

Generative Relational Academia

Towards a Theory of Academic Generativity under Structural Constraint

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Draft. This is a preprint draft. It is circulated for comment, and its arguments, formulations, and open questions are subject to revision. Correction and criticism are welcome at huangwanhong@serendip.ngo.

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PART I

THE PROBLEM AND THE METHOD OF ITS TREATMENT

Draft

CHAPTER 1

GENERATIVITY PRIOR TO INFRASTRUCTURE

1.1 THE QUESTION THE BOOK ADDRESSES

Accounts of knowledge production ordinarily begin from an arrangement in operation. A community assesses contributions, a channel circulates them, an institution supplies the time and the access their composition consumes, and a procedure allocates resources among those who contribute. The questions such accounts pose concern the conduct of the arrangement: how resources are best divided, how assessment may be improved, how recognition is distributed and why unequally.

This book poses a question arising before those. It asks how an arrangement of that kind comes into being where none operates, and what becomes of a capacity to produce knowledge held by a party for whom no such arrangement is available.

This section states the question, distinguishes it from the questions ordinarily posed, and marks what the distinction costs. It proceeds by statement, distinction, and consequence. The method is the specification of a problem.

The question is distinguished from the questions ordinarily posed by the conditions it declines to assume. An account asking how resources are best divided assumes a stock and a procedure. An account asking how recognition is distributed assumes a system conferring it. The question posed here assumes neither, and it accordingly falls outside the literatures constructed upon them, as Chapter 9 establishes across six surveys.

What the distinction costs is the evidence those literatures supply. Populations are drawn from those who submit, publish, or hold positions, and a party outside those arrangements appears in few of the measurements available. Chapter 52 states the consequence for what this account may be assessed against.

1.2 THE TWO REGIMES OF KNOWLEDGE PRODUCTION

The question of Section 1.1 arises from a difference between two conditions under which knowledge is produced, and the difference is one of kind in place of degree. This section states

the two conditions, states the difference, and marks what follows. It proceeds by statement, difference, and consequence. The method is comparison.

Under the first condition, a producer holds a position supplying time, access, criticism, passage, and a reception already oriented to the questions at issue. Contributions composed under those conditions enter circulation, are assessed, and return resources sustaining further composition. The chain closes, and each traverse of it is cheaper than the last.

Under the second condition, a producer holds a capacity to compose contributions and holds few of the conditions supporting their reception. Contributions are composed and reach parties positioned to respond at a rate the producer cannot raise by composing more of them.

The difference is one of kind because the closed chain and the open one differ in what the producer's effort accomplishes. Effort applied within a closed chain augments a holding that returns; effort applied within an open one is consumed. An account describing the second as a slower instance of the first misdescribes it, and Chapter 44 establishes the point in detail.

1.3 THE CASE OF FEW PARTICIPANTS

One case within the second condition sharpens the question, and it is the case from which this book proceeds. This section states the case, states why it is harder than the case of many participants, and marks its bearing. It proceeds by statement, comparison, and bearing. The method is the analysis of a case.

The case is that of an arrangement composed of very few participants. An arrangement of a thousand participants may be shown to sustain itself by an argument conducted over the aggregate: rates of contribution and of departure are computed, and the arrangement persists where the first exceeds the second.

An arrangement of five participants admits no such argument. Departure of any participant alters the arrangement rather than a rate within it, and the question facing such an arrangement is whether each participant returns on the next occasion. Retention of particular parties replaces the aggregate as the quantity at issue.

The case is harder in a definite respect. An argument over an aggregate establishes that an arrangement persists while leaving open what becomes of any participant, and an arrangement of few participants requires an account of each. Chapter 20 supplies the formal statement of the asymmetry, and Chapter 48 supplies the result establishing that a small group may sustain a field collectively where no member sustains one individually.

1.4 THE THESIS

The account developed in this book may be stated in advance of its development, and the statement governs the Parts that follow. This section states the thesis in four elements and marks where each is established. It proceeds element by element. The method is statement.

The first element is a diagnosis. Generativity may be present in a producer while the interpretation in force admits no occasion of its application, and the resulting observation is indistinguishable at the surface from the absence of generativity. Part X establishes the diagnosis and supplies the quantity separating the two conditions from outside the producer.

The second element is a criterion. A relation crosses a threshold at the point where what it returns for its own continuation meets what its maintenance consumes, and the crossing is examined by withdrawal. Part XI states the criterion and Part IX fixes the restriction under which it is used.

The third element is a mechanism. A state stable against small disturbances admits large intermediate growth where the arrangement receiving contributions responds in components distinct from those in which contributions are composed. Part XI establishes the mechanism and identifies the feature of a receiving arrangement responsible for it.

The fourth element is a consequence. The infrastructure of a knowledge-producing system may be a consequence of generative relations among its participants in place of their precondition, and support may accordingly be designed to be withdrawn. Part XIII states the consequence and the design.

1.5 THE CONTRIBUTIONS CLAIMED

The thesis of Section 1.4 assembles elements held separately elsewhere, and the claim this book makes is correspondingly narrow. This section states what is claimed, states what is conceded, and marks where the boundary is fixed. It proceeds by claim, concession, and reference. The method is the statement of a position.

What is claimed is a conjunction: a relational unit of evaluation, an operation assigning an arrangement to one side of a distinction between arrangements that sustain themselves and arrangements requiring continued supply, and a dynamics stating the conditions under which an arrangement passes from the second to the first.

What is conceded is each element severally. The relational unit is held by five programmes in philosophy. Operations assessing what persists after support concludes are held in the design literature of assistance. A dynamics of amplification under non-normal operators is held in five literatures, including one application to socio-economic systems. The diagnosis of Part X is inherited, and the vocabulary employed for support is established in the design of enterprises.

The boundary is fixed in Chapter 40 and restated in Chapter 43, together with the observations that would withdraw the claim.

1.6 THE SCOPE OF THE ACCOUNT

An account assembled from several domains invites readings it declines, and the scope is accordingly stated at the outset. This section states three exclusions and marks the ground of each. It proceeds exclusion by exclusion. The method is the specification of a boundary.

The account is no theory of what makes a contribution good. It concerns the arrangements through which contributions are received and supplies no criterion for their content, and the two questions are independent.

The account asserts no comparability between the condition it examines and material deprivation. Mechanisms are carried from the study of deprivation under the distinction fixed in Chapter 2, and a mechanism carried between settings entails nothing about their comparability in gravity, in stakes, or in what they demand of those who address them.

The account states no doctrine of desert. The proposition that self-crossing supplies the condition on which support enters a generative cycle describes a mechanism of coupling, and Chapter 51 fixes the requirement forbidding its use as a criterion of eligibility.

1.7 THE PLAN OF THE WORK

The book is composed of thirteen Parts, and their order is determined by what each supplies to those following. This section states the order and the office of each Part. It proceeds Part by Part. The method is the statement of a plan.

Part I states the question and fixes the instruments. Chapter 2 fixes the presupposition diagnostic, the procedure governing the transfer of mechanisms, the discipline governing physical analogies, and the separation of levels of analysis.

Parts II to VII survey six bodies of work: the literatures treating self-sustaining arrangements, the study of deprivation, the economics of allocation in science, the economics of a constrained producer, the theory and practice of support, and the ethical literatures. Each chapter closes by recording what its literature assumes, and Chapter 9 assembles the record.

Part VIII states the vocabulary against its established uses, assembles the limits of the transfers, and states the gap. Part IX states the unit of evaluation, the ground of worth, and the boundary of the contribution. Part X states the diagnosis and the control parameter. Part XI states the model, the criterion, the direction of generated value, the selection of perturbations, and the account of support. Part XII states the predictions, the cases, and the conditions of falsification. Part XIII states the consequences and the limits.

The order places the ethical material before the model, since the restriction governing the criterion is fixed in Part IX and the criterion is stated in Part XI. It places the predictions before the cases, so that agreement between them carries evidential weight. And it places the statement of the gap after all six surveys, so that the statement rests on the assembled record in place of on any single literature.

CHAPTER 2

METHOD AND TERMS

2.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

This book draws on eight bodies of scholarship and on one family of physical models, and it argues at three levels of analysis that are easily confused with one another. A study of that composition requires its instruments to be declared in advance. Where they are left implicit, a survey becomes a catalogue, a borrowing from a distant field becomes opportunism, and a result established for one level migrates silently to another where it holds no force.

The chapter states four instruments and three conventions. The instruments are the presupposition diagnostic, by which an existing literature is read for the conditions it assumes already to obtain; the transfer of mechanisms between domains, by which a mechanism established in one setting is carried to another; the discipline governing physical analogies, which fixes what a model of fluid onset may contribute to an account of knowledge production; and the separation of levels of analysis, which holds institutional, individual, and supporting arguments apart. The conventions concern terminology, the selection of cases and the status of evidence, and the unit of moral evaluation.

The chapter proceeds by treating each instrument in turn, stating its procedure, its warrant, and its limits; it then states the three conventions; and it closes with a summary of the results carried forward. The method throughout is stipulative. The chapter argues for the usefulness of its instruments and defers to Part IX the defence of the one choice, the unit of moral evaluation, that carries substantive commitments of its own.

2.2 THE PRESUPPOSITION DIAGNOSTIC

The survey Parts of this book examine literatures that have already treated adjacent questions with more resources and longer histories than the present account can claim. The purpose of examining them is neither summary nor fault-finding, and a procedure is required that states positively what is sought. This section supplies that procedure. It defines the diagnostic, fixes the categories it employs, and marks the conditions under which its results hold. The method is analytical: each literature is read for the conditions its central question takes as given.

2.2.1 *The Reading of a Literature for Its Assumed Conditions*

Every research programme begins somewhere. A theory of how commons are governed begins with a community and a resource in hand; a theory of how movements mobilise resources begins with resources; a theory of how recognition accumulates begins with a recognition system already in operation. These starting points are legitimate. A programme is entitled to fix its scope, and the conditions it assumes are ordinarily the conditions under which its object becomes observable at all.

The diagnostic puts one question to each literature: which conditions must already obtain for its central question to arise. The answer locates the programme on a scale running from the formation of a system to its operation, and the aggregate of the answers locates the region lying before the earliest condition any of them assumes. That region is the object of this book. The diagnostic therefore performs a locating function, and the survey Parts are organised around it: each chapter closes with a section stating what its literature presupposes, and Chapter 9 assembles the results.

2.2.2 *The Categories of Presupposition*

The answers are recorded under five headings, fixed here and used without variation through Parts II to VII.

Definition 2.1. (The five presuppositions). *A literature presupposes a community where its question requires two or more parties already in sustained interaction; a resource where its question requires a stock that may be allocated, accumulated, or depleted; an institution where its question requires a standing arrangement assigning roles and enforcing rules; a recognition system where its question requires an operating procedure by which contributions are valued; and a channel where its question requires a route through which a contribution reaches others.*

The five are independent in principle and clustered in practice. A literature that presupposes an institution ordinarily presupposes a community as well, and the interest of the diagnostic lies in the cases where the pattern breaks. An account that assumes a channel while assuming no institution, or one that assumes a recognition system while assuming no resource, marks a position on the formation scale that neighbouring accounts pass over.

2.2.3 *The Boundaries of the Diagnostic*

Three limits attach to the results the diagnostic yields, and each constrains what the survey Parts may conclude.

The first concerns charity. A programme that assumes a community assumes it for a reason, and the diagnostic records the assumption while leaving the reason intact. Chapters in the survey Parts state the presupposition and state also what the programme achieves under it.

The second concerns exhaustiveness. The diagnostic examines the literatures selected on the grounds given in Section 2.7, and the conclusion it supports concerns those literatures. Where the text reports that a region has gone untreated, the report is qualified by the literatures examined, and Chapter 40 states the conditions under which it would be withdrawn.

The third concerns significance. A region left untreated and a region worth treating are distinct findings, and the diagnostic establishes the first alone. The argument that the region located here repays study is made separately, on the ground that a class of phenomena falls within it and that the available accounts leave those phenomena unexplained.

2.3 THE TRANSFER OF MECHANISMS BETWEEN DOMAINS

Several of this book's central constructions are carried from settings remote from knowledge production: from the economics of subsistence, from the study of assistance under scarcity, from developmental psychology, and from the stability theory of shear flows. Such carrying requires a warrant, and the warrant is easier to abuse than to supply. This section states what is carried, the conditions under which the carrying holds, and the manner in which each instance is marked in the text. The method is conditional: each transfer is licensed by conditions stated in advance and lapses where the conditions fail.

2.3.1 *The Distinction between Mechanism and Situation*

What is carried in this book is a mechanism: a specified relation among specified variables, together with the conditions under which that relation obtains. What remains behind is the situation: the stakes, the moral weight, the phenomenology, and the consequences of failure attaching to the setting where the mechanism was established.

The distinction bears the weight of several arguments and is stated here in its strongest form. That two situations share a mechanism entails nothing about their comparability in any other respect. Material deprivation threatens survival; the condition treated in this book leaves survival untouched in the ordinary case. The mechanism of blocked conversion may hold in both while the situations remain incommensurable, and Chapter 39 sets out for each transfer the respects in which the situations diverge.

2.3.2 *The Conditions Under Which a Mechanism Transfers*

Three conditions license a transfer, and all three are stated for each transfer at the point of use.

Requirement 2.2. (Conditions on transfer). *A mechanism established in a source domain applies in a target domain where the mechanism admits a statement at a level of description that both domains instantiate; where each variable the mechanism ranges over has a counterpart in the target domain identified independently of the transfer; and where the conditions under which the mechanism was established have counterparts obtaining in the target domain.*

The second condition carries most of the burden. A transfer whose target-domain counterparts are identified by the transfer itself is circular, and the identification is therefore made on independent grounds and stated before the mechanism is invoked. The third condition supplies the ordinary route by which a transfer fails: a mechanism holds in its source domain under conditions the target domain lacks, and the transfer succeeds in appearance while carrying no content.

2.3.3 The Marking of a Transfer's Boundary

Each transfer in this book is accompanied by a statement of its boundary: the class of inferences it licenses and the class it withholds. The statements are collected in Chapter 39 and appear also at the point of use. A borrowing that arrives without its boundary counts as an error of drafting in this book, and the practice of marking boundaries is what separates the use of a mechanism from the use of a metaphor.

2.4 THE DISCIPLINE GOVERNING PHYSICAL ANALOGIES

One family of models occupies a position of its own. The account of emergence developed in Part XI is built on the transition of a shear flow from a laminar state to a turbulent one, and physical models used in social argument have a poor record. This section fixes the terms on which the model is used. It states the object of the analogy, distinguishes the elements that transfer from those that remain behind, and sets the requirement governing every physical term appearing in the text. The method is restrictive: the analogy is narrowed in advance to the smallest form supporting the argument.

The object of the analogy is the onset of turbulence, in place of turbulence in its developed form. The distinction is material. A developed turbulent flow is characterised by a cascade in which energy injected at large scales passes to small ones and dissipates, and an account built on that phenomenon would describe the fragmentation of large structures. The phenomenon at issue here lies earlier: a state stable against small disturbances, an operator whose non-normality permits large transient growth, and a transition requiring disturbances of finite amplitude and specific structure. Every use of the word turbulence in this book refers to the onset.

What transfers is the structural relation among variables: that stability against infinitesimal disturbance is compatible with large transient amplification; that the amplitude and the structure of a disturbance jointly determine whether transition follows; and that a control parameter fixes the regime within which these relations hold. What remains behind is everything quantitative, the conservation laws constraining a fluid, and the ontology of the medium. No numerical result from fluid mechanics enters this book, and no claim about knowledge production is supported here by a calculation performed on a fluid.

The requirement that follows governs the drafting of Part XI.

Requirement 2.3. (Interpretation of physical terms). *Every term carried from the theory of hydrodynamic stability receives, at its first appearance, an interpretation in the domain of knowledge production, stated in terms identified independently of the physical model.*

2.5 THE SEPARATION OF LEVELS OF ANALYSIS

This book argues at three levels. The institutional level concerns a funder, an evaluator, or a system allocating resources across many producers. The individual level concerns one producer on one trajectory. The supporting level concerns a party carrying part of the cost of another's crossing. The three questions are formally distinct, and results established at one carry no automatic force at another. This section states the separation and the condition under which a result may cross between levels. The method is a standing constraint on inference, applied throughout Parts IV to VI and Part XI.

The separation matters because the temptation to violate it is strong and the violation is difficult to see. Evidence that a funder achieves more by dispersing resources than by concentrating them is a statement about allocation across a population. An individual producer facing one trajectory occupies a different problem, in which the governing quantities are the time-average growth of that trajectory and the probability of its termination. The two results have been run together in discussions of scarcity, and the error becomes invisible where the levels are left unnamed.

Requirement 2.4. (The separation of levels). *A result established at one level of analysis enters an argument at another level only where the text supplies an explicit argument that the result transfers, stated under the conditions on transfer fixed in Section 2.3.*

2.6 THE CONVENTIONS GOVERNING TERMINOLOGY

The vocabulary of this book overlaps at several points with established usage elsewhere, and the overlaps are close enough to mislead. This section fixes the terms recurring across Parts, states the conventions governing them, and records where each substantive definition is given. The method is stipulative, and the stipulations hold throughout.

The central term is generativity. Two established usages occupy the word: the capacity of a deployed technical platform to yield unanticipated contributions from a broad audience, and the psychosocial disposition to establish and guide the next generation. The sense used here is a third: a property of a relation, concerning the returns that relation produces for its own continuation. Where the risk of confusion arises, the text writes relational generativity, and the qualifier carries the distinction wherever the neighbouring literatures are in view.

A generative field is fixed at three functions and receives no fourth. It retains, in that a contribution placed within it persists; it couples, in that contributions placed within it may interact; and it amplifies, in that a contribution placed within it may issue in a structure exceeding its own scale. Chapter 23 supplies the definition and the argument for the three.

Two terms formed on the word field are distinguished and are used without interchange. A generative field is an arrangement performing the three functions above, held by whatever parties participate in it. A relational field is the set of couplings a single producer holds, and it is the quantity whose state the model of Part XI tracks. A producer places contributions into a generative field and thereby alters that producer's own relational field.

One further convention concerns the quantity a relation returns. The criterion stated in Chapter 48 is expressed in terms of energy, and the criterion stated in Chapter 49 is expressed in terms of generated value. The two denote one quantity, comprising attention, time, and standing, and the difference in wording marks the difference between a magnitude and a destination.

The relation of this book to the wider framework is fixed as follows. Generative Relational Being supplies the ontology on which the account rests; Generative Relational Governance treats the emergence of normative order; the generative relational account of economy treats the direction taken by generated value. Generative Relational Academia names the case in which the account of pre-cyclic origin is worked out, and the case stands to the ontology as an instance stands to what it instantiates.

Four further conventions hold. Grammar denotes the distinctions a community is able to draw, in the sense fixed by the preceding volumes of this series. Support denotes any transfer of resources, attention, or standing from one party to another, and its extractive and generative varieties are distinguished by the test given in Chapter 51. Academic poverty denotes the condition defined in Chapter 45 and is used with that definition alone. Each formulation recurring across many chapters is stated once, in the chapter defining the construction it

concerns, and is quoted verbatim wherever it reappears.

2.7 THE SELECTION OF CASES AND THE STATUS OF EVIDENCE

The book cites empirical results drawn from literatures with markedly different standards of evidence, and it presents cases illustrating the model developed in Part XI. Both practices invite misreading. This section states the function assigned to cases, fixes the labels under which evidence is reported, and gives the ground on which the surveyed literatures and the cases were selected. The method is declarative.

The literatures were selected by proximity to the question of formation. Each treats either the conditions under which a collective capacity comes into being, or the conditions under which an existing capacity fails to express itself, and each has an established position from which the region before formation may be located. The selection is stated here so that the qualification recorded in Section 2.2.3 has a definite scope.

Cases perform an illustrative function. They display the mechanism in operation and supply the concrete referents an abstract model requires; they confirm nothing. The cases assembled in Chapter 53 were selected after the predictions of Chapter 52 were fixed, and the ordering is deliberate: a case corpus assembled first, with a model fitted to it afterwards, would yield an agreement of no evidential value. Chapter 54 states which observations would tell against the model, and the cases are read against that statement.

The literatures surveyed differ in what they have established. Some supply formal models whose results follow from stated assumptions; some supply empirical findings of varying strength; and some supply doctrine, which is to say positions held within a professional community and reported in its literature as settled. The aid, capacity-development, and research-reform literatures mix the three in a single register, and the survey Parts therefore label each claim on which the argument leans.

Requirement 2.5. (Labelling of evidence). *Each substantive claim carried from a surveyed literature is reported under one of three labels: formally modelled, where the claim follows from stated assumptions within an explicit model; empirically tested, where the claim rests on data, together with a statement of the strength of the test; and doctrine, where the claim reports a position held within a professional community.*

2.8 THE UNIT OF MORAL EVALUATION AS A METHODOLOGICAL CHOICE

One further choice belongs to method, and it carries commitments the other instruments avoid. An account of support, and of what is owed to a producer, requires a unit at which evaluation proceeds: the individual together with the outputs attributable to that individual,

the capabilities available to a person, the relation in which parties stand, or the system within which relations are situated. The choice is prior to the arguments it governs and determines which questions arise. This section states the choice, marks its consequences, and defers its defence.

The choice made here takes the relation as the unit. The consequence bearing on method appears immediately. A question posed at the level of an individual and an expected output, and admitting no satisfactory answer at that level, receives a different formulation at the level of the relation. Part IX treats the principal instance, and the treatment is deferred there because it requires the ethical literatures surveyed in Part VII.

Two constraints on the use of the unit are fixed here, since they govern chapters preceding Part IX.

Requirement 2.6. (The diagnostic restriction). *The threshold, folding, and fading criteria classify relations. They confer no worth on a participant and withdraw none, and every claim about what is owed to a participant rests on grounds stated independently of them.*

Requirement 2.7. (The lexical firewall). *Protection of dignity holds prior to every generative accounting, and remains in force at any value of the return that accounting yields.*

The two are stated at this point because the model of Part XI would otherwise arrive before the restriction governing its use. A criterion of self-maintenance presented without that restriction invites the inference from a description of what sustains itself to a judgement about what merits sustaining.

2.9 SUMMARY OF RESULTS

The chapter has fixed four instruments and three conventions.

The presupposition diagnostic reads each surveyed literature for the conditions its central question assumes, records the answers under five headings, and locates the region lying before the earliest of them. Its results are qualified by the literatures examined and establish the location of a gap alone.

The transfer of mechanisms carries a specified relation among specified variables while leaving the situation of the source domain behind. Three conditions license a transfer, and each transfer is accompanied at the point of use by a statement of the inferences it withholds.

The discipline governing physical analogies restricts the model of Part XI to the onset of turbulence, transfers structural relations among variables alone, and requires a domain interpretation for every physical term at its first appearance.

The separation of levels holds the institutional, individual, and supporting arguments apart, and admits a result from one level into another only under an explicit argument that it transfers.

The conventions fix relational generativity as the qualified form of the central term, fix the generative field at three functions, place the present account as a case of the underlying ontology, and assign each recurring formulation to the chapter at which it is stated.

The status of evidence is fixed by three labels, and cases are assigned an illustrative function under a selection procedure following the statement of predictions.

The unit of moral evaluation is the relation. Its defence is deferred to Part IX, and two constraints on its use hold from this point: the criteria of this book classify relations and confer no worth, and the protection of dignity holds prior to every generative accounting.

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PART II

THE PRESUPPOSITIONS OF SELF-SUSTAINABILITY IN EXISTING ACCOUNTS

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CHAPTER 3

COMMONS AND KNOWLEDGE COMMONS

3.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part II applies the presupposition diagnostic to the literatures treating the self-sustaining arrangement, and it opens with the body of work that established such arrangements as an object of study. A tradition demonstrating that shared resources are governed successfully by those who use them supplies the strongest available evidence that arrangements of the kind this book examines exist, and its questions begin at a point later than the one this book treats.

The chapter undertakes five tasks. It reports the study of governance over resources held in common. It reports the extension of that study to knowledge. It reports the framework constructed for the extension, and the case corpus assembled under it. It reports the account of production conducted by dispersed contributors. And it states the region the tradition leaves untreated, which is the region examined in Part XI.

The chapter proceeds by reporting four bodies of work and closes with a statement of the untreated region and the presupposition diagnostic. The method is the reporting of established positions under the labels fixed in Chapter 2.

3.2 THE GOVERNANCE OF RESOURCES HELD IN COMMON

The tradition reported in this chapter began from a demonstration that a widely held prediction about shared resources is false, and the demonstration determines the questions the tradition subsequently pursued. This section reports the demonstration, states the conditions associated with success, and marks the form of the account. It proceeds by report, conditions, and form. The method is exposition.

Ostrom (1990) assembled cases of resources held in common and governed by their users over long periods, establishing that arrangements avoiding both privatisation and external administration are durable under stated conditions (doctrine, with an extensive comparative case base and subsequent experimental work).

The conditions associated with durable governance were assembled into design principles comprising defined boundaries, rules matched to local circumstance, participation by users

in altering the rules, monitoring accountable to users, sanctions graduated by the severity of an infraction, accessible conflict resolution, recognition of the arrangement by external authorities, and organisation in nested layers where the resource is large (doctrine, with comparative support).

The form of the account is diagnostic of the tradition. The principles describe arrangements already operating, assembled by comparison across cases in which governance succeeded and cases in which it failed. An arrangement is assessed against them once it exists.

3.3 KNOWLEDGE TREATED AS A RESOURCE HELD IN COMMON

The extension of the tradition to knowledge required an argument that knowledge presents the difficulties the tradition was constructed to address, and the argument determines what the extension examines. This section reports the extension, states the difficulty it identifies, and marks the distinction it must accommodate. It proceeds by report, difficulty, and distinction. The method is exposition.

Hess and Ostrom (2007) extend the analysis to knowledge and to the arrangements through which it is stored, retrieved, and circulated, holding that the resources at issue face difficulties of provision and of maintenance comparable in structure to those affecting physical resources (doctrine, with case material).

The difficulty identified is that knowledge resources require sustained contribution and maintenance while conferring benefits that extend beyond those who contribute, so that the arrangements supporting them face the provision problem the tradition treats.

The distinction the extension must accommodate is that knowledge is not subtracted by use, so that the congestion and depletion motivating the original analysis are absent. The extension accordingly concentrates on provision and on maintenance in place of on allocation among rival users, which is the respect in which it stands closest to the present account.

3.4 THE FRAMEWORK CONSTRUCTED FOR KNOWLEDGE COMMONS

A framework was constructed to conduct the extension systematically, and its object determines the presupposition this chapter records. This section reports the framework, states its object, and reports the corpus assembled under it. It proceeds by report, object, and corpus. The method is exposition.

Frischmann et al. (2014) adapt the institutional analysis of the original tradition to knowledge, and specify a sequence of enquiries covering the resources at issue, the community involved, the goals pursued, the rules in use, and the outcomes observed (doctrine, with an extensive derived case literature).

The object of the framework is stated in its own terms as the institutionalised governance of the sharing and, in some cases, the creation of knowledge. An institution and a community

are therefore present in the object, and the framework's enquiries proceed from them.

The corpus assembled under the framework comprises arrangements including collaborative astronomical classification, genomic data repositories, consortia formed around particular diseases, and repositories of open software, together with a subsequent volume treating medical knowledge (doctrine, with case studies of varying depth).

3.5 PRODUCTION CONDUCTED BY DISPERSED CONTRIBUTORS

An account of production outside both firms and markets supplies the tradition with its most prominent modern instance, and its conditions bear on the present argument. This section reports the account, states its conditions, and marks what those conditions presuppose. It proceeds by report, conditions, and consequence. The method is exposition.

Benkler (2006) holds that a mode of production organised around dispersed contributors coordinating without price signals or managerial direction is viable where tasks are modular and where the increments contributors supply are small enough that many parties may contribute (doctrine, with case material and a formal treatment of the conditions).

The conditions stated are modularity, granularity of contribution, and low costs of integration, together with a population of contributors sufficiently large that the required increments are supplied.

What the conditions presuppose is the population. The account establishes the viability of the mode where contributors are present in number and specifies the properties a task must have for their contributions to be integrated; it treats the assembly of the contributor population as given.

3.6 THE FORMATION OF A COMMONS AS A REGION AWAITING TREATMENT

The tradition reported above bears on the present account at one point in particular, and the point is stated here in place of being left to the presupposition section. This section states the region, reports the treatments approaching it, and states what remains. It proceeds by statement, report, and residue. The method is analytical.

The region is the passage from parties acting severally to a community capable of governing a resource in common. The tradition's principles describe how such a community governs, and its frameworks describe the enquiries by which an operating arrangement is analysed.

Two treatments approach the region. The founding work of the tradition includes an account of institutional change, examining how arrangements are altered by parties already in repeated interaction (doctrine, with case material). A recent formal treatment states the difficulty directly, holding that parties perceive participation as advantageous only once an institution exists, and resolves it by supposing that parties act on an erroneous belief that one exists already (formally modelled; a preprint at the time of writing).

What remains is the case in which parties are not already in repeated interaction and hold no belief, erroneous or otherwise, about an institution. The first treatment begins from parties in interaction, and the second supplies a mechanism resting on misperception. Chapter 47 supplies an account resting on the amplification of contributions placed into a field, and Chapter 40 states the differentiation.

3.7 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a community in the strongest form of any literature reported in Part II, since its central question concerns how a body of users governs what it holds in common.

It presupposes a resource, since the arrangement governs one, and an institution, since the framework's object is institutionalised governance.

It presupposes a channel in the treatments of knowledge, since the resources at issue are stored, retrieved, and circulated through arrangements the literature examines.

It presupposes a recognition system only in the limited form of the monitoring and sanction the design principles describe.

The region left untreated is the formation of the community. Every enquiry the framework specifies proceeds from a community, a resource, and a set of goals, and a party holding no relation to any such community appears in none of them.

3.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Resources held in common are governed durably by their users under stated conditions, and the conditions were assembled by comparison across arrangements already operating.

The extension of the analysis to knowledge concentrates on provision and on maintenance, since knowledge is not subtracted by use, which is the respect in which the extension stands closest to the present account.

The framework constructed for the extension states its object as the institutionalised governance of the sharing and creation of knowledge, so that an institution and a community are present in the object before its enquiries begin.

Production by dispersed contributors is viable where tasks are modular, contributions are granular, and integration is inexpensive, and the account treats the assembly of the contributor population as given.

The passage from parties acting severally to a community capable of governing in common is approached by two treatments, of which one begins from parties already in repeated interaction and the other rests on misperception. The case of parties in neither position remains.

The literature presupposes a community, a resource, an institution, and a channel, and it leaves untreated the formation of the community from which its enquiries proceed.

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CHAPTER 4

ALTERNATIVE SCHOLARLY INFRASTRUCTURE

4.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Arrangements for circulating scholarly contributions have been reconstructed repeatedly over the past three decades, and the reconstruction supplies the present account with its richest body of documented cases. The arrangements bear on Part XI in two respects: several were founded by parties who departed from an existing arrangement, and several are maintained without the commercial revenue that sustains the arrangements they replaced.

The chapter undertakes six tasks. It reports the movement toward unrestricted access and the mechanisms constructed for it. It reports arrangements conducted by scholars without commercial intermediaries. It reports reconstruction of the review arrangement itself. It reports the founding of replacement titles by departing editorial boards, which is the case Chapter 53 examines. It reports arrangements circulating contributions outside legal sanction. And it reports the governance of shared scholarly infrastructure, whose difficulty is the one Chapter 19 treats formally.

The chapter proceeds by reporting six bodies of practice and closes with the presupposition diagnostic. The method is the reporting of documented practice and its associated scholarship, under the labels fixed in Chapter 2.

4.2 UNRESTRICTED ACCESS AND THE MECHANISMS CONSTRUCTED FOR IT

The movement toward unrestricted access supplies the setting within which the arrangements of this chapter were constructed. This section reports the movement, states its principal mechanisms, and marks the difficulty each encounters. It proceeds by report, mechanisms, and difficulty. The method is exposition.

The movement holds that contributions supported by public funds should be readable without payment, and it has been pursued through deposit of contributions in repositories, through journals levying charges on authors in place of readers, and through agreements converting subscription payments into support for unrestricted publication (institutional doctrine, with extensive policy documentation).

The difficulty each mechanism encounters is a transfer of the payment in place of its removal. Charges levied on authors relocate the barrier from those who read to those who write, and agreements converting subscriptions preserve the aggregate payment while altering what it purchases. Chapter 17 reports the consequence for producers holding no institutional support, who face the relocated barrier without the arrangements through which institutions meet it.

4.3 PUBLICATION CONDUCTED BY SCHOLARLY BODIES

A body of arrangements conducts publication without charges to either readers or authors, and their operation bears on the account of maintenance in Part V. This section reports the arrangements, states their maintenance, and marks what their existence establishes. It proceeds by report, maintenance, and consequence. The method is exposition.

The arrangements comprise journals operated by scholarly communities without commercial publishers, arrangements in which a community assesses contributions deposited in repositories and recommends them, and journals composed of assessments attached to contributions held elsewhere (institutional documentation, with descriptive scholarship reporting their number and distribution across fields).

Their maintenance is supplied by the unpaid effort of participants together with institutional subvention of infrastructure, and the descriptive literature reports that arrangements of this kind are concentrated in fields whose contributions are deposited in repositories as a matter of practice (doctrine, with a survey of the population).

What their existence establishes for the present account is that the functions of a circulation arrangement are separable from the commercial form that ordinarily performs them. The significance for Part V is qualified by the maintenance reported above, which is the recurring cost with no terminating condition that Chapter 22 examines.

4.4 RECONSTRUCTION OF THE REVIEW ARRANGEMENT

Several arrangements reconstruct the assessment of contributions in place of its financing, and their designs bear on the account of admissibility in Part X. This section reports the designs, states what each alters, and marks the bearing. It proceeds by report, alteration, and bearing. The method is exposition.

The designs comprise arrangements publishing assessments alongside contributions, arrangements in which a contribution is published before assessment and assessments are attached subsequently, and arrangements in which discussion is conducted publicly during assessment (institutional documentation, with evaluation of varying strength).

What each alters is the point at which a contribution becomes visible and the visibility of the assessment itself. In arrangements of the second kind, the operative criteria of assessment

are applied after a contribution has entered circulation in place of determining whether it enters.

The bearing on Part X is that these designs alter one component of pathway concentration directly. A contribution entering circulation before assessment reaches parties positioned to respond irrespective of the assessment it subsequently receives, which is an increase in channel bandwidth without alteration of interpretive admissibility.

4.5 EDITORIAL SECESSION AND THE FOUNDING OF REPLACEMENT TITLES

Editorial boards have on several occasions resigned in a body and founded a replacement title, and the pattern is the case examined in Chapter 53. This section reports the pattern, reports its instances, and marks what it displays. It proceeds by report, instances, and display. The method is the reporting of documented events.

The pattern comprises a dispute between a board and a commercial publisher, ordinarily concerning charges levied on authors or on readers, followed by the resignation of the board and the establishment of a new title carrying the same editorial practice (professional reporting, with a public register maintained from announcements).

Instances include the departure of a linguistics board in 2015, the departure of a neuroimaging board in 2023 over a charge the departing editors assessed as several times the cost of publication, and a continuing series recorded in the register (professional reporting; the register is compiled from public announcements and is not a systematic survey).

What the pattern displays is the separability established in Section 4.3, observed at the moment of separation. The publisher supplied the infrastructure and the board supplied the field of relations through which contributions were assessed and circulated, and the departure removed the first while carrying the second. Chapter 53 states what the pattern leaves unestablished.

4.6 CIRCULATION CONDUCTED BEYOND LEGAL SANCTION

Arrangements circulating contributions without the permission of those holding rights over them have operated at scale, and their treatment in scholarship bears on the account of access in Part V. This section reports the arrangements, reports the scholarship, and marks the bearing. It proceeds by report, scholarship, and bearing. The method is exposition.

The arrangements comprise repositories holding contributions and books, assembled and maintained outside the arrangements through which rights are administered, and used substantially by parties in regions and positions where subscription access is unavailable (documentary evidence, with usage analysis of varying strength).

The scholarship treating them holds that informal circulation operates as a relief mechanism within a system of unequal access, forestalling a sharper crisis of access while leaving

the arrangements producing the inequality in place (doctrine, with comparative case material across several countries).

These arrangements operate without the authorisation of rights holders and are unlawful in most jurisdictions. They are reported here as a documented feature of the circulation of scholarship, and this book recommends no conduct with respect to them.

The bearing on Part V is that literature reaches parties holding no institutional position by routes the substrate described in Chapter 44 does not supply, whether through these arrangements, through repositories holding contributions deposited by their authors, or through direct request to authors. Access to literature is therefore among the least binding components of the substrate, which sharpens the account by excluding one candidate explanation of the condition.

4.7 THE GOVERNANCE OF SHARED SCHOLARLY INFRASTRUCTURE

Arrangements holding shared infrastructure for scholarship face a difficulty of provision, and its statement in that literature anticipates the formal treatment reported in Chapter 19. This section reports the arrangements, states the difficulty, and marks the anticipation. It proceeds by report, difficulty, and correspondence. The method is exposition.

The arrangements comprise registries, identifier systems, and repositories operated as shared resources, together with principles governing their conduct that specify commitments concerning governance, sustainability, and the availability of their holdings should they cease operation (institutional documentation, with adoption by several organisations).

The difficulty stated is that such infrastructure benefits many parties and is funded by few, so that its provision presents the structure of a collective good, and a treatment within that literature applies the analysis of collective action to it directly (doctrine).

The correspondence to Chapter 19 is exact, and it establishes that the parties operating scholarly infrastructure have identified the difficulty of formation in the terms this book employs. What that literature supplies is an analysis of provision for infrastructure already operating, and the formation of such infrastructure where none exists is treated in neither.

4.8 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a channel in the strongest form of any literature reported in this book, since its subject is the arrangements through which contributions circulate.

It presupposes a community, since the arrangements it reports are constituted by scholars, and a recognition system, since assessment is the operation most of them reconstruct.

It presupposes an institution, since subvention and infrastructure are supplied by organizations, and a resource in the form of the funds and the effort those arrangements consume.

The region left untreated is the position of a producer holding no standing within the community that constitutes these arrangements. Every arrangement reported here is founded and maintained by parties holding positions, and the arrangements alter the terms on which contributions circulate among such parties. A producer outside that community encounters the reconstructed arrangements on the same terms as the arrangements they replaced.

4.9 SUMMARY OF RESULTS

The chapter has established six results carried forward.

The movement toward unrestricted access has proceeded through mechanisms that relocate a payment in place of removing it, so that a producer holding no institutional support faces the relocated barrier without the arrangements through which institutions meet it.

Publication is conducted without commercial intermediaries in a substantial population of arrangements, maintained by unpaid effort and institutional subvention, which establishes that the functions of a circulation arrangement are separable from the commercial form.

Reconstructions of the review arrangement alter the point at which a contribution becomes visible, which increases channel bandwidth without altering interpretive admissibility.

Editorial boards have departed in a body and founded replacement titles, displaying the separation of infrastructure from a field of relations at the moment it occurs.

Contributions circulate at scale outside legal sanction, and access to literature is therefore among the least binding components of the substrate described in Part X.

Shared scholarly infrastructure presents the structure of a collective good, and the parties operating it have identified the difficulty in the terms this book employs, for infrastructure already in operation.

The literature presupposes a channel, a community, a recognition system, an institution, and a resource, and it leaves untreated the position of a producer holding no standing within the community that constitutes these arrangements.

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CHAPTER 5

RECOGNITION, PRESTIGE, AND EPISTEMIC INJUSTICE

5.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The diagnosis stated in Part X holds that a capacity may be present while the arrangement receiving contributions admits no occasion for its application. A body of work in the sociology of science and in philosophy has established, over six decades, that recognition is distributed by mechanisms operating alongside the content of contributions, and the present chapter reports that work.

The chapter undertakes six tasks. It reports the mechanism by which recognition accrues to parties already holding it. It reports the concentration of position within systems of appointment. It reports the accounts treating scientific activity as a field in which standing is accumulated and exchanged. It reports the study of producers holding no institutional position. It reports the philosophical treatment of injuries inflicted upon parties in their capacity as knowers. And it states the respect in which this body of work bears on Part X and the respect in which it does not.

The chapter proceeds by reporting five bodies of work and closes with a statement of the relation and the presupposition diagnostic. The method is the reporting of empirical and doctrinal work under the labels fixed in Chapter 2.

5.2 THE ACCRUAL OF RECOGNITION TO PARTIES ALREADY HOLDING IT

The mechanism reported in this section was identified early and has been confirmed repeatedly, and it supplies the standing explanation of concentration in scientific recognition. This section reports the mechanism, reports the causal evidence, and marks what it establishes. It proceeds by report, evidence, and consequence. The method is the reporting of empirical work.

Merton (1968, 1988) held that recognition accrues disproportionately to parties of established standing and is withheld from parties who have yet to establish it, and connected the mechanism to the accumulation of advantage across a career (doctrine, with case material and interview evidence). DiPrete and Eirich (2006) formalised the family of processes in which

a favourable position becomes a resource producing further advantage, and related them to processes of preferential attachment (doctrine, with a formal review).

Bol et al. (2018) examined an early-career funding competition using the discontinuity at its funding threshold, and reported that parties just above the threshold accumulated substantially more funding over the following years than parties just below it, without the difference being attributable to what the initial funding enabled (empirically tested; regression discontinuity design, single national system).

What the evidence establishes is that a small initial difference in recognised standing produces a large subsequent difference in resources, through a mechanism operating independently of subsequent contribution. Chapter 40 treats this literature as the principal competing explanation of the phenomena Part XI addresses.

5.3 CONCENTRATION OF POSITION WITHIN SYSTEMS OF APPOINTMENT

Recognition is convertible into position, and the distribution of positions has been measured directly. This section reports the measurements, states what they establish, and marks their bearing. It proceeds by report, establishment, and bearing. The method is the reporting of empirical work.

Clauset et al. (2015) examined appointment networks across several disciplines and reported a steep hierarchy in which a minority of institutions supply a large majority of those appointed elsewhere (empirically tested; large administrative sample, single national system). Wapman et al. (2022) extended the analysis and reported comparable concentration together with limited movement upward through the hierarchy across a decade (empirically tested; large administrative sample, single national system).

What the measurements establish is that the routes through which a producer acquires the substrate described in Chapter 44 are concentrated, and that the concentration is stable across time.

The bearing on Part X is that the measurements supply direct evidence for one component of the control parameter fixed in Chapter 46. A producer's coupling density is determined substantially by position, and positions are distributed by a hierarchy the measurements report.

5.4 STANDING ACCUMULATED AND EXCHANGED WITHIN A FIELD

Several accounts treat scientific activity as a field in which parties accumulate a standing convertible into other holdings, and their treatment supplies the vocabulary Part III employs. This section reports the accounts, states the common structure, and marks the bearing. It proceeds by report, structure, and bearing. The method is exposition.

Bourdieu (1975) treats the scientific field as a space of positions in which parties compete for a specifically scientific authority, and holds that the authority so accumulated is convertible (doctrine). Latour and Woolgar (1979) describe a cycle in which recognition is converted into resources, resources into results, and results into further recognition (doctrine, with ethnographic material). Whitley (1984) classifies fields by the extent to which parties depend upon one another for the assessment of their contributions (doctrine). Gieryn (1983) examines the work by which parties establish and maintain the boundaries of a field (doctrine, with historical material).

The common structure is a cycle in which a holding of one kind is converted into a holding of another, and the conversion is conducted through the assessments of other parties.

The bearing on this book is that the structure is the one Chapter 14 treats under the conversion of capital, and the chain of transformations set out in Chapter 44 is the same cycle stated for a single producer.

5.5 PRODUCERS STANDING BEYOND INSTITUTIONAL POSITION

A body of work examines producers standing outside the arrangements reported above, and it supplies the population this book examines with its existing scholarly treatment. This section reports the work, states its findings, and marks its limits. It proceeds by report, findings, and limits. The method is exposition.

The work comprises studies of scholars holding no academic appointment, studies of contingent and precarious academic employment, and studies of parties contributing to fields without professional training, including cases in which such parties obtained standing through organised engagement with a professional community (doctrine, with case material of varying depth).

The findings reported are that producers outside institutional position encounter difficulties of access, of assessment, and of citation, and that standing is obtainable in particular circumstances through sustained engagement with parties holding it.

The limits are two. The literature is descriptive and case-based, and it supplies no measurement of the population or of the rate at which such producers obtain standing. And its cases concentrate on parties who obtained standing, which is the survivorship property Chapter 53 records of its own corpus.

5.6 INJURIES INFLICTED UPON PARTIES IN THEIR CAPACITY AS KNOWERS

A philosophical literature treats wrongs done to parties specifically in their capacity as knowers, and one of its constructions is the closest philosophical statement of the diagnosis in Part X. This section reports the constructions, states the one bearing on this book, and marks

the transfer. It proceeds by report, identification, and transfer. The method is exposition followed by the transfer procedure fixed in Chapter 2.

Fricker (2007) distinguishes testimonial injustice, in which prejudice causes a hearer to assign diminished credibility to a speaker, from hermeneutical injustice, in which a gap in the interpretive resources a community holds places a party at a disadvantage in rendering experience intelligible (doctrine, within analytic philosophy). Subsequent work treats the silencing of parties whose contributions a community lacks the resources to receive, and the condition in which parties decline to acquire the resources that would enable reception (doctrine). A further literature treats the destruction of bodies of knowledge and the standing of the parties holding them (doctrine).

The construction bearing on this book is the second. A capacity present in a party, and an interpretive apparatus admitting no application of it, is the structure defined in Chapter 45 as expression constraint.

The transfer carries the structure and withholds the object. The philosophical account concerns a party's capacity to render experience intelligible, including to that party, and the constraint defined in this book concerns the passage of a formulated contribution through an arrangement of assessment. The two coincide in form and differ in what is blocked.

5.7 THE RELATION OF THIS BODY OF WORK TO PART X

The materials reported above stand in a definite relation to the argument of this book, and the relation is stated here in place of being left implicit. This section states what the body of work supplies, states what it withholds, and marks the consequence. It proceeds by statement, exclusion, and consequence. The method is the placement of reported work.

What the body of work supplies is the diagnosis. Recognition accrues to parties already holding it; positions are concentrated; standing is convertible; producers outside institutional position encounter documented difficulties; and a philosophical construction describes the condition in which an interpretive apparatus admits no application of a capacity. Part X asserts nothing about the existence of the condition that this literature has not established.

What the body of work withholds is an account of passage. Every construction reported here describes a state and the mechanism maintaining it, and none states the conditions under which a party in that state comes to hold a field that receives contributions. The cumulative account describes accumulation among parties already receiving; the field accounts describe conversion among parties already holding; and the philosophical account describes a condition and the wrong it constitutes.

The consequence is that this book takes its diagnosis from this literature and supplies a dynamics. Chapter 40 states the position in the form the comparison requires, and treats the cumulative account as the principal competing explanation.

5.8 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a recognition system in the strongest form of any literature reported in this book, since its subject is the distribution of recognition and the arrangements conducting it.

It presupposes a community, since assessments are made by parties constituting one, and an institution, since positions and appointments are held within organisations.

It presupposes a channel, since the contributions whose reception it measures have been placed where they may be encountered, and a resource in the form of the funding whose distribution it examines.

The region left untreated is the formation of a recognition system. Every construction reported here operates within an arrangement already conducting assessment, and the case of a producer for whom no such arrangement is in operation appears in none of them.

5.9 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Recognition accrues to parties already holding it, and a small initial difference in recognised standing produces a large subsequent difference in resources through a mechanism operating independently of subsequent contribution.

Positions are distributed by a steep hierarchy in which a minority of institutions supply a large majority of those appointed, with limited movement upward across a decade.

Scientific activity is treated as a field in which a holding of one kind is converted into a holding of another through the assessments of other parties, which is the cycle Chapter 44 states for a single producer.

Producers holding no institutional position encounter documented difficulties of access, assessment, and citation, on a literature that is descriptive, case-based, and concentrated on parties who obtained standing.

A capacity present in a party, together with an interpretive apparatus admitting no application of it, is described in philosophy as a condition of injustice. The structure is the one Part X defines, and the two differ in what is blocked.

This book takes its diagnosis from this literature and supplies a dynamics. Every construction reported here describes a state and the mechanism maintaining it, and none states the conditions under which a party in that state comes to hold a field that receives contributions.

The literature presupposes a recognition system, a community, an institution, a channel, and a resource, and it leaves untreated the formation of a recognition system.

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CHAPTER 6

EMERGENCE, CRITICALITY, AND BOOTSTRAPPING

6.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The model developed in Part XI is constructed from materials belonging to the study of systems that produce order without external direction. The literatures supplying those materials are reported here, both to establish the provenance of the model and to determine what remains for it to supply.

The chapter undertakes six tasks. It reports the account of ordered structure arising in systems maintained away from equilibrium. It reports the account of self-production in living systems. It reports the formal result establishing that a set may sustain itself where no member of it does. It reports the accounts of systems organising toward a critical state and of transitions across one. It reports threshold accounts developed for social systems. And it reports the treatment of transient growth under operators whose spectrum indicates decay, which supplies the model of Part XI with its central property.

The chapter proceeds by reporting six bodies of work and closes with the presupposition diagnostic. The method is the reporting of formal and empirical work under the labels fixed in Chapter 2.

6.2 ORDERED STRUCTURE IN SYSTEMS MAINTAINED AWAY FROM EQUILIBRIUM

The tradition reported in this chapter began from the observation that order arises in systems supplied with a continuing flow of energy, and the observation determines the form of its accounts. This section reports the tradition, states its central result, and marks its bearing. It proceeds by report, result, and bearing. The method is exposition.

Nicolis and Prigogine (1977) and Prigogine and Stengers (1984) establish that systems held away from thermodynamic equilibrium by a continuing throughput may organise into structures that persist while the throughput continues, and that such structures arise through the amplification of fluctuations in place of by design (doctrine, with formal treatment in physical chemistry).

The central result is that order is compatible with dissipation, and that the fluctuation which initiates a structure is small relative to the structure it initiates.

The bearing on the present account is that the form of explanation is the one Part XI employs: a small disturbance, an amplifying mechanism, and a resulting structure. What the tradition requires and the present case lacks is the continuing throughput, since the structures it describes persist only while supply continues. Chapter 48 treats that requirement as the condition its criterion examines.

6.3 SELF-PRODUCTION IN LIVING SYSTEMS

An account developed in theoretical biology treats a system's production of its own components as the property distinguishing living organisation, and its treatment bears on the criterion of Part XI. This section reports the account, states its property, and marks its limit. It proceeds by report, property, and limit. The method is exposition.

Maturana and Varela (1980) hold that a living system is organised as a network of processes producing the components that constitute the network, so that the system produces itself and its boundary (doctrine, within theoretical biology, with an extensive derived literature).

The property so defined is self-production, and it is close in form to the criterion of Chapter 48, which holds that a relation crosses a threshold where the returns it generates meet the costs of its maintenance.

The limit is that the account describes a system already organised in the manner it defines, and supplies no treatment of the passage into that organisation. The tradition has been extended to social arrangements, and the extension is contested within the source discipline on the ground that the defining property is stated for the production of physical components (doctrine, with disagreement recorded among its principal authors).

6.4 COLLECTIVELY SELF-SUSTAINING SETS

One formal result establishes a possibility the present account requires, and it is the closest formal precedent available for the small-group case. This section reports the result, states its condition, and marks the transfer. It proceeds by report, condition, and transfer. The method is the reporting of formal work.

Kauffman (1993) and the formalisation by Hordijk and Steel (2004) establish that a collection of reactions may be collectively self-sustaining, in that each reaction in the collection is catalysed by a product of the collection and each product is reachable from a supplied set of inputs, while no reaction in the collection sustains itself (formally modelled, with numerical support). Eigen and Schuster (1977, 1979) established a related result for coupled replicators.

The condition established is that the level of catalysis required for such collections to appear grows slowly with the size of the system, so that collective self-sustenance is available at levels of interaction that are modest in relation to the number of elements.

The transfer to this book is stated in Chapter 48. It carries the possibility that a small group sustains a field collectively where no member sustains one individually, and it withholds the supplied input set and the numerical results, which concern reaction networks.

6.5 SYSTEMS ORGANISING TOWARD A CRITICAL STATE AND TRANSITIONS ACROSS ONE

Two further accounts treat systems in the vicinity of a critical point, and both stand close enough to the model of Part XI to require separation. This section reports them, states what each holds, and marks the separation. It proceeds by report and separation. The method is exposition.

Bak (1996) holds that certain systems organise spontaneously toward a critical state at which disturbances of any magnitude produce responses distributed without a characteristic scale (doctrine, with formal and computational treatment). Scheffer (2009) and Scheffer and colleagues (2009) treat transitions between alternative stable states and the statistical signatures preceding them (doctrine, with empirical application across ecology and other domains).

The separation from the model of Part XI concerns the location of the system relative to a critical point. Both accounts describe systems at or approaching one, and the amplification the present model requires occurs at parameter values remote from any point of instability. Chapter 47 states the separation, and Chapter 54 states the observation discriminating between them.

6.6 THRESHOLD ACCOUNTS DEVELOPED FOR SOCIAL SYSTEMS

Accounts stating thresholds for collective conduct have been developed within the social sciences, and their conditions bear on the model of Part XI. This section reports two, states what each establishes, and marks what each presupposes. It proceeds by reporting each in turn. The method is exposition.

Granovetter (1978) models a population in which each party acts once the number already acting exceeds a threshold particular to that party, and establishes that the aggregate outcome depends on the distribution of thresholds in place of on the average disposition (formally modelled).

Centola et al. (2018) examined the alteration of an established convention in constructed groups and reported that a minority reaching approximately a quarter of the group sufficed to alter the convention, while smaller minorities failed (empirically tested; controlled experiment with constructed online groups).

What each presupposes is a population assembled and a conduct already defined. The first requires parties observing one another's action, and the second requires a convention in operation and a group within which it holds. Both accounts therefore describe alteration within an assembled population, and the model of Part XI addresses a case in which no population is assembled.

6.7 TRANSIENT GROWTH UNDER OPERATORS INDICATING DECAY

One body of work supplies the model of Part XI with its central property, and its transfer beyond its domain of origin is established in several fields. This section reports the property, reports the transfers already conducted, and marks what remains. It proceeds by report, transfers, and residue. The method is the reporting of formal and applied work.

Trefethen et al. (1993) established that the stability of a flow is misjudged by examination of the spectrum alone where the governing operator is non-normal, since disturbances may grow by large factors over an interval before the decay indicated by the spectrum asserts itself (formally modelled, with application in fluid mechanics). Trefethen and Embree (2005) assemble the mathematical treatment.

The transfers already conducted extend the property beyond fluid mechanics. Neubert and Caswell (1997) introduced reactivity as a measure of the immediate response of an ecological system to disturbance and distinguished it from the asymptotic response (formally modelled, with ecological application). Murphy and Miller (2009) treat amplification in balanced neural circuits (formally modelled). Asllani et al. (2018) establish that non-normality is widespread among networks arising in empirical settings and examine its dynamical consequences (formally modelled, with analysis of empirical networks).

What remains for the present account is the application of the property to the formation of relational structure in knowledge production, together with the identification of the feature of a receiving arrangement that renders its operator non-normal. Chapter 47 supplies both, and Chapter 40 reports the application of the same property to socio-economic systems, which is the nearest prior art.

6.8 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a resource in the form of the throughput, the input set, or the energy supply on which its systems depend, and it presupposes the elements among which interaction occurs.

It presupposes neither an institution nor a recognition system nor a channel, which distinguishes it from every other literature reported in Part II and accounts for its usefulness as a source of mechanism.

It presupposes a community only in the social accounts reported in Section 6.6, where a population is assembled and a conduct is defined.

The region left untreated is the identification of the elements. Every account reported here begins from a specified set of components, whether molecules, cells, parties, or nodes, and states the conditions under which structure arises among them. A case in which the elements composing a prospective structure are unidentified, and become determinate through the same process by which the structure forms, is treated in none of them.

6.9 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Order arises in systems held away from equilibrium through the amplification of small fluctuations, and the structures so produced persist while the throughput continues.

Living organisation consists in a network of processes producing the components that constitute it, and the account describes a system already so organised, supplying no treatment of the passage into that organisation.

A collection may be collectively self-sustaining where no member of it is, and the level of interaction required grows slowly with the size of the system.

Accounts of self-organised criticality and of transitions between stable states describe systems at or approaching a critical point, and the model of Part XI requires amplification at values remote from any point of instability.

Threshold accounts for social systems establish that outcomes depend on the distribution of thresholds and that a minority of sufficient size alters an established convention. Both presuppose an assembled population and a defined conduct.

Disturbances grow by large factors under operators whose spectrum indicates decay, and the property has been carried into ecology, neuroscience, and network science. Its application to the formation of relational structure in knowledge production remains.

The literature presupposes a resource and a specified set of elements, and it leaves untreated the case in which the elements composing a prospective structure are unidentified.

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CHAPTER 7

ORGANIZATIONAL AND MOVEMENT EMERGENCE

7.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Two literatures examine the coming into being of collective arrangements: one treats the passage from an intention to an operating organisation, and the other treats the assembly of parties into a movement. Both address the region this book examines, and both begin at a point later than the one Part XI treats.

The chapter undertakes four tasks. It reports the account specifying the properties an arrangement must acquire before it is an organisation. It records the position of two accounts of conduct under constraint, which are reported at length in Part V and are placed here within the emergence literature. It reports the account of movement formation organised around the mobilisation of resources, together with the objection its critics advance. And it states the region these literatures leave untreated.

The chapter proceeds by reporting three bodies of work, placing two others, and stating the untreated region, and closes with the presupposition diagnostic. The method is the reporting of doctrinal and empirical work under the labels fixed in Chapter 2.

7.2 THE PROPERTIES ACQUIRED BEFORE AN ORGANISATION OPERATES

An account developed within organisational research specifies what an arrangement acquires in becoming an organisation, and the specification bears directly on the region this book examines. This section reports the account, states its four properties, and marks the sequence it implies. It proceeds by report, properties, and sequence. The method is exposition.

Katz and Gartner (1988) hold that an emerging organisation is identified by four properties: intention, held by parties who purpose to create it; resources, assembled and combined; boundary, distinguishing what belongs to the arrangement from what does not; and exchange, conducted across that boundary (doctrine, with a derived empirical literature on nascent venturing).

The sequence implied is that the four are acquired in no fixed order and that an arrangement holding all four is an organisation. The account thereby supplies a description of the

pre-organisational state as one in which some of the four are absent.

The bearing on this book is that the description is the closest available statement of the object Part XI addresses, and that its four properties are stated as conditions in place of as achievements to be explained. An arrangement holding intention and lacking exchange is described by the account and its acquisition of exchange is not.

7.3 THE POSITION OF TWO ACCOUNTS OF CONDUCT UNDER CONSTRAINT

Two accounts reported at length in Part V belong also to the literature of this chapter, and their position is recorded here to prevent duplication. This section states each in brief, marks its treatment elsewhere, and states its relation to the present chapter. It proceeds by placing each in turn. The method is cross-reference.

The first holds that decision under uncertainty proceeds from means already held, forms goals from what those means permit, and commits under an affordable-loss criterion. The account is reported in Chapter 21, and it belongs to the present chapter in that its object is the formation of a venture where none exists.

The second holds that parties under severe constraint construct resources by applying definitions other than the prevailing ones to materials at hand. The account is reported in Chapter 21, and it belongs to the present chapter in that it supplies the resources property of Section 7.2 for parties who hold none in the ordinary sense.

The relation of both to the present chapter is that each supplies a mechanism by which one of the four properties is acquired, and that neither supplies an account of the arrangement's passage into operation as a whole.

7.4 THE MOBILISATION OF RESOURCES IN MOVEMENT FORMATION

An account of collective action formed around the resources available to those undertaking it, and the objection its critics advance is the objection this book records throughout. This section reports the account, reports the objection, and states the consequence. It proceeds by report, objection, and consequence. The method is exposition.

McCarthy and Zald (1977) hold that movements arise where resources are available to be mobilised and organisations exist to mobilise them, and that grievance is widespread while mobilisation is not, so that the variable requiring explanation is the resource in place of the grievance (doctrine, foundational, with an extensive derived literature).

The objection advanced by critics is that an account explaining mobilisation by resources presupposes the resources whose absence defines the hardest cases, and that insurgency among parties holding neither resources nor organisation is documented and falls outside the account (doctrine, with historical case material).

The consequence for this book is that the objection identifies within a neighbouring literature the same difficulty the presupposition diagnostic identifies throughout Part II. An account constructed to explain formation explains it by a condition whose presence is what requires explanation in the cases of interest.

7.5 THE REGION AWAITING TREATMENT IN BOTH LITERATURES

The two literatures reported above address formation directly, and the region they leave untreated is stated here in place of being left to the diagnostic. This section states the region, gives the ground, and marks the treatment supplied in Part XI. It proceeds by statement, ground, and reference. The method is analytical.

The region is the acquisition of the first exchange. An organisation is identified in part by exchange conducted across a boundary, and a movement is explained by the mobilisation of resources, and both presuppose a party positioned to exchange or to be mobilised.

The ground for identifying this as the region is that the accounts state their conditions as properties an arrangement holds. Intention is attributed to parties, resources are assembled, boundaries are drawn, and each is available to a party acting alone. Exchange is not: it requires a second party who receives what is offered and returns something for it, and no account reported here states the conditions under which such a party is found.

Part XI treats that acquisition as the placement of a perturbation into a field and the formation of a coupling, and Chapter 50 states the properties determining whether a coupling forms.

7.6 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a resource, in that the movement account explains formation by its mobilisation and the organisation account lists its assembly among the identifying properties.

It presupposes a community in the movement account, since parties are mobilised from a population holding a grievance, and a channel, since mobilisation proceeds through arrangements reaching those parties.

It presupposes an institution in the movement account, since the organisations conducting mobilisation are its unit of analysis.

It presupposes no recognition system, which distinguishes it from the literatures reported in Chapters 4 and 5.

The region left untreated is the acquisition of the first exchange, as Section 7.5 states. Both accounts state conditions available to a party acting alone alongside one that is not, and the condition that is not is left without an account.

7.7 SUMMARY OF RESULTS

The chapter has established four results carried forward.

An emerging organisation is identified by intention, assembled resources, a boundary, and exchange across it. The four are stated as conditions in place of as achievements to be explained, so that an arrangement holding three of them is described and its acquisition of the fourth is not.

Two accounts of conduct under constraint, reported at length in Part V, each supply a mechanism by which one of the four properties is acquired, and neither supplies an account of the passage into operation as a whole.

Movements are explained by the mobilisation of resources, and the objection advanced by critics is that the account presupposes the resources whose absence defines the hardest cases. The objection identifies within a neighbouring literature the difficulty the presupposition diagnostic identifies throughout Part II.

The region left untreated by both literatures is the acquisition of the first exchange. Intention, resources, and boundary are available to a party acting alone; exchange requires a second party who receives what is offered and returns something for it, and no account reported here states the conditions under which such a party is found.

The literature presupposes a resource, a community, a channel, and an institution, and it presupposes no recognition system.

CHAPTER 8

CO-CREATION MOVEMENTS AND PARA-INSTITUTIONS

8.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part II closes its survey of practice with arrangements constructed by scholars to alter the conditions of their own work. Such arrangements are the nearest existing instances of what Chapter 55 proposes, and their record determines what that proposal may claim.

The chapter undertakes five tasks. It reports the movement to reform the assessment of research. It reports academies constituted outside universities. It records the position of a programme treating the circulation of generated value, which is reported at length in Part VI. It reports the study of governance in communities producing open software, which is the closest documented case of an arrangement whose governance followed its production. And it reports forms of organised inquiry conducted with little infrastructure outside the Western university.

The chapter proceeds by reporting four bodies of practice, placing one further programme, and closes with the presupposition diagnostic. The method is the reporting of documented practice and its associated scholarship, under the labels fixed in Chapter 2.

8.2 THE REFORM OF RESEARCH ASSESSMENT

A movement to alter the assessment of research has produced declarations, agreements, and altered procedures, and its record bears on the account of admissibility in Part X. This section reports the movement, states its principal instruments, and marks its bearing. It proceeds by report, instruments, and bearing. The method is exposition.

The movement holds that the assessment of contributions by the venues in which they appear misdirects both assessment and conduct, and it has produced declarations signed by institutions and funders, an agreement establishing a coalition committed to reforming assessment, and procedures under which a study is assessed before its results are known (institutional doctrine, with evaluation of implementation reporting uneven adoption).

The bearing on Part X is that the movement addresses interpretive admissibility directly. A procedure assessing a study before its results are known alters the criteria applied, and a

declaration directing assessors away from venue-based measures alters what an assessor is instructed to consider.

What the record establishes is that the component is alterable by deliberate action, and that alteration is slow and uneven where the parties conducting assessment are numerous and their procedures are held separately.

8.3 ACADEMIES CONSTITUTED BEYOND THE UNIVERSITY

Arrangements constituted to conduct scholarship outside university employment supply the nearest institutional counterpart to the condition this book examines. This section reports them, states their forms, and marks what their record establishes. It proceeds by report, forms, and record. The method is exposition.

The forms comprise institutes constituted by scholars holding no university appointment, organisations supporting scholars displaced by persecution or by conflict, and consortia through which universities host such scholars (institutional documentation, with limited independent scholarship).

What the record establishes is twofold. Arrangements of the first form have been constituted repeatedly and have encountered difficulties of maintenance and of governance, including dissolution and reconstitution in at least one prominent case. Arrangements of the second and third forms operate durably and depend upon universities to host the scholars they support, which places them within the arrangement whose conditions are at issue in place of outside it.

The bearing on this book is that the first form is the case Chapter 22 examines, and its record supports the finding reported there: the constitution of an arrangement is achievable and its maintenance is the recurring difficulty.

8.4 THE POSITION OF A PROGRAMME TREATING THE CIRCULATION OF VALUE

A programme treating the direction in which generated value moves belongs to the practice literature of this chapter and is reported at length in Part VI. This section states its position and its relation to the present chapter. It proceeds by placement. The method is cross-reference.

The programme holds that value generated by labour, by ecological process, and by expression should circulate to those who generate it, and it has produced empirical projects in community settings alongside its theoretical statement.

Its position within the present chapter is that its projects constitute arrangements of the kind this chapter reports, and its theoretical statement is treated in Chapter 31, where the criterion of Chapter 49 is placed against it.

8.5 THE EMERGENCE OF GOVERNANCE IN COMMUNITIES PRODUCING OPEN SOFTWARE

One documented case establishes the order in which production and governance arise, and the case is examined again in Chapter 53. This section reports the study, states its finding, and marks the boundary at which it stops. It proceeds by report, finding, and boundary. The method is the reporting of empirical work.

O'Mahony and Ferraro (2007) examined a large community producing open software over an extended period and reported that its governance developed alongside the community's own conceptions of authority, that members established a basis of formal authority, and that they limited it through democratic mechanisms (empirically tested; multi-method study of a single community across several years). Related work treats the transition of such communities to more formal arrangements and the default forms of authority in online communities (doctrine).

The finding is that governance followed production. The community produced before it governed, and the arrangements by which it governed were constructed from the conduct already established.

The boundary at which the study stops is the formation of the contributor community. The study takes as given a body of contributors, an accumulated codebase, and a platform holding both, and examines how governance crystallised upon them. The passage into that condition is outside its scope, and Chapter 53 records the same boundary for the case corpus.

8.6 ORGANISED INQUIRY CONDUCTED WITH LITTLE INFRASTRUCTURE

Forms of organised inquiry conducted outside the Western university supply instances of arrangements maintained with minimal infrastructure, and they are reported here for the comparison they permit. This section reports three forms, states what each maintains, and marks the status of the evidence. It proceeds by reporting each in turn. The method is exposition.

The Japanese 研究会 is a self-organised research and reading circle convened by its participants, meeting on a regular schedule, and operating without institutional sponsorship or budget. The Japanese 研究会 tradition supplies a form of publication constituted by its contributors outside commercial arrangements. Chinese discussion of 读书会 concerns scholarship conducted outside university position, and carries a substantial vernacular literature on its conditions (vernacular discussion and limited scholarship; none of the three has received systematic treatment).

What each maintains is the reception and criticism that Chapter 44 lists among the components of the substrate, supplied by the participants to one another in place of by an institution.

The status of the evidence is weak. No population is defined for any of the three, no

rate of persistence is available, and the documentation is largely descriptive and internal to the practice. The forms are reported here as instances of the possibility and as material for Chapter 53, and they support no claim about frequency.

8.7 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a community, since every arrangement it reports is constituted by parties acting together, and a channel, since the arrangements circulate what their participants produce.

It presupposes a recognition system in the reform movement, whose object is the alteration of assessment, and an institution in the arrangements hosting displaced scholars and in the declarations adopted by universities and funders.

It presupposes a resource in the limited form of the effort participants supply.

The region left untreated is the constitution of the participating group. The reform movement addresses parties already conducting assessment; the academies are constituted by scholars holding qualifications and prior standing; the software study begins from an assembled contributor community; and the forms reported in Section 8.6 are convened by parties already acquainted. Each arrangement alters the conditions under which an existing group works, and the assembly of the group is treated in none.

8.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

The movement to reform research assessment addresses interpretive admissibility directly, and its record establishes that the component is alterable by deliberate action and that alteration is slow where assessing parties are numerous and hold their procedures separately.

Academies constituted outside universities have been established repeatedly and encounter difficulties of maintenance and governance, while arrangements supporting displaced scholars depend upon universities to host them. The record supports the finding that constitution is achievable and maintenance is the recurring difficulty.

A programme treating the circulation of generated value supplies arrangements of the kind this chapter reports, and its theoretical statement is placed in Part VI.

Governance in a large community producing open software followed production and was constructed from conduct already established. The study takes the contributor community as given, and its boundary is the boundary of the case corpus.

Forms of organised inquiry conducted with little infrastructure maintain reception and criticism among their participants, on evidence that defines no population and supports no claim about frequency.

The literature presupposes a community, a channel, a recognition system, an institution, and a resource, and it leaves untreated the constitution of the participating group whose conditions each arrangement alters.

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CHAPTER 9

THE PRESUPPOSITION LEDGER

9.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 2 fixed a diagnostic under which each surveyed literature is read for the conditions its central question assumes, and fixed five headings under which the answers are recorded. Every survey chapter in Parts II to VII closes with a section applying that diagnostic. The present chapter assembles the results.

The chapter undertakes four tasks. It presents the recorded answers in a form permitting comparison across literatures. It states the pattern the assembly exhibits. It identifies the region lying before the earliest condition any of the surveyed literatures assumes, which is the object of Part XI. And it states the limits attaching to the assembly, which constrain what Chapter 40 may conclude from it.

The chapter proceeds by presentation, by the statement of a pattern, by the identification of a region, and by the statement of limits. The method is comparative, and it draws exclusively on the diagnostic sections of the survey chapters, adding no material of its own.

9.2 THE ASSEMBLY OF THE RECORDED ANSWERS

The answers recorded across the survey chapters are presented here in tabular form, since the pattern at issue is visible in comparison and obscured in narrative. This section presents the assembly, states the notation, and marks its scope. It proceeds by presentation followed by two notes. The method is presentation.

Table 9.1 records the literatures surveyed in Parts II and III, and Table 9.2 records those surveyed in Parts IV to VI. A filled mark records that the literature's central question requires the condition. An open mark records that the condition is required in a limited form, or by a portion of the literature alone. A dash records that the question proceeds without it.

The scope of the assembly is the literatures selected on the grounds stated in Chapter 2, and the entries record the diagnostic sections of the chapters named. Entries for Part VII are recorded in Chapter 40 alongside the treatment of prior art, since the ethical literatures are read for a unit of evaluation in place of a set of operating conditions.

Table 9.1: Conditions presupposed by the literatures surveyed in Parts II and III. A filled mark records a condition required by the literature's central question, an open mark a condition required in limited form, and a dash a question proceeding without it.

Ch.	Literature	Comm.	Res.	Inst.	Recog.	Chan.
3	Commons and knowledge commons	•	•	•	○	•
4	Alternative scholarly infrastructure	•	•	•	•	•
5	Recognition and epistemic injustice	•	•	•	•	•
6	Emergence and bootstrapping	○	•	—	—	—
7	Organisational and movement emergence	•	•	•	—	•
8	Co-creation and para-institutions	•	○	•	•	•
10	Poverty as resource deficiency	—	•	•	—	○
11	Capability and conversion factors	•	•	•	○	○
12	Poverty traps and thresholds	—	•	•	—	•
13	Intervention and sustainability	•	•	•	○	•
14	Relational and structural poverty	•	•	•	•	•
15	Periphery and knowledge hierarchy	•	○	•	•	•

Table 9.2: Conditions presupposed by the literatures surveyed in Parts IV to VI. Notation as in Table 9.1.

Ch.	Literature	Comm.	Res.	Inst.	Recog.	Chan.
16	Public good and disclosure	•	•	•	•	•
17	Allocation mechanisms	•	•	•	•	•
18	Attention and the medium	•	○	—	•	•
19	Field creation and infrastructure	•	•	•	—	•
20	Survival-constrained optimisation	—	•	—	○	—
21	Strategy under scarcity	○	•	—	•	•
22	Construction without capital	•	○	—	•	•
23	Constructs neighbouring generative capital	•	—	—	•	•
24	Foundations of assistance	•	○	—	○	•
25	Psychology of helping	○	•	—	○	—
26	Organisations of assistance	•	•	•	•	•
27	Dependency and sustainability	•	•	•	•	•
28	Welfare and social reintegration	•	•	•	•	•
29	International cooperation	•	•	•	•	•
30	Asymmetry of the helping relation	•	•	•	•	—
31	Generative and regenerative economics	•	•	•	○	•

9.3 THE PATTERN THE ASSEMBLY EXHIBITS

The assembly exhibits a pattern that no single chapter makes visible, and the pattern is stated here. This section states three features of the assembly and marks what each indicates. It proceeds feature by feature. The method is comparison.

The first feature is the near-universality of the resource condition. Every literature surveyed, with one exception concerning constructs neighbouring generative capital, proceeds from a quantity that is held, allocated, accumulated, or consumed. The exception concerns

constructs recording holdings composed of relations, which is the form the present account adopts.

The second feature is the distribution of the community and channel conditions. Both are presupposed by the literatures examining arrangements in operation and are absent from the literatures supplying formal mechanism, namely those reported in Chapters 6 and 20. The distribution indicates the division of labour this book has followed: domain content is drawn from literatures presupposing arrangements, and mechanism is drawn from literatures presupposing elements and a quantity alone.

The third feature is that no literature surveyed proceeds without at least one of the five conditions. The literatures presupposing fewest are those reported in Chapters 6, 20, and 25, and each of the three requires a specified set of elements, a measurable holding, or a pair of parties already in contact.

9.4 THE REGION LYING BEFORE THE EARLIEST CONDITION

The assembly locates a region, and its identification is the result Part II was constructed to produce. This section states the region, gives the formulation the survey chapters supply, and marks the chapter treating it. It proceeds by statement, formulation, and reference. The method is analytical.

The region is that in which no condition recorded in the assembly obtains. A party stands in no community whose members receive contributions, holds no channel through which contributions reach parties positioned to respond, faces a recognition system whose criteria admit no contribution the party composes, and holds no resource beyond time and formulation.

Three formulations of the region are supplied by the survey chapters, and they agree. Chapter 3 states it as the case of parties neither in repeated interaction nor holding a belief about an institution. Chapter 6 states it as the case in which the elements composing a prospective structure are unidentified and become determinate through the same process that forms the structure. Chapter 7 states it in the sharpest form available: intention, resources, and boundary are each available to a party acting alone, and exchange is not, since exchange requires a second party who receives what is offered and returns something for it.

The third formulation reduces the region to a single missing condition, and Part XI is constructed to supply an account of its acquisition. Chapter 47 treats the acquisition as the placement of a perturbation and the formation of a coupling, and Chapter 50 states the properties determining whether a coupling forms.

9.5 THE BOUNDARIES ATTACHING TO THE ASSEMBLY

The assembly supports a conclusion of a definite and limited kind, and the limits are stated here in place of being left to inference. This section states four limits and marks what each withholds. It proceeds limit by limit. The method is the specification of constraints on a result.

The first limit concerns charity. A recorded presupposition is a condition a literature's question requires, and it is no defect. Each chapter records what its literature achieves under the condition it assumes, and the assembly records the conditions alone.

The second limit concerns scope. The assembly covers the literatures selected on the grounds stated in Chapter 2, and a condition recorded as unexamined is unexamined within those literatures. Chapter 40 states the conditions under which the conclusion would be withdrawn.

The third limit concerns extension. A literature presupposing a condition may be extended to treat its formation, and several of those surveyed contain such extensions, reported in the chapters concerned. The assembly records the central question of each literature, and the existence of an extension bears on Chapter 40 in place of on the entries here.

The fourth limit concerns significance. The assembly establishes that a region falls outside the central questions of the literatures surveyed, and it establishes nothing about whether the region repays study. The argument for its significance rests on the phenomena reported in Chapter 53 and on the diagnosis of Part X, and it is stated separately.

9.6 SUMMARY OF RESULTS

The chapter has established four results carried forward.

The conditions recorded across the survey chapters are assembled in Tables 9.1 and 9.2, under the five headings fixed in Chapter 2.

The assembly exhibits three features: a resource condition is presupposed almost universally; community and channel are presupposed by the literatures examining arrangements in operation and absent from those supplying formal mechanism; and no literature surveyed proceeds without at least one of the five conditions.

The region lying before the earliest condition is that in which a party stands in no community receiving contributions, holds no channel reaching parties positioned to respond, faces criteria admitting no contribution the party composes, and holds no resource beyond time and formulation. Its sharpest formulation reduces it to a single missing condition: exchange requires a second party who receives what is offered and returns something for it, and no surveyed literature states the conditions under which such a party is found.

The assembly is limited in four respects. A presupposition is a condition and no defect; the scope is the literatures selected; extensions within a literature bear on the statement of prior art

in place of on the entries; and the assembly establishes the location of a region and establishes nothing about its significance.

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PART III

BLOCKED CONVERSION IN POVERTY, CAPABILITY, AND DEVELOPMENT

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CHAPTER 10

POVERTY AS RESOURCE DEFICIENCY

10.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part III examines the study of poverty for mechanisms bearing on the condition diagnosed in Part X, and it opens with the account against which the remainder of the Part defines itself. An account treating deprivation as a shortfall in a measurable stock has organised measurement and policy for more than a century, and its structure determines what the accounts following it were constructed to remedy.

The chapter undertakes four tasks. It reports the construction of the income measure and the lines drawn upon it. It reports the extension of the measure to material holdings. It states the model of causation the measure carries and the policies that model recommends. And it states the position this account occupies in the present argument, which differs from the position occupied by every other literature reported in Part III.

The chapter proceeds by reporting a measure, an extension, and a model, and closes with a placement and the presupposition diagnostic. The method is the reporting of an established position under the labels fixed in Chapter 2.

10.2 THE INCOME MEASURE AND THE LINES DRAWN UPON IT

Measurement of deprivation by income requires a line, and the construction of that line determines what the measure records. This section reports the original construction, reports the international line and its revisions, and states the property of the construction that bears on the present argument. It proceeds by report followed by consequence. The method is exposition.

Rowntree (1901) established a line by costing the requirements of physical efficiency and distinguished primary poverty, in which income falls below the cost so computed, from secondary poverty, in which income suffices and is directed elsewhere (doctrine, foundational, with survey evidence for a single city).

The international line maintained by the World Bank has been drawn at successive values as price data have been revised, standing at one dollar a day in 1990 and at three dollars a day in

2021 prices following a revision announced in 2025, each value derived from the median of the national lines of the poorest countries (institutional reporting; the derivation is documented and the revisions are substantial).

The property bearing on the present argument is that a line records a state and reports nothing about its causes. A party below the line and a party above it are distinguished by a quantity held, and the measure is silent as to whether the quantity is absent because the party lacks the capacity to acquire it or because a channel through which acquisition would proceed is closed.

10.3 THE EXTENSION TO MATERIAL HOLDINGS

Income measured over a period records a flow, and a literature extends the measurement to holdings that a party may draw upon. This section reports the extension, states what it adds, and marks its limit. It proceeds by report, addition, and limit. The method is exposition.

Measurement by material deprivation records the possession of specified items and the ability to meet specified expenses, and measurement by assets records the stock a party holds against adverse periods (doctrine, with extensive survey programmes attached in several countries).

The extension adds a temporal dimension the flow measure lacks. A party with income above the line and no holdings is exposed to any adverse period, and the exposure is invisible to a measure recording the flow alone.

The limit is that the extension retains the structure of the account it extends. A holding is a stock, the measure records its magnitude, and the account remains silent as to why the stock is small. The mechanisms reported in Chapters 11 and 14 were developed in response to that silence.

10.4 THE MODEL OF CAUSATION AND THE POLICIES IT RECOMMENDS

A measure of a state carries a model of how the state arises, and the model carried here determines the policies the literature recommends. This section states the model, states the policies, and reports the difficulty the literature itself identifies with them. It proceeds by model, policies, and difficulty. The method is exposition.

The model holds that a party's condition is determined by the resources at that party's disposal, so that an increase in resources produces an improvement in condition. The relation it posits runs from an input to an outcome, with the party's own properties entering as a constant.

The policies recommended follow directly: transfer of resources to those below the line, redistribution through taxation, and investment in the infrastructure through which resources are delivered.

The difficulty the literature identifies is that parties receiving comparable resources arrive at markedly different outcomes, and that the variation is systematic in place of random (empirically tested; a general finding across evaluation literatures). The model treats the party's own properties as constant and therefore accommodates the variation by supposing differences in those properties, which returns an explanation resting on the parties in place of on the transfer.

10.5 THE POSITION OF THIS ACCOUNT IN THE PRESENT ARGUMENT

This literature occupies a position within Part III that differs from the position of every other literature reported there, and the difference is stated rather than left to be inferred. This section states the position, gives its ground, and marks the single respect in which the account nonetheless contributes. It proceeds by statement, ground, and qualification. The method is the placement of a reported position.

The position is that of the account against which the present argument is defined. Part X holds that a capacity may be present while the interpretation in force admits no occasion of its application, and that the difficulty accordingly lies at the conversion of a capacity into an expression in place of at the supply of an input. An account locating the difficulty at the supply of an input asserts the position this book denies.

The ground of the placement is the observation of Section 10.5: parties receiving comparable resources arrive at systematically different outcomes, which the input model accommodates only by attributing the difference to the parties. The literatures reported in the remainder of Part III were constructed to supply an account of the difference that locates it elsewhere.

The single respect in which the account contributes is its measurement apparatus. The construction of a line, the recording of holdings, and the distinction between a flow and a stock are instruments the present account borrows in Chapter 12, where an asset stock is the quantity on which a threshold is defined.

10.6 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a resource, in that its subject is a quantity held and a line drawn upon that quantity, and an institution, in that the transfers it recommends are administered by parties with standing to administer them.

It presupposes a channel in a limited sense, since a transfer must reach its recipient, and the literature takes the reaching as a matter of administration.

It presupposes neither a community nor a recognition system, which distinguishes it from every literature reported in Parts IV and VI.

The region left untreated is the conversion of a resource into a condition. The account records the quantity held and the outcome observed and supplies no term for what stands between them. The literatures reported in the following chapters were constructed to supply that term, and the present account is reported here as the position from which they depart.

10.7 SUMMARY OF RESULTS

The chapter has established four results carried forward.

A poverty line records a state and reports nothing of its causes. A party below a line and a party above it are distinguished by a quantity held, and the measure is silent as to why the quantity is small.

Measurement by holdings adds a temporal dimension to measurement by flow, and it retains the structure of the account it extends.

The model carried by the measure runs from an input to an outcome with the party's properties constant, and it recommends transfer, redistribution, and investment in delivery. Parties receiving comparable resources arrive at systematically different outcomes, which the model accommodates only by attributing the difference to the parties.

This account occupies the position against which the present argument defines itself, since it locates the difficulty at the supply of an input where Part X locates it at the conversion of a capacity into an expression. Its measurement apparatus is borrowed in Chapter 12.

The literature presupposes a resource, an institution, and a channel in a limited sense, and it supplies no term for what stands between a quantity held and a condition observed.

CHAPTER 11

THE CAPABILITY APPROACH AND CONVERSION FACTORS

11.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 10 closed on a silence: an account measuring a quantity held and an outcome observed supplies no term for what stands between them. The literature reported in the present chapter supplies that term, and the term it supplies is the nearest counterpart in the study of deprivation to the diagnosis stated in Part X.

The chapter undertakes five tasks. It reports the distinction between resources, capabilities, and functionings. It reports the machinery of conversion, which is the term the preceding account lacked. It reports the measurement programme constructed upon the approach. It reports the application of the approach to universities and to epistemic contribution, which occupies ground this book might otherwise have claimed. And it states the transfer to the present account together with its boundary.

The chapter proceeds by reporting a distinction, a mechanism, a measurement programme, and an application, and closes with a transfer and the presupposition diagnostic. The method is exposition followed by the transfer procedure fixed in Chapter 2.

11.2 RESOURCES, CAPABILITIES, AND FUNCTIONINGS

The approach separates three quantities that the account of Chapter 10 treats as one, and the separation determines what the approach measures. This section reports the separation, states the evaluative claim built upon it, and marks its bearing on the present argument. It proceeds by report followed by consequence. The method is exposition.

Sen (1985, 1992, 1999) distinguishes resources, which a party holds; capabilities, which are the real opportunities a party has to achieve states of being and doing; and functionings, which are the states achieved (doctrine, foundational, with an extensive derived literature). The evaluative claim built upon the separation holds that deprivation consists in capability shortfall in place of resource shortfall, and that the informational base for assessing a party's condition is accordingly the capability set.

The bearing on the present argument is that the distinction between a holding and what a

party can do with it is made general. Chapter 45 distinguishes a capacity that is present from an occasion for its application, and the present separation is the same distinction drawn in the study of deprivation, with the capability standing where the occasion stands.

11.3 THE MACHINERY OF CONVERSION

The separation of resources from capabilities requires an account of what determines whether a resource becomes a capability, and the approach supplies one. This section reports the machinery, states its three classes, and identifies the class bearing on this book. It proceeds by report, classes, and identification. The method is exposition.

Robeyns (2005, 2017) sets out conversion factors, which determine the extent to which a party converts a resource into a capability, and groups them into three classes: personal factors, comprising a party's own physical and mental characteristics; social factors, comprising public policies, social norms, discriminating practices, hierarchies, and relations of power; and environmental factors, comprising the physical and built surroundings (doctrine, with an operational literature attached).

The class bearing on this book is the social one. A recognition system's operative criteria are public in the relevant sense, are maintained by a community, and determine whether a contribution is admitted to assessment. They occupy the position the approach assigns to social conversion factors, and Part X may accordingly be read as an account of one such factor examined in detail.

The identification carries a qualification the approach itself supplies. Conversion factors are introduced to explain variation in what parties achieve from comparable holdings, and the approach treats them as conditions to be described in place of mechanisms to be modelled. The present book models one of them, and the modelling is an addition to the approach in place of an application of it.

11.4 THE MEASUREMENT OF MULTIPLE DEPRIVATION

A measurement programme has been constructed upon the approach, and its construction bears on the question whether the present account admits of measurement. This section reports the programme, states its method, and marks what its existence establishes. It proceeds by report, method, and consequence. The method is exposition.

Alkire and Foster established a counting methodology under which a party is identified as deprived where deprivations across several dimensions exceed a cutoff, and an adjusted headcount is computed from the incidence and the intensity of deprivation (formally modelled, with extensive application). The resulting index is published across a large number of countries and reports deprivation in health, education, and living standards jointly.

What the existence of the programme establishes for the present account is that a condition defined by simultaneous shortfalls across several dimensions admits of measurement without a single scalar quantity. Chapter 23 holds that generative capital admits of no scalar measure and that its components are assessed separately, and the counting methodology is the precedent for assessment of that form.

11.5 THE APPLICATION TO UNIVERSITIES AND TO EPISTEMIC CONTRIBUTION

The approach has been applied to higher education and to the standing of parties as contributors of knowledge, and the application occupies ground adjacent to the present book. This section reports the application, states what it holds, and marks the respect in which the present account departs. It proceeds by report, position, and departure. The method is comparison against prior art.

Walker has developed an application of the approach to universities and to human development, and Walker and Boni hold that the capacity to make epistemic contributions is a component of wellbeing and that this capacity is marginalised by institutional and structural conditions (doctrine, with participatory case material).

The position so held covers a substantial part of what Part X asserts. A capacity to contribute is distinguished from its exercise; the marginalisation of that capacity is attributed to institutional conditions in place of to the party; and the normative weight is placed on the party's standing as a contributor.

The respect in which the present account departs is confined to two additions. The approach describes the condition and this book models its dynamics, supplying an account of the conditions under which a marginalised capacity may generate the structure that receives it. And the approach treats conversion factors as conditions while this book supplies a criterion distinguishing arrangements that come to sustain themselves from arrangements requiring continued supply. Chapter 43 states the boundary in the form the comparison requires.

11.6 THE TRANSFER TO THE PRESENT ACCOUNT AND ITS BOUNDARY

The materials reported above are carried into the present account at several points, and the transfer is stated here with its boundary. This section states what is carried, states what remains behind, and records the condition under which the transfer would lapse. It proceeds by statement, exclusion, and condition. The method is the transfer procedure fixed in Chapter 2.

What is carried is the machinery of conversion. The operative criteria of a recognition system are treated in this book as a social conversion factor, standing between a producer's capacity and the functioning that capacity would otherwise issue in. The identification licenses

the description of academic poverty in Chapter 45 as a conversion failure in place of a resource shortfall.

What remains behind is the aggregate measurement apparatus. The counting methodology is constructed for populations and for deprivations recorded at the level of a household, and the quantities of Chapter 52 are recorded at the level of a producer, a placement, and a system. The form of the assessment is carried; the instrument is not.

The condition under which the transfer would lapse is the failure of the identification made in Section 11.3. Where a recognition system's criteria were shown to operate as a personal conversion factor, residing in the producer, the identification would fail and the diagnosis of Part X would reduce to a claim about producers. Chapter 54 states the observation bearing on that possibility.

11.7 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a resource, in that conversion begins from a holding, and an institution, in that the public policies among its social conversion factors are administered.

It presupposes a community, since norms and practices among its social factors are maintained by one, and a recognition system in the application reported in Section 11.5, where the standing of a party as a contributor is at issue.

It presupposes a channel only where the application to epistemic contribution is in view, and the general statement of the approach requires none.

The region left untreated is the formation of a conversion factor. The approach describes the factors obtaining in a setting and evaluates a party's condition under them, and it contains no account of how a factor comes to obtain, nor of the case in which a party alters the factors under which that party is assessed. The present book treats a producer whose contributions may alter the criteria that receive them, which is a case the approach describes from one side alone.

11.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Resources, capabilities, and functionings are distinct, and deprivation consists in capability shortfall. The distinction between a capacity and an occasion for its application is thereby made general in the study of deprivation.

Conversion factors determine whether a resource becomes a capability, and the social class comprises norms, hierarchies, and discriminating practices. The operative criteria of a recognition system occupy that position, so Part X may be read as one such factor examined in detail.

A condition defined by simultaneous shortfalls across several dimensions admits of measurement without a scalar quantity, which is the precedent for the assessment of generative capital by separate components.

The approach has been applied to universities and to epistemic contribution, and the application holds a substantial part of what Part X asserts. The present account departs in two respects: it models the dynamics of the condition, and it supplies a criterion distinguishing arrangements that sustain themselves.

The machinery of conversion is carried into this book and the aggregate measurement apparatus is left behind. The transfer lapses where the operative criteria of a recognition system are shown to reside in the producer.

The literature presupposes a resource, an institution, a community, and in one application a recognition system, and it leaves untreated the formation of a conversion factor and the case of a party who alters the factors under which that party is assessed.

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CHAPTER 12

POVERTY TRAPS, THRESHOLDS, AND NONLINEAR DYNAMICS

12.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 48 states a criterion dividing relations that sustain themselves from relations persisting on external supply, and it reports that the shape of that division has a precedent in the study of persistent deprivation. The present chapter examines the precedent, together with the interventions constructed upon it and the evidence bearing on their results.

The chapter undertakes six tasks. It reports the distinction between deprivation that persists and deprivation that passes. It reports the asset-based model in which a threshold divides trajectories that diverge. It reports the interventions constructed on the model, from coordinated injection to the bundled transfer, together with the evidence on each. It reports the evidence on the timing of transfers. It reports the treatment of aspiration as a quantity subject to its own threshold. And it reports the challenge brought against the empirical standing of the whole construction.

The chapter proceeds by reporting a distinction, a model, three bodies of intervention evidence, and a challenge, and closes with a transfer statement and the presupposition diagnostic. The method is the reporting of formal and empirical work under the labels fixed in Chapter 2.

12.2 DEPRIVATION THAT PERSISTS AND DEPRIVATION THAT PASSES

The construction reported in this chapter rests on a distinction between two conditions that a single measurement records identically. This section states the distinction, states its consequence for measurement, and marks its bearing on the present argument. It proceeds by statement and consequence. The method is exposition.

Carter and Barrett (2006) distinguish stochastic deprivation, in which a party holding sufficient productive assets falls below a line through an adverse period and returns above it, from structural deprivation, in which a party's asset holding is such that return is unavailable (formally modelled, with empirical application).

The consequence for measurement is that a single observation of a party below a line is

consistent with both conditions, and that the two are separated by the trajectory in place of the position. A measure recording position at a moment therefore fails to distinguish them, and the distinction requires observation over time or an estimate of the asset holding.

The bearing on the present argument is that the same difficulty recurs in Chapter 44, where an observation of a producer attracting no attention is shown to be consistent with several distinct histories. Both literatures confront a surface observation that conflates conditions differing in what they call for.

12.3 THE ASSET-BASED MODEL AND THE THRESHOLD WITHIN IT

The model dividing the two conditions supplies the precedent to which Chapter 48 refers. This section reports the model, states the threshold within it, and reports the conduct the model predicts near that threshold. It proceeds by report, threshold, and prediction. The method is the reporting of formal work.

Carter and Barrett (2006) and the literature assembled by Barrett et al. (2019) model accumulation as a function of the asset holding and establish conditions under which the function admits multiple stable equilibria (formally modelled). Where the function takes an S-shape, a party above a critical holding accumulates toward a high equilibrium and a party below it converges to a low one, so that trajectories on either side diverge in place of differing in rate.

The critical holding is termed the Micawber threshold, and in a formulation admitting variation in ability across parties it becomes a frontier in the space of ability and assets (formally modelled).

The conduct predicted near the threshold is asset smoothing. A party close to the critical holding, facing an adverse period, protects the asset in place of protecting consumption, since the loss of the asset would place the party on a trajectory from which return is unavailable (formally modelled, with field evidence).

12.4 THE COORDINATED INJECTION AND THE BUNDLED TRANSFER

Interventions constructed on the model aim to carry a party across the threshold, and two generations of such interventions have been evaluated. This section reports both, states the evidence on each, and identifies the finding that bears on Chapter 50. It proceeds by reporting each in turn. The method is the reporting of empirical work.

The first generation proceeds by coordinated injection at scale. Rosenstein-Rodan (1943) and Murphy et al. (1989) supply the formal argument that simultaneous investment across sectors carries a system past a low equilibrium that any single investment would fail to escape (formally modelled). Sachs (2005) and the associated village programme applied the argument, and its evaluations are mixed: retrospective comparisons report broadly

positive effects across sectors, prospective comparisons report smaller or null results, and a reconciliation attributes the divergence in part to a design not constructed for causal inference (empirically tested; the designs are non-randomised and the findings are contested).

The second generation proceeds by a bundled transfer to households, combining a productive asset, consumption support during the transition, training, coaching, savings access, and health provision, delivered once. Banerjee et al. (2015) report randomised trials in six countries enrolling more than ten thousand households, with improvements in consumption, assets, income, and psychosocial measures persisting a year after the programme ended and benefits exceeding costs at most sites (empirically tested; multi-country randomised design, strong internal validity).

The finding bearing on Chapter 50 is the comparison between the bundled transfer and the repeated small loan reported in Chapter 14. A single intervention composed of complementary components carried households across a boundary that a repeated thin transfer failed to cross, and the difference lies in composition in place of magnitude summed over time.

12.5 THE TIMING OF TRANSFERS

Transfers of equal total value differ in their effects according to the schedule on which they arrive, and the difference bears on the threshold construction. This section reports the evidence, states the pattern, and marks its interpretation. It proceeds by report and interpretation. The method is the reporting of empirical work.

Haushofer and Shapiro (2016) report randomised unconditional transfers in which recipients of a single large payment acquired productive assets while recipients of the same value in monthly instalments improved food security (empirically tested; randomised design, single country). A study in a further country reports that several years after transfer, positive effects persisted for large transfers alone (empirically tested; randomised design, single country).

The pattern is that a schedule concentrating value permits a purchase that a schedule distributing it does not, and that the difference appears in what the recipient acquires in place of what the recipient consumes.

The interpretation within the threshold construction is direct. A party below a critical holding requires a single increment sufficient to cross it, and a stream of increments each below the requirement leaves the party where it began, however long the stream continues.

12.6 ASPIRATION AS A QUANTITY SUBJECT TO A THRESHOLD

A further literature treats a quantity internal to the party as subject to a threshold of its own, and it bears on the present account at the point where a producer's conduct is at issue. This section reports the literature, states its formal result, and marks its boundary. It proceeds by report, result, and boundary. The method is the reporting of formal and doctrinal work.

Appadurai (2004) holds that the capacity to aspire is unequally distributed and is itself formed in social conditions (doctrine). Ray (2006) introduces an aspirations window, comprising the lives a party takes as attainable, and an aspirations gap between present standing and what the window contains (doctrine). Genicot and Ray (2017) establish formally that a moderate gap encourages investment while a large gap discourages it, so that aspirations, income, and the distribution of income evolve together and may produce clustering (formally modelled).

The boundary is that these results concern a party's own assessment of what is attainable, and the present account excludes a producer's self-assessment from its evidentiary base for the reason stated in Chapter 46. The literature is therefore reported here as a precedent for threshold structure in a second quantity, and its results enter no argument about any particular producer.

12.7 THE CONTESTED STANDING OF THE CONSTRUCTION

The construction reported above has been challenged within its own literature, and the challenge constrains the use this book may make of it. This section reports the challenge, states its finding, and states the consequence. It proceeds by report and consequence. The method is the reporting of a critical review.

Kraay and McKenzie (2014) review the reduced-form evidence and report that incomes stagnant in the manner the standard models predict are uncommon, and that the evidence on several of the canonical mechanisms is mixed, with the strongest support attaching to geographic cases (a review of the empirical literature).

The consequence for this book is that the precedent is carried at the level of mechanism and withheld at the level of prevalence. The asset-based model supplies a structure in which a threshold divides diverging trajectories, and the frequency with which parties occupy stable low equilibria is disputed in the source literature. Chapter 48 accordingly borrows the shape and asserts nothing about how often the corresponding condition obtains.

12.8 THE TRANSFER TO THE PRESENT ACCOUNT AND ITS BOUNDARY

The materials reported above are carried into Part XI at several points, and the transfer is stated here with its boundary. This section states what is carried, what remains behind, and the condition under which the transfer would lapse. It proceeds by statement, exclusion, and condition. The method is the transfer procedure fixed in Chapter 2.

What is carried is the shape: a threshold dividing trajectories that diverge, protective conduct near the threshold, and the requirement of a single sufficient increment in place of a stream of insufficient ones.

What remains behind is the measured stock. The asset holdings of this literature are counted in units, and the quantities of Chapter 23 admit of no scalar measure. What remains behind also is the population and the stakes, in accordance with the distinction between mechanism and situation fixed in Chapter 2: deprivation of the kind studied here threatens subsistence, and the condition examined in this book does not.

The condition under which the transfer would lapse is a demonstration that the accumulation of generative capital is monotone in effort, without the region of divergence the shape requires. Chapter 54 states the corresponding observation.

12.9 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a resource, in that its central quantity is a stock that accumulates, and a measure of that stock, since thresholds are defined upon it.

It presupposes an institution, in that the interventions it evaluates are administered, and a channel, in that transfers reach the parties receiving them.

It presupposes neither a community nor a recognition system. The accumulation it models proceeds through production and exchange, and no party's assessment of another enters the model.

The region left untreated is the case in which the accumulating quantity is constituted by relations with other parties. Where the stock is composed of couplings, its accumulation depends on the responses of parties who assess what is placed before them, and the model contains no term for such assessment. The present book treats a stock of that kind, and the addition is stated in Chapter 23.

12.10 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Deprivation that persists and deprivation that passes are recorded identically by a measure taken at a moment, and the two are separated by the trajectory. The same conflation recurs in the diagnosis of Part X.

Accumulation admitting multiple stable equilibria produces a critical holding above which trajectories converge upward and below which they converge downward, together with protective conduct near the critical holding.

A bundled transfer delivered once carried households across a boundary that a repeated thin transfer failed to cross, and the difference lies in composition. Coordinated injection at

scale has been evaluated with mixed and contested results.

A schedule concentrating value permits a purchase that a schedule distributing the same value does not, since a party below a critical holding requires a single sufficient increment.

Aspiration is treated in a further literature as a quantity subject to its own threshold, and the results are reported here as a precedent for threshold structure and enter no argument about any particular producer.

The empirical standing of stagnant low equilibria is disputed in the source literature. The precedent is carried at the level of mechanism and withheld at the level of prevalence, and the transfer lapses where the accumulation of generative capital is shown to be monotone in effort.

The literature presupposes a resource, a measure of it, an institution, and a channel, and it leaves untreated the case in which the accumulating quantity is constituted by relations with parties who assess what is placed before them.

CHAPTER 13

INTERVENTION, INJECTION, AND THE SUSTAINABILITY OF SUPPORT

13.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 12 reported interventions constructed to carry a party across a threshold, and reported evidence that some of them do so. A separate literature asks what remains once an intervention concludes, and its findings bear on the criterion stated in Chapter 48, which is defined by the consequences of withdrawal.

The chapter undertakes five tasks. It reports the evidence relating assistance to subsequent growth. It reports the treatment of what survives an intervention, together with the design literature addressing that question. It reports the critical anthropology of development, whose findings constrain what an account recommending intervention may claim. It reports the methodological dispute over the evidence on which such accounts rest. And it reports two programmes of state practice in which relational channels are constructed directly.

The chapter proceeds by reporting five bodies of work and closes with the presupposition diagnostic. The method is the reporting of empirical, doctrinal, and ethnographic work under the labels fixed in Chapter 2.

13.2 ASSISTANCE AND SUBSEQUENT GROWTH

The aggregate relation between assistance received and growth achieved has been examined repeatedly, and its inconclusiveness bears on the form the present account takes. This section reports the findings, states their standing, and draws the consequence. It proceeds by report and consequence. The method is the reporting of empirical work.

Burnside and Dollar (2000) reported that assistance raised growth in recipients holding favourable policies, and Rajan and Subramanian (2008) reported little robust cross-country relation between assistance and growth under a range of specifications (empirically tested; cross-country regression designs, with acknowledged difficulties of identification).

The standing of the literature is contested. Cross-country designs face limited variation, substantial measurement error in the assistance series, and reverse causation, and successive studies have reversed one another's findings.

The consequence for the present account is that no argument in this book rests on an aggregate relation between assistance and growth. The criterion of Chapter 48 is defined at the level of a relation and assessed by the consequences of withdrawal, and it requires no aggregate result of this kind.

13.3 WHAT SURVIVES THE CONCLUSION OF AN INTERVENTION

The question the criterion of this book poses has been posed within the assistance literature in its own vocabulary, and the treatments available are reported here. This section reports the concern, reports the design evidence, and states what the literature supplies and withholds. It proceeds by report, evidence, and assessment. The method is the reporting of doctrinal and empirical work.

The concern is stated in that literature as dependency, and it holds that assistance sustained over long periods produces arrangements requiring its continuation (doctrine, widely held and politically contested). Moyo (2009) states the position in a strong form. The counter-evidence is reported in Chapter 27, where the claim is examined directly.

The design evidence concerns what persists after an intervention concludes. Rogers and Coates (2015) synthesised a four-country study of exit and reported that gains persisted where resources, capacity, motivation, and linkages to other parties were in place before handover (empirically tested; multi-country design, with substantial variation in programme type). Evaluation frameworks maintained by donor bodies include sustainability among their standing criteria (institutional doctrine).

What the literature supplies is the question and a set of conditions associated with persistence. What it withholds is an operation assigning a given arrangement to one side or the other in advance of its conclusion. Sustainability is assessed after the fact, and the criterion of Chapter 48 is proposed in this book as the operation the literature lacks.

13.4 THE ETHNOGRAPHIC ACCOUNT OF INTERVENTION

A body of ethnographic work examines what interventions do irrespective of what they achieve against their stated objectives, and its findings constrain the recommendations of Chapter 56. This section reports four positions, states their common finding, and draws the consequence. It proceeds by report and consequence. The method is the reporting of ethnographic and interpretive work.

Ferguson (1990) examined a rural development programme and found that its stated objectives were substantially unmet while its operation extended bureaucratic administration into the region, and that the programme's constitution of poverty as a technical difficulty removed political questions from view (doctrine, with extended field material). Escobar (1995) treats development as a discourse constituting its object. Scott (1998) establishes that

schemes imposing legible, standardised order upon local practice fail where they suppress the practical knowledge that sustained the practice. Mosse (2005) reports from within an aid organisation that policy functions to mobilise legitimacy for a project more than to guide its conduct.

The common finding is that an intervention's effects are substantially independent of its stated purpose, and that its principal effects operate through the categories it imposes.

The consequence for the present account is a constraint on Chapter 56. An account recommending that support be designed to create couplings and to admit of withdrawal must state what its own categories would do if adopted administratively, and Part XIII carries that statement.

13.5 THE DISPUTE OVER THE EVIDENTIARY BASE

The evidence reported in Chapter 12 was produced largely by one method, and the standing of that method is disputed. This section reports the dispute, states each position, and marks its bearing on this book. It proceeds by reporting both positions. The method is the reporting of a methodological disagreement.

Banerjee and Duflo (2011) and the associated research programme hold that randomised evaluation supplies credible estimates of an intervention's effect and that accumulation of such estimates is the reliable route to knowledge of what assistance achieves (doctrine, with an extensive body of trials attached).

Deaton (2010) and Deaton and Cartwright (2018) hold that randomised designs identify an average effect within a sample and that transporting the estimate to another setting requires theory the design itself does not supply, so that the method carries no automatic priority (doctrine, within econometrics and the philosophy of science).

The bearing on this book is on the use made of the trials reported in Chapter 12. Those trials are cited for a comparison between a bundled transfer and a repeated thin one, and the comparison is carried as a mechanism under the transfer procedure of Chapter 2. Transport of the magnitudes to any other setting is not claimed anywhere in this book.

13.6 THE DIRECT CONSTRUCTION OF CHANNELS IN STATE PRACTICE

Two programmes of state practice construct relations between parties directly in place of transferring resources and leaving relations to form, and both bear on the account of Chapter 51. This section reports each, states what each constructs, and marks the reservation attaching to it. It proceeds by reporting each in turn. The method is the reporting of policy practice and the research upon it.

The first pairs each assisted household with a responsible official and pairs administrative units of greater means with units of lesser means. Research on the mechanism reports that

the rank of the paired official is associated with the resources mobilised for the household (empirically tested; observational study within a single national programme). The reservation is that the couplings so constructed are routed through the assisting party, which Chapter 51 associates with continued dependence, and that the available evidence concerns resources mobilised during the programme in place of what survives its conclusion.

The second directs assistance toward the recipient's own effort and organises its activity around the development of capacity in place of the delivery of outputs, within a doctrine of human security whose two pillars are protection and the extension of capacity (institutional doctrine, with an extensive programme literature). The reservation is that the doctrine states an aspiration and supplies no operation by which a given programme is assigned to one side of it, which is the deficiency Chapter 51 addresses.

13.7 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes an institution in a strong form, since its subject is an organisation conducting an intervention, and a resource, since the intervention disposes of one.

It presupposes a community, in that the parties an intervention addresses are treated as constituting one, and a channel, in that the intervention reaches them.

It presupposes a recognition system only where the intervention's own assessment is at issue.

The region left untreated is the case in which no intervening party is present. Every position reported in this chapter describes an arrangement between a party conducting an intervention and parties receiving it, including the critical positions, which examine what the intervening party does. A party attempting to construct a generative field without any intervening party falls outside the literature entirely, and Part V examines that case.

13.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

The aggregate relation between assistance and growth is contested, and no argument in this book rests upon it. The criterion of Chapter 48 is defined at the level of a relation and assessed by the consequences of withdrawal.

The question of what survives an intervention is posed within the assistance literature under the heading of sustainability, and gains persist where resources, capacity, motivation, and linkages are in place before handover. The literature supplies the question and a set of

associated conditions, and withholds an operation assigning an arrangement to one side in advance.

Interventions produce effects substantially independent of their stated purposes, operating through the categories they impose. An account recommending a design for support therefore owes a statement of what its own categories would do if adopted administratively.

The method producing much of the evidence in Part III identifies an average effect within a sample, and its transport to other settings requires theory the design does not supply. The trials cited in this book are carried as mechanism, and no magnitude is transported.

Two programmes of state practice construct channels directly. The first routes couplings through the assisting party and reports resources mobilised during the programme; the second directs assistance toward the recipient's own effort and supplies no operation assigning a programme to one side of its own aspiration.

The literature presupposes an institution, a resource, a community, and a channel, and it leaves untreated the case in which no intervening party is present.

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CHAPTER 14

RELATIONAL AND STRUCTURAL POVERTY

14.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapters 10 to 13 report accounts locating deprivation in a quantity held, in a conversion, and in the design of an intervention. A further body of work locates it in the terms on which a party stands with other parties, and that body supplies the present account with several of its central constructions.

The chapter undertakes six tasks. It reports the account of incorporation on disadvantageous terms, which supplies the description this book uses in place of exclusion. It reports the mechanisms by which inequality is made durable through categorical boundaries. It reports the treatment of capital in several forms and of the rates at which one form converts into another. It reports the evidence on repeated small transfers, which supplies the contrast that Chapter 50 employs. It reports the approach organising intervention around assets already held, together with the critique brought against it. And it reports the evidence on participation as a method.

The chapter proceeds by reporting six bodies of work and closes with the presupposition diagnostic. The method is the reporting of doctrinal and empirical work under the labels fixed in Chapter 2.

14.2 INCORPORATION ON DISADVANTAGEOUS TERMS

The vocabulary in which marginal positions are described determines what an account of them may say, and one literature has argued that the standard vocabulary misdescribes the position. This section reports the argument, states the description it recommends, and marks its adoption in this book. It proceeds by report, description, and adoption. The method is exposition.

Hickey and du Toit (2007) hold that chronic deprivation arises less often from exclusion from a system than from incorporation into it on terms that reproduce disadvantage, and that an analysis organised around exclusion mistakes the position of parties who are firmly inside an arrangement and poorly placed within it (doctrine, with qualitative field material from

southern Africa).

The description recommended is adverse incorporation: a party participates, contributes, and receives, on terms whose operation maintains the party's position.

The adoption in this book is stated in Chapter 45. A producer in academic poverty holds qualifications, reads the literature, submits to journals, and receives their decisions, and the language of exclusion misdescribes that position. The transfer carries the description and withholds the implication that the terms of incorporation are the product of anyone's intention, which the source literature likewise declines to assert.

14.3 THE MECHANISMS PRODUCING DURABLE INEQUALITY

An account of how unequal positions are maintained across time supplies the present argument with the mechanism underlying its control parameter. This section reports the mechanisms, states the one bearing on this book, and marks the tradition standing behind it. It proceeds by report, identification, and antecedents. The method is exposition.

Tilly (1998) holds that durable inequality is produced by four mechanisms operating through categorical boundaries: exploitation, in which parties command resources whose value depends on the effort of others excluded from the returns; opportunity hoarding, in which a bounded network sequesters access to a resource and reserves it for members; emulation, in which the categorical arrangement is copied into further settings; and adaptation, in which routines form around the arrangement and come to sustain it (doctrine, with extensive historical material).

The mechanism bearing on this book is opportunity hoarding. Chapter 46 fixes pathway concentration as the quantity determining whether a contribution reaches valuation, and a bounded network holding those pathways is an instance of the mechanism Tilly describes.

The tradition standing behind the mechanism is the analysis of social closure, under which a collectivity restricts access to resources and opportunities to a limited circle of eligibles (doctrine, within sociology). The tradition supplies the general form, and the present account uses it to establish that concentration of pathways is a general property of bounded networks in place of a property of any particular region, which Chapter 15 requires.

14.4 THE FORMS OF CAPITAL AND THE RATES BETWEEN THEM

The mechanism by which a holding of one kind fails to become a holding of another is supplied by an account treating capital as taking several forms. This section reports the account, states the property bearing on this book, and reports the qualification a further literature attaches. It proceeds by report, property, and qualification. The method is exposition.

Bourdieu (1986) distinguishes economic capital, cultural capital in its embodied, objectified, and institutionalised states, social capital comprising the resources attached to durable

networks, and symbolic capital comprising recognition, and holds that each converts into the others at rates that vary with context and that the conversion is the mechanism by which positions are maintained (doctrine, foundational).

The property bearing on this book is the variability of the rate. Chapter 45 describes academic poverty as the state in which the rate at which a producer's cultural capital converts into standing has fallen toward zero while the stock itself remains intact, and the description is available because this account treats the rate as a variable in place of a constant.

The qualification is supplied by work on the exclusionary operation of networks, which establishes that the same ties supplying resources to members withhold them from others, so that a high conversion rate for one party is constituted in part by a low rate for another (doctrine, within sociology).

14.5 THE SMALL REPEATED CYCLE AND ITS EVIDENCE

An intervention supplying small amounts repeatedly has been evaluated at scale, and its results supply the contrast on which Chapter 50 rests. This section reports the intervention, reports the evidence, and states the comparison. It proceeds by report, evidence, and comparison. The method is the reporting of empirical work.

The intervention extends small loans to parties without collateral, ordinarily through group lending in which joint liability substitutes for security, and it was widely held to carry recipients into self-sustaining enterprise (doctrine, widely held before evaluation).

Six randomised evaluations conducted in six countries, introduced jointly in 2015, report effects that are modestly positive and short of transformative, with no significant effect on average household income; a subsequent reanalysis pooling the trials reports a small average effect with substantial probability of an effect near zero (empirically tested; multi-country randomised designs, strong internal validity).

The comparison with the bundled transfer reported in Chapter 12 is the finding this book carries. A thin transfer repeated over time left recipients where they began, and a single transfer composed of complementary components carried them across a boundary. The comparison is transferred as a mechanism, and Chapter 50 states the boundary of the transfer.

14.6 THE MOBILISATION OF ASSETS ALREADY HELD

An approach organising intervention around what a community holds in place of what it lacks stands close to the premise of this book, and it carries a critique that this book must also carry. This section reports the approach, states its premise, and reports the critique. It proceeds by report, premise, and critique. The method is exposition followed by qualification.

Kretzmann and McKnight (1993) recommend that intervention begin from a map of the capacities, associations, and institutions a community already holds, in place of a survey of its

needs, and that external parties support what the community is already doing (doctrine, with practitioner material).

The premise is that capacity is present and unmobilised, which is the premise of Chapter 45 stated for a community in place of a producer.

The critique holds that an approach emphasising what a community already holds supplies a warrant for the withdrawal of external provision, and that its adoption has at times accompanied such withdrawal (doctrine, within community development scholarship). The critique transfers directly to the present account. An argument that a producer's capacity is present and blocked may be read as an argument that no resources are owed, and Chapter 42 states the ground on which this book declines that reading.

14.7 PARTICIPATION AS A METHOD AND ITS EVIDENCE

Intervention conducted through the participation of those it addresses has been advanced as the remedy for the difficulties reported in Chapter 13, and its evaluation constrains what this book may recommend. This section reports the position, the critique, and the evidence. It proceeds by reporting each in turn. The method is exposition followed by empirical assessment.

Chambers (1983) holds that intervention should proceed from the knowledge and priorities of those it addresses, and that the biases of outside parties systematically misdirect it (doctrine, with extensive field material).

Cooke and Kothari (2001) hold that participation may operate as a technique of legitimisation, producing consent to decisions already taken and obscuring the exercise of power within communities (doctrine).

Mansuri and Rao (2013) reviewed the evidence and reported that induced participation seldom builds durable local capacity and is frequently captured by parties already advantaged within a community (a review of the empirical literature, conducted for a donor institution).

The constraint on this book is that a recommendation to construct couplings among parties carries no presumption that the couplings so constructed will be equitably distributed within a community, and Chapter 56 states the recommendation with that qualification attached.

14.8 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a community in a strong form, since its subject is the terms on which parties stand with one another, and a recognition system, since the categorical

boundaries and conversion rates it describes are maintained by parties assessing one another.

It presupposes an institution, in that the arrangements maintaining categorical inequality are organisational, and a resource, in that the hoarding it describes is hoarding of something.

It presupposes a channel in the form of the ties along which resources travel.

The region left untreated is the formation of the ties. This literature examines a party positioned within a network on adverse terms, and it treats the network as given. A party holding few ties of any kind, whose difficulty is the formation of a first coupling in place of the terms of an existing one, falls outside its subject matter, and Part V examines that case.

14.9 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Chronic deprivation arises more often from incorporation on disadvantageous terms than from exclusion, and the description is adopted in this book for the position of a producer who participates in a system and is poorly placed within it.

Durable inequality is produced through categorical boundaries by exploitation, opportunity hoarding, emulation, and adaptation. Opportunity hoarding by a bounded network is the mechanism underlying pathway concentration, and social closure supplies its general form.

Capital takes several forms converting into one another at rates varying with context. Academic poverty is describable as a collapse in one such rate with the stock intact, and a high rate for one party is constituted in part by a low rate for another.

Small transfers repeated over time produce effects short of transformative, and the contrast with a single composed transfer supplies the mechanism carried into Chapter 50.

An approach organising intervention around capacities already held shares the premise of Part X and carries a critique that transfers with it: an argument that capacity is present and blocked may be read as an argument that no resources are owed.

Induced participation seldom builds durable local capacity and is frequently captured by parties already advantaged, so a recommendation to construct couplings carries no presumption of equitable distribution within a community.

The literature presupposes a community, a recognition system, an institution, a resource, and a channel, and it leaves untreated the formation of the ties whose terms it examines.

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CHAPTER 15

DEPENDENCY, PERIPHERY, AND THE GLOBAL KNOWLEDGE HIERARCHY

15.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part III closes with a literature that applies the analysis of structural position to the production of knowledge itself. The application supplies the present account with measured asymmetries, with an established practice of intervention against them, and with a temptation the account must decline.

The chapter undertakes five tasks. It reports the analysis of structural position from which the application proceeds. It reports the account of academic dependency and of the intellectual formation associated with it. It reports the measured asymmetries in the publication system. It reports the practice of research capacity strengthening, which is the closest existing counterpart to an intervention against the condition this book examines. And it states the ground on which this book replaces a geography of centre and periphery with a quantity admitting of variation at every scale.

The chapter proceeds by reporting four bodies of work and closes with a replacement and the presupposition diagnostic. The method is the reporting of doctrinal and empirical work under the labels fixed in Chapter 2.

15.2 STRUCTURAL POSITION IN THE WORLD ECONOMY

The application reported in this chapter proceeds from an analysis of position developed for economies, and the analysis is reported here for the form it supplies. This section reports it, states its central claim, and marks its bearing on the present argument. It proceeds by report and consequence. The method is exposition.

Prebisch, Frank, Cardoso and Faletto, and Amin hold, in differing formulations, that the position of an economy within a wider system determines its development, and that positions at the periphery are reproduced by the operation of the system in place of by any internal deficiency (doctrine, foundational, with an extensive critical literature). Wallerstein's world-systems analysis distinguishes core, semi-periphery, and periphery and treats exchange between them as unequal (doctrine).

The bearing on the present argument is the form of the explanation. A condition observed at a party is attributed to that party's position within a structure, and the attribution is the same move Part X makes for a producer within a system of recognition. The analysis supplies the form and supplies no content concerning knowledge production, which the following section reports.

15.3 ACADEMIC DEPENDENCY AND THE FORMATION IT PRODUCES

The analysis of position has been applied to the production of knowledge, and the application is the nearest existing account of the condition this book examines at the scale of a global system. This section reports the account, states the mechanism it identifies, and marks its bearing. It proceeds by report, mechanism, and consequence. The method is exposition.

Alatas (2003) defines academic dependency as a condition in which the social science of one region depends upon that of another for its problems, its theories, and its standards of assessment (doctrine). An earlier formulation describes the captive mind, in which a scholar is trained in categories developed elsewhere and applies them without recognising their provenance (doctrine). Connell (2007) holds that theory is produced under a division of labour in which the metropole theorises and the periphery supplies material (doctrine, with historical material). Hountondji (1997) describes the same division for the natural sciences.

The mechanism identified is that the operative criteria of assessment are maintained in one region and applied to contributions originating in another, so that a contribution formulated in categories the criteria fail to admit is assessed as deficient in place of being assessed as unfamiliar.

The bearing on the present argument is that the mechanism is the one stated in Chapter 45, at the scale of a global system. The present book therefore inherits an account of its central mechanism from a literature it must acknowledge, and Chapter 43 states what remains once the acknowledgement is made.

15.4 THE MEASURED ASYMMETRIES IN THE PUBLICATION SYSTEM

The account reported above is accompanied by measurement, and the measurements bear on the control parameter of Chapter 46. This section reports the measurements, states what they establish, and marks their limit. It proceeds by report, establishment, and limit. The method is the reporting of empirical work.

Measurements report concentration in the regional composition of authorship in highly ranked venues, in the composition of editorial boards, and in citation, together with a hierarchy of language under which contributions in one language are assessed and cited more readily than contributions in others (empirically tested; large bibliometric samples, with methods varying across studies). A related literature reports research conducted in

one region by parties from another without local co-authorship or credit (doctrine, with case documentation).

What the measurements establish is that the components of pathway concentration fixed in Chapter 46 take extreme values for producers in some regions: routes are few, admissible form is defined elsewhere, and assessing capacity is directed elsewhere.

The limit is that measurement of composition establishes concentration and establishes nothing about the mechanism producing it. A distribution of authorship is consistent with differences in resources, in training, in language, and in the operative criteria of assessment, and separating them requires designs the bibliometric literature seldom supplies.

15.5 RESEARCH CAPACITY STRENGTHENING AS AN EXISTING PRACTICE

An established practice intervenes against the asymmetries reported above, and it is the closest counterpart available to an intervention against the condition this book examines. This section reports the practice, reports the evidence, and states what the practice presupposes. It proceeds by report, evidence, and analysis. The method is the reporting of practice and its evaluation.

The practice comprises mentoring and training programmes for researchers in lower-income countries, fellowship and grant schemes, and arrangements supplying access to literature held behind subscription (institutional reporting, with programme documentation).

The evidence available reports positive effects on participants' confidence and on publication counts, drawn largely from self-report, and systematic reviews of capacity strengthening report that evidence on sustainability after programmes conclude is lacking (empirically tested at a low level of strength; the reviews are explicit about the deficiency).

What the practice presupposes is an intake channel. Its interventions raise a participant's capacity to compose contributions that the receiving system will assign, and they leave the operative criteria of that system as they were. The practice therefore addresses the personal conversion factors of Chapter 11 and leaves the social ones untouched, which is the deficiency Part X identifies and Chapter 56 addresses.

15.6 CONCENTRATION OF PATHWAYS IN PLACE OF A MORAL GEOGRAPHY

The materials reported above admit of an organisation this book declines, and the ground of the declining is stated here. This section states the available organisation, gives three grounds for replacing it, and states the replacement. It proceeds by statement, grounds, and replacement. The method is the assembly of an argument from reported materials.

The available organisation assigns regions to positions and attributes suppression to the parties occupying the higher ones. It follows readily from the measurements of Section 15.4 and from the vocabulary of centre and periphery.

Three grounds favour a replacement. Closure and hoarding are general properties of bounded networks, as Chapter 14 established, and they require no regional boundary. The asymmetries reproduce themselves within regions as well as between them, so that an organisation by region would require redrawing at every scale at which it was applied. And the measurements of Section 15.4 establish concentration while leaving its mechanism undetermined, so that an attribution of agency exceeds what they support.

The replacement is the quantity fixed in Chapter 46. Pathway concentration admits of variation at every scale, applies within a national system and within a single institution, and carries no attribution of intention. The claim this book makes is accordingly that any system suppresses generativity where its pathways to valuation become sufficiently concentrated, and the global asymmetries reported here are one instance in place of the phenomenon itself.

15.7 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a recognition system in a strong form, since its subject is the operation of assessment across regions, and a community, since the criteria it examines are maintained by one.

It presupposes a channel, in that publication venues are the object of its measurements, and an institution, in that its interventions are administered by organisations.

It presupposes a resource in the limited form of access to literature and to funding.

The region left untreated is the case of a producer holding no institutional position of any kind. The literature addresses researchers within universities in lower-income countries, and its interventions reach participants through those universities. A producer outside any institution appears in none of its programmes and in none of its measurements, and the condition of such a producer is examined in Part V.

15.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

The analysis of structural position attributes a condition observed at a party to that party's position within a system, which is the form of explanation Part X employs for a producer within a system of recognition.

Academic dependency consists in the maintenance of operative criteria in one region and their application to contributions originating in another, so that a contribution formulated in unadmitted categories is assessed as deficient in place of unfamiliar. The mechanism is the

one stated in Part X, at the scale of a global system, and the present book inherits it from a literature it must acknowledge.

Measurements report concentration in authorship, in editorial composition, in citation, and in language, establishing that the components of pathway concentration take extreme values for producers in some regions, and leaving the mechanism producing the concentration undetermined.

Research capacity strengthening raises a participant's capacity to compose admissible contributions and leaves the operative criteria unchanged, addressing personal conversion factors while leaving social ones untouched.

An organisation by region is declined on three grounds: closure is a general property of bounded networks, the asymmetries reproduce within regions, and the measurements establish concentration without establishing agency. Pathway concentration replaces it, and the global asymmetries are one instance of the phenomenon in place of the phenomenon itself.

The literature presupposes a recognition system, a community, a channel, an institution, and a resource, and it leaves untreated the case of a producer holding no institutional position.

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PART IV

THE ALLOCATIVE ECONOMICS OF SCIENCE AND ITS LIMITS

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CHAPTER 16

SCIENCE AS A PUBLIC GOOD AND THE DISCLOSURE PARADOX

16.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part IV examines the economics of allocation in science, and it opens with the literature establishing why knowledge is allocated by procedures other than a market. That literature contains, alongside its principal result, a subsidiary one bearing directly on the diagnosis of Part X: an account of why the value of information resists assessment in advance of its disclosure.

This chapter examines both. It undertakes five tasks. It states the character of knowledge as an economic good and the conclusion the literature draws from it. It states the paradox concerning the assessment of information and gives its form in the setting of this book. It records the qualification a later literature attaches to that paradox, and states what the qualification implies for a producer under expression constraint. It states the reward structure the literature identifies in place of a market. And it records the conditions this literature presupposes.

The chapter proceeds by exposition, by the statement of an analogue, by qualification, and by the presupposition diagnostic fixed in Chapter 2. The method is analytical, and each claim is reported under the labels fixed in that chapter.

16.2 THE CHARACTER OF KNOWLEDGE AS AN ECONOMIC GOOD

The literature on the economics of research opens from properties of knowledge that distinguish it from ordinary commodities, and those properties fix the problem the remainder of Part IV addresses. This section states the properties, states the conclusion drawn from them, and marks the position of that conclusion in the present argument. It proceeds by exposition followed by consequence. The method is the reporting of an established result.

Nelson (1959) and Arrow (1962) establish that knowledge is non-rival, in that its use by one party leaves it available to others undiminished, and imperfectly excludable, in that a party producing it captures a fraction of the value others derive (formally modelled). A producer weighing the cost of production against the fraction captured therefore produces

less than the quantity at which the aggregate value of production would be greatest, and the literature concludes that basic research is underprovided by decentralised decision and warrants provision by other means (formally modelled, with the policy conclusion carrying the status of doctrine).

The conclusion occupies a definite position in the present argument. It establishes why a system of knowledge production is organised around allocative procedures administered by funders, institutions, and journals, in place of purchases made by those who value the product. The procedures examined in Chapter 17 exist because of the properties stated here, and the difficulties recorded there are difficulties of the arrangement this literature recommends.

16.3 THE PARADOX CONCERNING THE ASSESSMENT OF INFORMATION

The same literature contains a result about the assessment of information that bears on the diagnosis of Part X more directly than the argument for public provision. This section states the result, gives its standard form, and states the form it takes in the setting of this book. It proceeds by statement followed by transfer. The method is the transfer procedure fixed in Chapter 2.

Arrow (1962) observes that a buyer cannot assess the value of a piece of information without being told what the information is, and that on being told, the buyer has acquired it at no cost (formally modelled). The observation identifies a structural obstacle to the exchange of information: the act by which value would be assessed is the act that transfers the good.

The form the result takes in the present setting concerns opportunity in place of information. A producer's capacity to generate is assessed by an allocating party through the contributions that capacity has already produced, and the production of contributions requires the time, access, and reception that the allocation supplies. The assessment therefore requires the very thing the assessment is to allocate. The structure is the one Chapter 45 describes as expression constraint, arrived at from the side of the allocating party.

The transfer licenses the identification of the structure and withholds two things. It withholds the object, since Arrow's result concerns a good whose transfer is completed by disclosure while the present case concerns an opportunity whose supply is costly and divisible. And it withholds the remedy, since the remedies canvassed in the economics of information turn on property rights over the disclosed good, which have no counterpart in the case of an opportunity withheld.

16.4 PARTIAL DISCLOSURE AND RIVALRY AMONG ASSESSORS

A subsequent literature qualifies the paradox, and the qualification bears on the strength of the claim this book may make. This section reports the qualification, states the conditions under which it holds, and draws the consequence for a producer under expression constraint.

It proceeds by report, conditions, and consequence. The method is the reporting of a result that constrains the present account.

Anton and Yao (1994) establish that an inventor lacking property rights may nonetheless appropriate a substantial share of an invention's value, since a party to whom the invention is disclosed faces the prospect of the inventor disclosing to a rival, and the prospect disciplines what the first party will offer (formally modelled). Later work in the same line treats equilibria in which partial disclosure conveys enough to establish value while withholding enough to preserve the remainder (formally modelled).

The qualification holds under stated conditions. Rivalry among parties to whom disclosure might be made is required, and the disclosed good must admit of division into a part that conveys value and a part that remains withheld.

The consequence for a producer under expression constraint is that the paradox admits of relief exactly where those conditions obtain, and that the conditions ordinarily fail in the case this book examines. A producer facing a system whose routes to valuation are held by few parties who consult one another faces no rivalry among assessors, which is the condition Chapter 46 names as high pathway concentration. The economics of information therefore supplies both the structure of the difficulty and the condition under which the difficulty relaxes, and the condition under which it relaxes is the complement of the condition under which this book's diagnosis applies.

16.5 THE REWARD STRUCTURE IDENTIFIED IN PLACE OF A MARKET

Having established that a market allocates knowledge production poorly, the literature describes the arrangement operating instead, and the description supplies the medium in which the model of Part XI operates. This section reports the description, states its components, and marks its position in the present argument. It proceeds by report followed by placement. The method is exposition.

Dasgupta and David (1994) describe an arrangement in which the reward attaching to a contribution is priority: recognition of having been first, conferred by a community and convertible into position and resources (doctrine, with formal elements). Stephan (1996, 2012) develops the labour-market consequences and concludes that resources rather than individual capacity account for a substantial part of what a producer is able to accomplish (doctrine, with supporting empirical work).

The description supplies two elements the present argument requires. It identifies recognition as the medium through which value returns to a producer, which is the quantity Chapter 48 treats as returned for a relation's continuation. And it identifies the conversion of recognition into position and resources, which is the step Chapter 14 treats under the collapse of a conversion rate.

16.6 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic fixed in Chapter 2 is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the five categories in turn. The method is the diagnostic.

The literature presupposes a recognition system. Its central questions concern the allocation of support for production and the reward accruing to production, and both presuppose an operating procedure by which contributions are valued and priority is conferred.

It presupposes a resource, in that the underprovision it identifies is underprovision of a quantity that could be allocated otherwise, and an institution, in that the provision it recommends is administered by parties with standing to administer it.

It presupposes a community, since priority is conferred by a body of practitioners recognising a claim, and a channel, since disclosure is the act on which both the paradox and the reward structure turn.

The region left untreated is the formation of the recognition system itself. The literature takes as given a community capable of conferring priority and a procedure by which it does so, and it examines the incentives operating within that arrangement. Its account of underprovision concerns the quantity produced under an existing arrangement, and it contains no treatment of the case in which the arrangement admits a producer's contributions to no category at all.

16.7 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Knowledge is non-rival and imperfectly excludable, from which the literature concludes that basic research is underprovided by decentralised decision and warrants provision by other means. The allocative procedures examined in the following chapter exist for this reason.

The value of information resists assessment in advance of its disclosure, since the act by which value would be assessed is the act transferring the good. The form the result takes in this book concerns opportunity: assessment of a producer's capacity requires the contributions whose production requires the opportunity being allocated.

The paradox admits of relief where rivalry among assessing parties obtains and the good admits of partial disclosure. Both conditions fail at high pathway concentration, so the condition under which the difficulty relaxes is the complement of the condition under which this book's diagnosis applies.

The arrangement operating in place of a market rewards priority with recognition, which is convertible into position and resources. Recognition is thereby identified as the medium in which returns travel, and its conversion as the step whose failure Part III examines.

The literature presupposes a recognition system, a resource, an institution, a community, and a channel, and it leaves untreated the formation of the recognition system on which its questions depend.

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CHAPTER 17

ALLOCATION MECHANISMS AND THEIR DOCUMENTED FAILURES

17.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 16 established why knowledge production is organised around administered allocation in place of purchase, and the arrangement so recommended has been examined empirically for several decades. The findings bear on the diagnosis of Part X at one point in particular: a literature internal to the arrangement has documented that its assessments discriminate against contributions of unfamiliar form.

This chapter reports the findings. It undertakes six tasks. It reports the evidence on the reliability of assessment in competitive allocation. It reports the aggregate cost the competition consumes. It reports the practice of allocating by lot and states what the practice concedes. It reports the evidence on concentration and dispersal, and marks the constraint under which that evidence may be used. It reports the evidence on the assessment of unfamiliar contributions, which supplies the diagnosis of Part X with its economic counterpart. And it reports the arrangements advanced in response, together with the evidence bearing on them.

The chapter proceeds by reporting six bodies of evidence and closes with the presupposition diagnostic. The method is the reporting of empirical findings under the labels fixed in Chapter 2.

17.2 THE RELIABILITY OF ASSESSMENT IN COMPETITIVE ALLOCATION

Competitive allocation rests on the assumption that assessors distinguish proposals of higher promise from proposals of lower promise, and the assumption has been tested. This section reports the tests, states their consistency, and draws the consequence. It proceeds by reporting three findings. The method is the reporting of empirical work.

Cole et al. (1981) found that agreement among assessors of proposals to a national funding agency exceeded chance by a modest margin, so that the outcome for a given proposal depended substantially on which assessors it received (empirically tested; observational study with a partial replication design). Pier et al. (2018) had assessors evaluate identical proposals and found little agreement in the scores assigned (empirically tested; experimental design,

single agency, modest sample). Fang et al. (2016) found that among proposals that were funded, the scores assigned predicted subsequent productivity poorly (empirically tested; large observational sample, single agency).

The three findings are consistent with one another and concern different stages of the same procedure. The consequence for the present argument is that the discrimination competitive allocation claims to perform is weaker than the procedure's structure assumes, and that a producer's outcome under it carries a substantial component that the procedure does not control.

17.3 THE COST BORNE BY THE COMPETITION

Competitive allocation consumes the effort of those competing, and the aggregate has been estimated. This section reports an estimate and a model, states their joint implication, and marks the position of the result in the argument. It proceeds by reporting two results. The method is the reporting of a measurement and a formal analysis.

Herbert et al. (2013) estimated the time consumed in preparing proposals to a national funding agency in a single round and reported an aggregate in the hundreds of researcher-years, against a success rate near one in five (empirically tested; survey-based estimate, single agency and round). Gross and Bergstrom (2019) modelled proposal competition as a contest and established that where awards are scarce relative to meritorious proposals, the aggregate cost of preparation approaches or exceeds the value of the funding allocated (formally modelled).

The joint implication is that the arrangement recommended by Chapter 16 consumes a substantial fraction of the capacity it exists to support. The result bears on the present argument by establishing that the difficulty of allocation under scarcity is a difficulty of the procedure in place of a difficulty of the quantity available.

17.4 RANDOMISATION AS AN INSTITUTIONAL CONCESSION

Several funders now allocate part of their budgets by lot among proposals judged meritorious, and the practice concedes something the present argument requires. This section reports the practice, states the argument advanced for it, and states what its adoption concedes. It proceeds by report, argument, and consequence. The method is the reporting of a practice and its rationale.

A national health research agency has allocated an exploratory grant by lot among proposals passing a threshold since 2013, and a private foundation operates a comparable programme; partial randomisation has been adopted or trialled by several further agencies (professional reporting and agency documentation; outcome evaluations remain thin, and the available evidence concerns applicant attitudes).

Avin (2019) advances an epistemic argument for the practice, holding that assessment under uncertainty is biased toward the familiar and that randomisation among meritorious proposals raises the rate at which unfamiliar directions are explored (formally modelled by simulation on an epistemic landscape).

The adoption of the practice concedes that assessment cannot reliably rank proposals by their eventual value. The concession is made by the institutions administering the arrangement, and it supports the same proposition as the evidence of Section 17.2, from the side of practice in place of measurement.

17.5 CONCENTRATION AND DISPERSAL IN THE ALLOCATION OF SUPPORT

Whether support achieves more when concentrated on the highest-ranked producers or dispersed across many has been examined repeatedly. This section reports the findings, states their direction, and fixes the constraint under which the present book may use them. It proceeds by report followed by constraint. The method is the reporting of empirical work under the separation of levels.

Fortin and Currie (2013) found that measured impact rose with funding weakly and at a decreasing rate, and that producers holding support from two agencies were no more productive than those holding support from one (empirically tested; observational, three disciplines, single national system). Mongeon and colleagues found decreasing marginal returns to concentration in a comparable design (empirically tested; observational, single system). A review by Aagaard et al. (2020) reported that the large majority of studies addressing grant size find negative, null, or decreasing returns above a threshold (a review of the empirical literature).

The direction of the findings favours dispersal over concentration. The constraint under which this book may use them is the separation of levels fixed in Chapter 2. The findings concern a funder choosing an allocation across a population of producers, and they bear on the arguments of Part IV alone. The question examined in Part V, which concerns a single producer choosing among uses of a constrained endowment, is a distinct question, and no result reported here enters it.

17.6 THE ASSESSMENT OF CONTRIBUTIONS OF UNFAMILIAR FORM

One body of evidence in this literature supplies the economic counterpart of the diagnosis stated in Part X, and it is reported here at greater length for that reason. This section reports three findings, states what they establish jointly, and marks their relation to the diagnosis. It proceeds by report and consequence. The method is the reporting of empirical work.

Boudreau et al. (2016) had assessors evaluate proposals under a randomised assignment and found that assessors scored proposals of high novelty lower than proposals of low novelty,

and scored proposals close to their own expertise lower still (empirically tested; randomised experiment at a single institution, large number of assessor-proposal pairs). Wang et al. (2017) found that contributions combining previously unjoined bodies of work are more likely to reach the highest citation ranks in the long run, while being published in lower-ranked venues, cited less in short windows, and exhibiting higher variance (empirically tested; large bibliometric sample). Foster et al. (2015) found that innovative research strategies achieve higher impact when they succeed and fail more often, so that the conservative strategy dominates for an individual producer while the innovative strategy is the one from which the field gains (empirically tested; large bibliometric sample).

The three establish jointly that the operative criteria of assessment discriminate against contributions of unfamiliar form, that the discrimination is a property of the procedure in place of a property of the contributions, and that a producer responds rationally by composing contributions the procedure will assign.

The relation to the diagnosis is direct. Chapter 45 defined expression constraint as the condition in which a valid rule finds no occasion of application under the interpretation in force, and the present findings measure the interpretation in force and record that it discriminates by form. The economic literature thereby supplies, from within the arrangement, the observation the diagnosis requires.

17.7 THE ARRANGEMENTS ADVANCED IN RESPONSE

Arrangements departing from competitive project allocation have been proposed and in some cases implemented, and the evidence bearing on them is reported here. This section reports one comparison and one model, states what they establish, and marks the limits of the evidence. It proceeds by report followed by limitation. The method is the reporting of empirical and formal work.

Azoulay et al. (2011) compared producers supported under a programme selecting people for long periods with tolerance of early failure against comparable producers supported under conventional project allocation, and found higher rates of high-impact contribution under the first (empirically tested; quasi-experimental design with matched comparison, single field, modest treated sample). Manso (2011) established the corresponding formal result, that contracts motivating exploration tolerate early failure and reward long-term success (formally modelled).

The limits of the evidence are two. The comparison concerns a single programme in a single field, and the producers selected into it were selected on criteria the comparison cannot fully adjust for. And the wider body of proposals advanced in the reform discussion, including new funding organisations of several designs, is reported in that discussion largely without outcome evidence and is recorded here as doctrine.

17.8 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes an institution, in that its object is a funder with a budget and a procedure; a resource, in that the question is how a stock is divided; and a recognition system, in that the assessment of proposals and the measurement of subsequent impact both require operating criteria by which contributions are valued.

It presupposes a community of producers who submit and assess, and a channel through which contributions become visible to the measurements the literature employs.

The region left untreated is the position of a producer standing outside the arrangement entirely. Every study reported here draws its population from those who submit proposals or publish contributions, and a producer whose contributions the procedure assigns to no category appears in none of these populations. The literature measures the operation of the interpretation in force upon those it processes, and it is silent by construction about those it does not.

17.9 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Agreement among assessors of proposals exceeds chance by a modest margin, scores assigned to identical proposals differ widely, and scores among funded proposals predict subsequent productivity poorly.

The aggregate cost of preparing proposals approaches or exceeds the value allocated where awards are scarce relative to meritorious proposals, so that the difficulty of allocation under scarcity is a difficulty of the procedure.

Allocation by lot among meritorious proposals is practised by several funders and defended on epistemic grounds, and its adoption concedes that assessment cannot reliably rank proposals by eventual value.

Measured impact rises with funding weakly and at a decreasing rate, and the direction of the evidence favours dispersal. The finding concerns a funder allocating across a population and enters no argument at the level of an individual producer.

Assessors score contributions of unfamiliar form lower, contributions joining previously unjoined bodies of work reach the highest citation ranks in the long run while being placed lower and cited less in short windows, and the conservative strategy dominates for an individual producer while the field gains from the innovative one. The interpretation in force discriminates by form, which supplies the diagnosis of Part X with its economic counterpart.

Support selecting people for long periods with tolerance of early failure is associated with higher rates of high-impact contribution, on evidence from a single programme in a single field.

The literature presupposes an institution, a resource, a recognition system, a community, and a channel, and it is silent by construction about producers whose contributions its procedures assign to no category.

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CHAPTER 18

ATTENTION, METRICS, AND THE AMPLIFICATION MEDIUM

18.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The model of Part XI describes perturbations placed into a medium that amplifies some and extinguishes others, and the properties of that medium are treated in the present chapter as an object of economic study. A literature on the scarcity of attention, and a second literature on the effects of measurement upon the conduct measured, jointly supply the description the model requires.

This chapter assembles that description. It undertakes five tasks. It reports the identification of attention as the scarce quantity in a communicating system. It reports the account of recognition as attention transferred, which supplies the medium in which returns travel. It reports the evidence on the alteration of conduct by measures employed in allocation. It reports the structure of reward in markets where small differences in assessment produce large differences in return. And it assembles from these the response of the medium across the range of amplitudes, which is the description Chapter 50 employs.

The chapter proceeds by reporting four bodies of work and assembling a description from them, closing with the presupposition diagnostic. The method is the reporting of established positions under the labels fixed in Chapter 2.

18.2 ATTENTION AS THE SCARCE QUANTITY IN A COMMUNICATING SYSTEM

The identification of the binding constraint in a system of communication determines what an economics of that system examines, and one identification has been widely adopted. This section reports it, states the reasoning supporting it, and marks its consequence for the present argument. It proceeds by report followed by consequence. The method is exposition.

Simon (1971) observes that a wealth of information produces a poverty of attention, since information consumes the attention of those who receive it, and that the allocation problem in an information-rich environment is therefore the allocation of attention among the sources competing for it (doctrine, widely adopted).

The consequence for the present argument is that the constraint binding a producer under

the conditions this book examines is identified. Infrastructure for placing contributions has become abundant, in that a contribution may be deposited, circulated, and made permanently retrievable at negligible cost. Attention has not, since the assessing capacity of a community grows with the number of its members and the volume seeking that capacity grows faster. Chapter 22 draws the consequence for a producer choosing between constructing a channel and coupling into channels already in operation.

18.3 RECOGNITION AS ATTENTION TRANSFERRED

An account of scientific communication treats attention as a currency and derives recognition from its movement, and the account supplies the medium in which the returns of Part XI travel. This section reports the account, states its mechanism, and marks its position in the argument. It proceeds by report and placement. The method is exposition.

Franck (1999, 2002) holds that attention is the currency of science, that a citation transfers to the cited work a portion of the attention the citing work has earned, and that reputation is attention that has been capitalised (doctrine, with a formal treatment attached).

The mechanism has two properties the present argument requires. Transfers are made from a finite stock, so that attention conferred on one contribution is attention withheld from another. And transfers accumulate, so that a contribution holding attention attracts further transfers, which is the mechanism recorded independently in the sociology of science and reported in Chapter 5.

The position of the account in the argument is that it identifies what is returned when a relation returns. Chapter 48 states the generative threshold in terms of a quantity returned for a relation's continuation, and the present account supplies the quantity in the case of a system of knowledge production.

18.4 THE ALTERATION OF CONDUCT BY MEASURES EMPLOYED IN ALLOCATION

Measures of contribution are employed in allocation, and a literature establishes that the employment alters the conduct measured. This section reports the position and the evidence, states the mechanism, and draws the consequence for the medium. It proceeds by report, mechanism, and consequence. The method is the reporting of empirical and doctrinal work.

The position holds that a measure adopted as a target ceases to measure what it measured before adoption. Espeland and Sauder (2007) documented the mechanism in an organisational setting, establishing that parties subject to a public ranking alter their conduct to affect their position within it, and that the alteration changes the quantity the ranking was constructed to record (empirically tested; multi-method study of a single sector). Muller (2018) and Power (1997) assemble the position across sectors (doctrine). Statements issued

by scholarly bodies concerning the assessment of research recommend restrictions on the use of such measures (doctrine).

The mechanism operates through the operative criteria of assessment. A measure employed in allocation becomes a category the receiving system maintains, and contributions are composed to be assigned to it.

The consequence for the medium is that the range of forms a receiving system will assign narrows as measurement is adopted for allocation, which is the component of pathway concentration that Chapter 46 names interpretive admissibility. The present chapter thereby supplies the economic mechanism by which that component moves.

18.5 THE DISTRIBUTION OF REWARD UNDER SMALL DIFFERENCES IN ASSESSMENT

Markets exist in which small differences in assessed quality produce large differences in return, and the structure has been applied to academic careers. This section reports the structure, states its application, and marks its bearing on the argument. It proceeds by report and application. The method is exposition.

Frank and Cook (1995) describe markets in which reward is determined by rank in place of absolute performance, so that a small margin in assessment yields a large margin in return, and in which the resulting concentration attracts entry beyond the level the aggregate return would support (doctrine, with supporting empirical work in several sectors).

The application to academic careers concerns positions, prizes, and the attention of audiences, each allocated by rank among candidates whose assessed differences are small relative to the differences in what they receive.

The bearing on the present argument is that the structure supplies the shape of the distribution against which a producer's returns are assessed. A distribution concentrated in this manner leaves the lower portion of its range with returns near zero, which is the condition Chapter 46 identifies among the marks of the subcritical region.

18.6 THE RESPONSE OF THE MEDIUM ACROSS THE RANGE OF AMPLITUDES

The materials of the preceding sections assemble into a description of how a receiving system responds to contributions of differing amplitude, and the description is the one the model of Part XI requires. This section assembles it in three regions, states the support each region draws from the preceding material, and records its status. It proceeds region by region and closes with a statement of status. The method is assembly from reported positions.

The first region comprises amplitudes at which a contribution draws no assessing capacity. Attention is finite and the volume seeking it exceeds it, and the concentration described in Section 18.5 leaves the lower portion of the distribution unassessed. A contribution placed in this region consumes the producer's effort and enters no transfer.

The second region comprises amplitudes at which a contribution draws assessing capacity and transfers of attention follow. Within this region the accumulation property of Section 18.3 operates, and a contribution holding attention attracts further transfers.

The third region comprises amplitudes at which a producer already commands a large share of the assessing capacity available for contributions of the relevant kind. Further placement draws little additional transfer, since the stock is finite. A second property operates in this region: a producer placing a high volume of contributions is assessed on the aggregate, and the mechanism of Section 18.4 applies the assessment to subsequent placements.

The status of the description is that of an assembly. Each region draws on positions reported above, and the assembly into three regions with the stated properties is made here in place of being taken from any single source. Chapter 52 states the observations by which the assembly would be assessed.

18.7 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a recognition system, in that attention is transferred through citation and reputation is accumulated within an operating procedure that records both. It presupposes a community, since the stock of attention is the assessing capacity of a body of practitioners. And it presupposes a channel, since transfers occur among contributions that have been placed where they may be encountered.

The literature presupposes no institution in the narrow sense, and it presupposes a resource only in the form of the attention stock itself, which distinguishes it from the literatures reported in Chapters 16 and 17.

The region left untreated is the formation of an attention stock where none is directed. The literature examines the allocation of a stock among contributions competing for it and takes the existence of a body of practitioners oriented to a class of questions as given. A producer whose contributions address questions no assembled body is oriented to falls outside its subject matter.

18.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Attention is the scarce quantity in a communicating system, and infrastructure for placing contributions has become abundant while assessing capacity has not.

Recognition consists in transferred attention, drawn from a finite stock and accumulating on contributions that already hold it. The account identifies what is returned when a relation returns, in the case of a system of knowledge production.

Measures employed in allocation alter the conduct measured, through the mechanism by which a measure becomes a category the receiving system maintains. The adoption of measurement for allocation narrows the range of forms a system will assign, which supplies the economic mechanism moving interpretive admissibility.

Reward is distributed by rank in place of absolute assessment, so that the lower portion of the distribution receives returns near zero.

The medium responds in three regions: a region drawing no assessing capacity, a region in which transfers follow and accumulate, and a region of saturation carrying an aggregate assessment applied to subsequent placements. The assembly into three regions is made in this chapter in place of being taken from a source.

The literature presupposes a recognition system, a community, and a channel, and it leaves untreated the formation of an attention stock where no body of practitioners is oriented to the questions at issue.

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CHAPTER 19

FIELD CREATION IN INNOVATION AND INFRASTRUCTURE ECONOMICS

19.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The chapters preceding this one report an economics organised around allocation: a stock exists, and the question concerns its division. A second body of economic work is organised around the construction of conditions under which activity becomes possible, and that body supplies the present account with its nearest economic relatives.

This chapter examines it. The chapter undertakes six tasks. It reports the distinction between risk and uncertainty and its bearing on the assessment of the unprecedented. It reports the account of exploration and exploitation. It reports the theory of increasing returns and lock-in, and separates it from the mechanism of Part XI. It reports the demand-side account of infrastructure, which supplies the strongest economic support for the claim that constructing conditions dominates dividing stocks. It reports the formation problem in platform economics and the theory of critical mass in collective action, which together supply the nearest formal precedent for the threshold of Chapter 48. And it distinguishes two senses in which a quantity is described as scarce.

The chapter proceeds by reporting five bodies of work, drawing a separation and a distinction, and closing with the presupposition diagnostic. The method is the reporting of established positions, with comparisons drawn under the transfer procedure fixed in Chapter 2.

19.2 UNCERTAINTY AND THE ASSESSMENT OF THE UNPRECEDENTED

An assessment of a proposed activity presupposes that its possible outcomes admit of a distribution, and a distinction drawn early in the economics of the firm denies the presupposition for a class of cases. This section reports the distinction, states the class, and marks its bearing on the argument. It proceeds by report and application. The method is exposition.

Knight (1921) distinguishes risk, in which possible outcomes are known and carry probabilities, from uncertainty, in which the outcomes themselves are unenumerated (doctrine, foundational).

The class of cases falling under the second heading includes activities without precedent, for which the enumeration of outcomes would require the activity to have been undertaken. An assessment of expected value is undefined for such cases, since the quantity it would compute has no arguments.

The bearing on the argument is that the difficulty reported in Chapter 17, that assessors discriminate poorly among proposals and score unfamiliar proposals lower, receives a foundation in place of a description. Assessors scoring an unprecedented proposal are performing an operation the distinction holds to be undefined, and the score they assign records the proposal's proximity to precedents in place of its expected value.

19.3 EXPLORATION AND EXPLOITATION

An organisation dividing effort between the refinement of known activities and the search for unknown ones faces a trade-off that has been formalised, and the formalisation bears on the allocation of research effort. This section reports the account, states its result, and marks its application. It proceeds by report and application. The method is exposition.

March (1991) distinguishes exploitation, which refines activities whose returns are known and near, from exploration, whose returns are distant, diffuse, and uncertain, and establishes that adaptive systems under-invest in exploration, since the returns to exploitation are realised sooner and attributed more reliably (formally modelled).

The application to the present argument is twofold. The result supplies a mechanism for the finding of Chapter 17 that the conservative strategy dominates for an individual producer while the field gains from the innovative one. And it identifies the divergence between what an individual optimises and what a system requires, which the separation of levels fixed in Chapter 2 holds apart and which Part V examines at the individual level.

19.4 INCREASING RETURNS AND LOCK-IN

A body of work explains how small early events produce large and durable structures, and its proximity to the present account requires the two to be separated with care. This section reports the account, states the mechanism, and states the respects in which the mechanism of Part XI differs. It proceeds by report followed by separation. The method is comparison.

Arthur (1989) and David (1985) establish that where returns to adoption increase with the number of prior adoptions, a small early advantage compounds, and a system settles on an arrangement selected by events of no intrinsic significance (formally modelled, with historical case material).

The mechanism requires an accumulating path along which returns rise, and adoptions that register and persist. Given these, the compounding proceeds without any appeal to transient effects.

The mechanism of Part XI differs in three respects. It operates where no accumulating path has formed, which is the condition the present book examines. It produces its growth over an interval and against a background of decay, in place of along a rising path. And it depends on a property of the receiving operator, non-normality, which plays no part in the account of increasing returns. The two accounts describe successive phases in place of competing for one, and Chapter 54 states the observation discriminating between them.

19.5 THE DEMAND-SIDE ACCOUNT OF INFRASTRUCTURE

An account of infrastructure resources supplies the strongest economic support available for the claim that constructing conditions differs in kind from dividing stocks. This section reports the account, states its argument, records the objection brought against it, and marks its position in the present book. It proceeds by report, argument, objection, and placement. The method is exposition followed by qualification.

Frischmann (2012) holds that infrastructure resources are inputs to a wide and unpredictable range of downstream productive activities, that the value they generate is realised in those activities in place of in the resource itself, and that the value so realised is neither observable nor priceable in advance (doctrine, with an extended argument and case material). The conclusion drawn is that such resources are frequently managed better under open access than under pricing, since pricing selects among downstream uses by a criterion that the unpredictability of those uses makes unreliable.

The objection brought against the account concerns provision. Open access addresses the allocation of a resource that exists, and the cost of bringing the resource into existence falls somewhere; an account emphasising downstream value understates the difficulty of financing supply (doctrine, in critical commentary).

The position in the present book is that the account supplies the economic form of the claim that a field is worth constructing, and that the objection identifies precisely the difficulty Part V addresses. A producer constructing a field bears the supply cost personally, and Chapter 22 examines whether the bearing is sustainable.

19.6 THE FORMATION PROBLEM IN PLATFORMS AND COLLECTIVE ACTION

Two literatures address the formation of a structure whose value to each participant depends on the participation of others, and they supply the nearest formal precedent for the threshold of Part XI. This section reports both, states what each establishes, and marks the transfer. It proceeds by reporting each in turn. The method is the transfer procedure fixed in Chapter 2.

Platform economics establishes that a structure serving two groups is valueless to each until the other is present, so that a platform must be carried through an initial interval in which it supplies little to anyone (formally modelled). The strategies described for that interval

consist in subsidising one side, beginning within a narrow segment where the required number is small, and supplying the missing side directly.

Collective action theory establishes a result of greater precision. Olson (1965) holds that large groups under-provide collective goods absent selective incentives. Marwell and Oliver (1985, 1993) establish that the shape of the function relating contributions to the collective good governs the outcome: where the function accelerates, early contributions are costly and later ones cheap, so that formation faces a severe initial difficulty, and a small group whose members are heterogeneous in interest and resources may bear the initial cost and induce wider contribution (formally modelled).

The transfer to the present account is substantial and is stated with its boundary. It supplies the asymmetry between the cost of the first crossing and the cost of later ones, and it supplies the result that heterogeneity within a small group substitutes for numbers, which bears directly on the case set out in Chapter 1. It withholds the collective good, which both literatures take as defined in advance and which is absent in the case Part XI treats, and it withholds the participants, whom platform economics assumes to exist and to be identifiable.

19.7 SCARCITY AS A LIMITATION AND SCARCITY AS AN OPENING

The literatures reported in Part IV employ a single sense of scarcity, and the present account requires a second. This section states the sense they employ, states the second, and refers its development forward. It proceeds by stating both senses. The method is conceptual.

Under the sense employed throughout Part IV, a scarcity is a limitation: a quantity is insufficient for the uses proposed for it, and the response is an allocation ranking those uses. Every difficulty reported in Chapters 16 to 18 arises within that sense.

Under a second sense, a quantity withheld from present use preserves a condition on which continued generation depends, in that the object generated remains unfinished and further contribution retains somewhere to go. The second sense has no place in the literatures reported here, which treat a quantity withheld as a quantity foregone. Chapter 49 develops the second sense and states the test separating it from the first.

19.8 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a resource, in that infrastructure is a stock whose management is at issue, and an institution, in that provision and open access are policies administered by parties with standing to administer them.

Platform economics presupposes a community, in that the groups a platform serves are assumed to exist and to be identifiable in advance, and a channel, in that a platform is the channel whose formation is examined.

Collective action theory presupposes a resource and a community, and it presupposes further that the collective good is defined before formation begins.

The region left untreated is the case in which the participants are unidentified and the good is undefined. Both formation literatures address the assembly of parties around an object already specified, and neither treats the case in which what a field is for becomes determinate through the same process by which the field forms.

19.9 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Assessment of the unprecedented computes a quantity with no arguments, so that a score assigned to an unprecedented proposal records proximity to precedent.

Adaptive systems under-invest in exploration, since the returns to exploitation are realised sooner and attributed more reliably, which supplies a mechanism for the dominance of the conservative strategy at the individual level.

Increasing returns to adoption compound a small early advantage into a durable arrangement. The mechanism requires an accumulating path, produces growth along it in place of against a background of decay, and makes no appeal to non-normality; it describes a phase following the one Part XI treats.

Infrastructure resources generate value in downstream activities that are neither observable nor priceable in advance, from which the literature concludes that open access frequently dominates pricing. The objection concerning the financing of supply identifies the difficulty Part V addresses.

Formation of a structure whose value depends on participation faces an initial interval in which it supplies little, and a small heterogeneous group may bear the initial cost where the production function accelerates. The transfer withholds the collective good and the participants, both of which those literatures take as given.

Scarcity in the literatures of Part IV is a limitation throughout. The second sense, in which a quantity withheld preserves the unfinishedness on which further contribution depends, is developed in Chapter 49.

The literature presupposes a resource, an institution, a community, and a channel, and it leaves untreated the case in which participants are unidentified and the good toward which they would assemble is undefined.

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PART V

THE MICRO-ECONOMICS OF A CONSTRAINED PRODUCER

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CHAPTER 20

SURVIVAL-CONSTRAINED OPTIMIZATION

20.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part IV examined a funder dividing a stock among many producers. Part V examines one producer holding a constrained endowment and choosing among uses of it, and the two questions are formally distinct in a manner that the separation of levels fixed in Chapter 2 holds apart. The present chapter opens Part V by establishing what the distinction consists in and which criterion of choice applies on the individual side of it.

The chapter undertakes five tasks. It establishes the formal difference between an allocation across producers and a trajectory of one. It reports the literature on non-ergodic growth, which supplies that difference with a mathematical statement. It reports the treatment of ruin in the sizing of commitments. It reports the criterion of choice developed for decision under a subsistence constraint. And it fixes the objective function this book employs, which none of the reported literatures supplies entire.

The chapter proceeds by establishing a distinction, reporting three literatures, and fixing an objective. The method is the reporting of established positions under the labels fixed in Chapter 2, with the objective of Section 20.6 assembled in this book from the materials reported.

20.2 AN ALLOCATION ACROSS PRODUCERS AND A TRAJECTORY OF ONE

The distinction on which Part V rests is easily stated and easily violated, and the violation is difficult to detect once the levels are left unnamed. This section states the distinction, gives the instance in which the violation occurs most often, and fixes the constraint governing the remainder of the Part. It proceeds by statement, instance, and constraint. The method is the application of a separation fixed in Chapter 2.

A funder dividing a stock among producers computes a quantity summed across a population. An outcome that destroys one producer's capacity while raising the aggregate is, on that computation, an improvement, since the population continues and the quantity summed over it has risen.

A producer holding a constrained endowment computes a quantity realised along one trajectory. An outcome that destroys that producer's capacity terminates the trajectory, and no subsequent period contributes to the quantity, since there are no subsequent periods.

The instance in which the violation occurs concerns the evidence reported in Chapter 17, that dispersal of support across many producers achieves more than concentration on a few. The finding is a property of the population computation, and it carries no implication for a single producer choosing between concentrating an endowment on one undertaking and dividing it among several. The present Part therefore imports no result from Part IV, and states its own criterion from materials proper to the individual case.

20.3 NON-ERGODIC GROWTH AND THE DIVERGENCE OF AVERAGES

A literature in the physics of economic processes supplies the distinction of Section 20.2 with a mathematical statement, and the statement is reported here together with the objections it has drawn. This section reports the result, states its interpretation, and reports the objections. It proceeds by report, interpretation, and objection. The method is the reporting of a contested position.

Peters (2019) and Peters and Gell-Mann (2016) establish that for a multiplicative process subject to random shocks, the growth rate of the average over an ensemble of trajectories exceeds the growth rate realised along almost every individual trajectory, and that the two coincide only where the process is ergodic (formally modelled). A decision criterion computing an expectation over the ensemble therefore recommends to an individual a course that the individual's own trajectory will almost surely fail to realise.

The interpretation in the present setting is direct. A statement that producers in a given position succeed at a given rate is a statement about an ensemble. A producer occupying that position lives one trajectory, and the quantity governing that producer's outcome is the growth rate realised along it. The asymmetry between a population of a thousand and a group of five, from which the questions of this book proceed, receives here its formal statement: an argument establishing that a population sustains itself establishes little about whether any given member does.

Two objections have been pressed. Doctor et al. (2020) hold that the treatment of dynamic and wealth-dependent risk within expected utility theory already accommodates the phenomena, so that the claimed novelty is overstated. A further line holds that the comparisons offered set the dynamic criterion against a static formulation of the alternative, which understates the alternative. The objections are recorded, and the present book employs the result for the distinction it makes visible in place of the decision theory built upon it.

20.4 RUIN AND THE SIZING OF COMMITMENTS

A second literature treats the consequences of commitment size where a sufficiently adverse outcome terminates the sequence, and its results bear on a producer's choice among uses of an endowment. This section reports the results, states their interpretation, and marks the respects in which the transfer strains. It proceeds by report, interpretation, and limitation. The method is the transfer procedure fixed in Chapter 2.

Jr. (1956) and the literature following it establish that where a sequence of favourable commitments is available and a sufficiently adverse outcome ends the sequence, the size maximising the growth rate realised over the sequence is a fixed fraction of the holding, and that sizes above it raise the probability of termination while lowering the growth rate realised (formally modelled).

The interpretation is that a producer committing an entire endowment to a single undertaking whose return is uncertain and distant raises the probability of terminating the sequence, and that the elevation is a property of the sizing in place of the quality of the undertaking.

Three respects strain the transfer, and each is stated. The result assumes a sequence of repeated commitments, while an undertaking of the kind at issue may be available once. It assumes divisibility, while a book, a system, or a programme of collection may admit no partial version. And it assumes a known favourable edge, while the assessment of an undertaking's prospects is the quantity Chapter 16 established to be unavailable in advance. The transfer therefore licenses the qualitative result that full commitment raises the probability of termination, and it withholds the computation of a fraction.

20.5 THE SAFETY-FIRST CRITERION AND ITS ANTECEDENTS

A third literature states a criterion of choice for a party facing a threshold below which continuation ends, and it is the closest of the three to the situation this book examines. This section reports the criterion, reports its application in the study of subsistence production, and states its consequence. It proceeds by report, application, and consequence. The method is exposition.

Roy (1952) states a criterion under which a party selects the course minimising the probability that the outcome falls below a level at which continuation is impossible, in place of the course maximising expected return (formally modelled). Telser states a related criterion under which expected return is maximised subject to a constraint on that probability.

The criterion has been applied in the study of production at subsistence. Lipton (1968) and the literature following establish that producers near subsistence select courses minimising the probability of falling below it, and that conduct appearing inefficient under an expected-return criterion is efficient under a safety-first one (doctrine, with field evidence attached).

The consequence for the present argument is that a producer whose continuation is in

question is described by a criterion that expected-return computations misdescribe, and that the description is available in the literature in a developed form. The consequence carries a difficulty which Section 20.6 addresses: a criterion minimising the probability of termination favours short intervals to return and low variance, and the undertakings this book examines have long intervals and high variance.

20.6 THE OBJECTIVE FUNCTION ADOPTED

The three literatures reported above supply three criteria, and the criteria give different answers to the question Part V poses. This section states the divergence, fixes the objective this book employs, and states what the fixing costs. It proceeds by stating the divergence and adopting an objective. The method is the assembly of an objective from reported materials.

The divergence is as follows. A criterion maximising expected output recommends the undertaking with the highest expected return, without regard to the probability that the producer's sequence ends first. A criterion maximising the growth rate realised along a trajectory recommends sizing that avoids termination while compounding. A criterion minimising the probability of termination recommends the course with the shortest interval to return and the least variance, which excludes every undertaking of the kind this book examines.

Definition 20.1. (The objective under constraint). *Under severe constraint the producer maximizes the time-average growth rate of generative capacity subject to a constraint on the probability of ruin.*

The objective is two-part by construction. Its first part is drawn from the literature of Section 20.4 and directs the producer toward what compounds; its second part is drawn from the literature of Section 20.5 and excludes courses whose probability of termination exceeds a stated level. The quantity compounding is generative capacity in the sense of Chapter 23, in place of output or income.

The fixing costs two things and both are stated. It requires a level at which the constraint binds, and no principled means of setting that level is available, so that the objective guides comparison among courses in place of computing one. And it renders the objective sensitive to the interval over which the growth rate is computed, since a course with a long interval to return may satisfy the constraint over a long horizon and violate it over a short one. Chapter 22 confronts the second directly, in the case of a producer considering the construction of a field.

20.7 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its

questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a resource, in that its subject is the disposition of a holding, and it presupposes a measure of that holding, since growth rates and thresholds are computed upon it.

It presupposes neither a community nor an institution nor a channel, which distinguishes it from every literature reported in Part IV and accounts for its usefulness here.

It presupposes a recognition system in a limited respect. The returns whose growth is computed must be realised and recorded, and the literature takes the realisation as unproblematic.

The region left untreated is the case in which the holding admits of no measure. A producer's generative capacity has no stock measure of the kind these results assume, and the objective adopted in Section 20.6 therefore inherits a difficulty the source literature does not face. Chapter 52 states the quantities by which the account proposes to assess the difference.

20.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

An allocation across producers and a trajectory of one are formally distinct computations. An outcome terminating one producer's capacity is an improvement on the first computation where the aggregate rises, and it ends the sequence on the second. No result from Part IV enters Part V.

For a multiplicative process subject to random shocks, the growth rate of the ensemble average exceeds the growth rate realised along almost every trajectory. The asymmetry between a large population and a small group receives its formal statement here, and the objections pressed against the decision theory built upon the result are recorded.

Where a sufficiently adverse outcome ends a sequence, commitment size above a fixed fraction raises the probability of termination while lowering the growth rate realised. The transfer licenses the qualitative result and withholds the computation, since the case at issue lacks repetition, divisibility, and a known edge.

A criterion minimising the probability of falling below a level at which continuation ends describes production at subsistence, and it favours short intervals to return and low variance, which excludes the undertakings this book examines.

The objective adopted is two-part: the time-average growth rate of generative capacity is maximised subject to a constraint on the probability of ruin. The objective guides comparison among courses in place of computing one, and it is sensitive to the interval over which growth is computed.

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CHAPTER 21

STRATEGY UNDER SCARCITY

21.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 20 fixed an objective for a producer holding a constrained endowment and left open the question of how such a producer proceeds. A literature in the study of new ventures addresses that question directly, having formed around the observation that parties beginning without resources proceed by a logic differing from the one that planning models describe.

This chapter reports that literature. It undertakes four tasks. It reports the account of decision proceeding from available means under an affordable-loss constraint. It reports the account of resource construction from materials at hand. It reports the treatment of staged commitment under option value. And it reports the evidence on organisational slack, which bears against the position this Part develops and is reported here for that reason.

The chapter proceeds by reporting four bodies of work and closes with the presupposition diagnostic. The method is the reporting of established positions under the labels fixed in Chapter 2.

21.2 DECISION FROM AVAILABLE MEANS UNDER AN AFFORDABLE LOSS

An account of decision under uncertainty formed in the study of new ventures inverts the order that planning models assume, and the inversion bears on the objective fixed in Chapter 20. This section reports the account, states its components, and reports the evidence bearing on it. It proceeds by report, components, and evidence. The method is exposition.

Sarasvathy (2001) distinguishes causal logic, which fixes a goal and acquires the means to reach it, from effectual logic, which begins from means already available and forms goals from what those means permit, and holds that the second is characteristic of decision under uncertainty of the Knightian kind (doctrine, with an extended argument and protocol evidence).

Three components compose the second logic. The starting point is the party's own identity, knowledge, and connections. The commitment criterion is affordable loss, under which a course is undertaken where its worst outcome is one the party can absorb, in place of expected

return. And contingency is treated as material for the formation of goals in place of deviation from a plan.

The evidence bearing on the account is of two kinds. Chandler and colleagues (2011) established that the components are measurable and that effectual logic is multidimensional (empirically tested; instrument validation, single population). Evidence that parties proceeding effectually achieve better venture outcomes than parties proceeding causally is mixed and largely correlational, and the account is reported here as a description of conduct under uncertainty in place of a demonstrated superiority.

The bearing on the present argument is that affordable loss is the commitment criterion corresponding to the second part of the objective fixed in Chapter 20, arrived at independently in a literature concerned with a different population.

21.3 RESOURCE CONSTRUCTION FROM MATERIALS AT HAND

A second account addresses what a party does with materials that the environment treats as worthless, and it supplies the treatment of constraint that Part V requires. This section reports the account, states its central mechanism, and marks its relation to the present argument. It proceeds by report, mechanism, and relation. The method is exposition.

Baker and Nelson (2005) hold that parties operating under severe constraint proceed by bricolage, combining materials at hand for purposes other than those for which the materials were intended, and that the parties doing so decline to enact the limitations that the prevailing definitions of a resource environment impose (empirically tested; qualitative study of a substantial number of firms, with theory built from the cases).

The central mechanism is the refusal of an enacted environment. A resource environment is not given but constituted by the definitions parties apply to it, and a party applying different definitions finds materials where others find none. The mechanism is distinct from resourcefulness in the ordinary sense, since it concerns the categories under which materials are described in place of the ingenuity with which they are used.

The relation to the present argument is that the mechanism operates on the same object as the diagnosis of Chapter 45. Expression constraint was defined there as a condition in which the interpretation in force admits no occasion for the application of a valid rule, and bricolage is the practice of applying a different interpretation to one's own materials. The literatures approach one object from the sides of production and of reception respectively.

21.4 STAGED COMMITMENT AND THE VALUE OF AN OPTION

A third account treats commitment made in stages under uncertainty, and it supplies the form in which the objective of Chapter 20 is satisfied in practice. This section reports the

account, states its mechanism, and marks its limitation. It proceeds by report, mechanism, and limitation. The method is exposition.

McGrath (1999) holds that a commitment made in stages, each of which may be discontinued, carries a value distinct from the expected return of the undertaking, since the party retains the possibility of continuing where early information is favourable and of discontinuing where it is not (doctrine, with formal antecedents in the valuation of options).

The mechanism bears on the objective directly. A staged commitment satisfies a constraint on the probability of termination that the same undertaking, committed entire at the outset, would violate, and it does so without altering the undertaking itself.

The limitation is that staging requires the undertaking to admit of division into stages whose early information is informative. An undertaking whose returns arrive only on completion admits of no such division, and the literature supplies no treatment of that case. Chapter 22 examines an undertaking of precisely that shape.

21.5 SLACK AND THE CONSEQUENCES OF ITS SCARCITY

One body of evidence in this literature bears against the position Part V develops, and it is reported here in the place its weight requires. This section reports the finding, states its implication for the population this book examines, and marks what the implication costs the account. It proceeds by report, implication, and cost. The method is the reporting of evidence that runs against the argument.

Nohria and Gulati (1996) established that the relation between organisational slack and innovation takes an inverted form: some slack is required, since exploration consumes resources whose return is uncertain, and excessive slack is associated with reduced discipline in the selection of undertakings (empirically tested; observational study across a large number of business units).

The implication for the population this book examines is unfavourable. A producer under severe constraint holds slack near zero, and the finding indicates that a party in that position is among those least able to sustain exploration. The account of Part XI holds that formation proceeds through perturbations whose returns are uncertain, which is exploration in the sense this evidence measures.

The cost to the account is stated rather than absorbed. The evidence establishes that the conditions this book examines are unfavourable to the conduct the book describes, and the account is therefore committed to holding that formation under those conditions is infrequent in place of routine. Chapter 53 records that its corpus over-represents formations that occurred, and the present finding indicates the direction of the resulting bias.

21.6 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a resource in the form of means already held, which its central account takes as the starting point of decision, and it presupposes a party's identity, knowledge, and connections as given.

It presupposes a channel, since the ventures it studies place products before parties who may purchase them, and a recognition system in the form of a market that returns a verdict on what is placed.

It presupposes no institution, and it presupposes a community only in the limited form of the connections a party already holds.

The region left untreated is the case in which the verdict-returning arrangement fails to process what is placed before it. The ventures this literature studies face markets that assess their products and decline them where they are unwanted; the producer this book examines faces an arrangement whose categories may admit the contribution to no assessment at all. The distinction between a course declined and a course unassessed has no counterpart in this literature.

21.7 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Decision under uncertainty proceeds from means already held, forms goals from what those means permit, and commits under an affordable-loss criterion. The criterion corresponds to the second part of the objective fixed in Chapter 20, arrived at independently.

Parties under severe constraint construct resources by applying definitions other than the prevailing ones to the materials at hand. The mechanism operates on the same object as the diagnosis of Part X, approached from the side of production.

Commitment made in stages satisfies a constraint on the probability of termination that the same undertaking committed entire would violate. Staging requires an undertaking divisible into stages whose early information is informative, and undertakings returning only on completion admit of no such division.

The relation between slack and exploration takes an inverted form, so that a producer holding slack near zero is among those least able to sustain exploration. The account is thereby committed to holding that formation under the conditions this book examines is infrequent, and the direction of the bias in the corpus of Chapter 53 is indicated.

The literature presupposes means already held, a channel, and an arrangement returning a verdict, and it leaves untreated the distinction between a course declined and a course that receives no assessment.

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CHAPTER 22

THE CONSTRUCTION OF INFRASTRUCTURE UNDER CONSTRAINED MEANS

22.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 19 reported an account under which infrastructure generates its value in downstream activities that cannot be priced in advance, and recorded the objection that the account understates the difficulty of financing supply. Chapter 20 fixed an objective sensitive to the interval over which growth is computed. The present chapter examines the case in which one producer bears the supply cost personally and the interval to return is long.

The chapter undertakes six tasks. It reports the incentives under which parties contribute to shared infrastructure without payment. It reports the treatment of reputation as an accumulating holding. It reports the evidence on the cost of maintaining infrastructure once built. It reports what is known of the frequency with which such constructions succeed. It examines the choice between constructing infrastructure and coupling into infrastructure already in operation. And it states the conditions under which construction is warranted.

The chapter proceeds by reporting four bodies of evidence, examining a choice, and stating conditions. The method is the reporting of established positions under the labels fixed in Chapter 2, with the conditions of Section 22.7 assembled in this book from the materials reported.

22.2 THE INCENTIVES SUSTAINING UNPAID CONTRIBUTION TO SHARED INFRASTRUCTURE

Parties contribute substantial effort to infrastructure from which they receive no direct payment, and an economic account of the practice bears on a producer considering the same course. This section reports the account, states the mechanism it identifies, and marks the condition on which the mechanism depends. It proceeds by report, mechanism, and condition. The method is exposition.

Lerner and Tirole (2002) hold that unpaid contribution to open software is sustained by signalling: a contribution visible to parties who allocate positions and resources conveys information about the contributor's ability, and the value of the signal justifies the effort (formally modelled, with case material). Von Krogh and colleagues describe a private-

collective model under which contributors obtain benefits from the process of contribution itself alongside the public good produced (doctrine). Von Hippel establishes that users construct innovations for their own use and release them at low cost, and that toolkits lowering the cost of others' contributions extend the practice (doctrine, with survey evidence).

The mechanism identified is signalling, and the condition on which it depends is an audience positioned to read the signal. A contribution visible to parties who allocate conveys information; a contribution visible to no such party conveys none, whatever its quality.

The condition bears directly on the population this book examines. A producer whose contributions reach no party positioned to allocate is a producer for whom the signalling mechanism supplies no return, and the account therefore explains unpaid contribution among parties already coupled to an allocating community while leaving the constrained case unexplained.

22.3 REPUTATION AS AN ACCUMULATING HOLDING

The signalling account presupposes that a signal accumulates into a holding, and the treatment of that holding bears on the objective fixed in Chapter 20. This section reports the treatment, states its properties, and marks its position in the argument. It proceeds by report and placement. The method is exposition.

Spence (1973) establishes that a costly action conveys information about an unobservable quality where its cost differs across parties of differing quality, and that the action functions as a signal for that reason (formally modelled). Reputation in a labour market accumulates from such signals and is drawn upon in subsequent allocations.

Two properties bear on the present argument. A reputation is an accumulating holding, which places it among the quantities to which the growth-rate criterion of Chapter 20 applies. And its accumulation requires that each signal be read, which returns the condition stated in Section 22.2.

The position in the argument is that reputation supplies one component of the construct defined in Chapter 23, and supplies it under a condition that the constrained case fails.

22.4 THE RECURRING COST OF MAINTENANCE

Infrastructure once constructed requires maintenance, and the character of that requirement bears against the course this Part might otherwise recommend. This section reports the evidence, states the property that makes it decisive, and draws the consequence for the objective. It proceeds by report, property, and consequence. The method is the reporting of evidence that constrains the argument.

Eghbal (2016, 2020) documents that widely used digital infrastructure is maintained largely by unpaid parties, that the maintenance burden rises with adoption, and that the

binding scarce quantity for a maintainer is that maintainer's own attention (doctrine and field reporting, with extensive interview material; no measurement programme attached).

The property that makes the evidence decisive is that maintenance has no terminating condition. A written contribution is completed and ceases to consume effort. Infrastructure in use requires correction, adaptation, and the reception of those who use it, for as long as it remains in use, and the requirement rises with success.

The consequence for the objective fixed in Chapter 20 is severe. A relation whose maintenance cost rises with the returns it generates approaches the generative threshold from an unfavourable direction, and an undertaking of this shape may consume more as it succeeds. A producer constructing infrastructure therefore requires a means of transferring the maintenance to others, and Chapter 23 states the requirement in the form the account employs.

22.5 THE FREQUENCY WITH WHICH CONSTRUCTIONS SUCCEED

A course recommended to a producer requires a statement of how often it succeeds, and the available evidence on that question is weak in a manner the account must record. This section states what is known, states the properties of the record, and draws the consequence. It proceeds by report, properties, and consequence. The method is the statement of a limit on the available evidence.

Constructions of the kind at issue comprise platforms serving two groups, journals founded outside established publishers, tools released for the use of others, and communities convened around a question. Platform economics holds that the majority fail before reaching the participation at which they become self-sustaining (doctrine; the figures circulated in that literature derive from practitioner sources in place of a census). Abandonment of released software projects and the lapse of small independent journals are widely reported and irregularly measured.

Two properties of the record bear on its use. Constructions that lapse leave records thinner than constructions that persist, so that any estimate assembled from the visible cases overstates the rate of success. And no population of attempts is defined anywhere in the literature, so that a rate has no denominator.

The consequence is that the account states no frequency. It states conditions under which construction is warranted, in Section 22.7, and it declines to state how often those conditions obtain or how often construction succeeds where they do.

22.6 COUPLING INTO INFRASTRUCTURE AND THE CONSTRUCTION OF INFRASTRUCTURE

A producer facing the conditions this book examines chooses between constructing a channel and coupling into channels already in operation, and the materials reported above bear on

that choice. This section states the choice, states the argument favouring one course, and states the default the argument establishes. It proceeds by statement, argument, and default. The method is the assembly of an argument from reported materials.

The choice is between two dispositions of the same effort. A producer may construct a publication venue, a tool, or a community, bearing the construction and maintenance costs recorded above. Or a producer may place contributions into venues, tools, and communities already in operation, bearing the cost of composing contributions those arrangements will receive.

Three considerations favour coupling. Chapter 18 established that the binding constraint in a communicating system is assessing capacity in place of placement infrastructure, and a constructed channel supplies placement infrastructure to a producer who has it already. Section 22.2 established that the signalling return requires an audience positioned to read, and a newly constructed arrangement holds none. And an arrangement holding few contributions and few participants conveys a signal of its own: the absence of participation is visible, and it is read.

The default the argument establishes is coupling. A producer under the conditions this book examines places contributions into arrangements already in operation, and constructs an arrangement only where a condition stated in Section 22.7 obtains.

22.7 THE CONDITIONS LICENSING CONSTRUCTION

The default stated in Section 22.6 admits exceptions, and the conditions defining them are stated here in the form the account employs. This section states three conditions, gives the ground of each, and fixes their status. It proceeds by stating each condition with its ground. The method is the assembly of conditions from the materials reported in Parts IV and V.

Requirement 22.1. (The conditions licensing construction). *Construction of new infrastructure is warranted where the operative criteria of the available arrangements admit no contribution of the kind the producer composes; where the construction lowers the cost at which parties other than the producer contribute; or where a small and heterogeneous group is reachable whose participation carries the arrangement past the level at which it sustains itself.*

The first condition is the diagnosis of Part X applied to the choice. Where an arrangement assigns a producer's contributions to no category, coupling into that arrangement returns nothing, and the consideration favouring coupling lapses. The condition is narrow, and a producer whose contributions are received and declined fails it.

The second condition is drawn from the account of toolkits reported in Section 22.2. A construction lowering the cost of others' contributions creates couplings by its own operation,

which is the property Chapter 50 identifies as decisive.

The third condition is drawn from the theory of critical mass reported in Chapter 19. Where the production function accelerates and a reachable group is heterogeneous in interest and resources, the initial cost may be borne, and the arrangement passes the level at which participation sustains it.

The status of the conditions is that they are jointly sufficient for the choice to be defensible and severally insufficient. A construction satisfying none of them is a construction undertaken against the default, and the maintenance evidence of Section 22.4 indicates what such a construction costs.

22.8 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a community, in that unpaid contribution is made to a body of users and read by a body of allocators, and a channel, in that the contributions it studies are released where others encounter them.

It presupposes a recognition system, since the signalling mechanism requires parties who read signals and allocate upon them.

It presupposes a resource in the limited form of the contributor's own time, and it presupposes no institution.

The region left untreated is the position of a contributor whose releases are read by no party positioned to allocate. The literature explains contribution by the return the signal carries, and it contains no account of contribution where the signal is unread. The population this book examines occupies that position, and the account of Part XI supplies what this literature leaves without explanation: a contribution creating a coupling returns something other than a signal.

22.9 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Unpaid contribution to shared infrastructure is sustained by signalling, which requires an audience positioned to read the signal. The mechanism supplies no return to a producer whose contributions reach no such party.

Reputation accumulates from signals and is drawn upon in later allocations, which places it among the quantities to which the growth criterion applies, under a condition the constrained case fails.

Maintenance of infrastructure has no terminating condition, and its cost rises with adoption. An undertaking whose maintenance cost rises with its returns approaches the generative threshold from an unfavourable direction, and a means of transferring maintenance is therefore required.

The frequency with which constructions succeed is unmeasured, and the visible record overstates it, since constructions that lapse leave thinner records and no population of attempts is defined. The account states no frequency.

Coupling into arrangements already in operation is the default, on the grounds that assessing capacity rather than placement infrastructure is the binding constraint, that a new arrangement holds no audience positioned to read, and that an arrangement holding few participants conveys that condition visibly.

Construction is warranted where the available arrangements admit no contribution of the kind composed, where the construction lowers the cost at which others contribute, or where a reachable heterogeneous group carries the arrangement past the level at which it sustains itself.

CHAPTER 23

GENERATIVE CAPITAL

23.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part V has treated a producer choosing among uses of a constrained endowment, and the quantity that endowment is spent to accumulate has been named at several points without definition. Chapter 20 fixed an objective directing a producer toward the growth of generative capacity; Chapter 22 established a default favouring coupling and stated the conditions under which construction is warranted. The construct these results employ requires a definition, and the arrangement it names requires an account of its functions.

The chapter undertakes five tasks. It defines the construct. It separates the construct from two established ones with which it would otherwise be identified. It states the account of capital from which the construct takes its form. It defines the arrangement in which generative capital is held, and gives the argument for its three functions. And it states the condition under which such an arrangement ceases to consume the effort of the party that constructed it.

The chapter proceeds by definition, separation, and the statement of a condition. The method is stipulative, with the separations of Section 23.3 drawn against literatures reported in Parts III and IV.

23.2 THE CONSTRUCT DEFINED

The quantity a producer accumulates under the objective of Part V requires a definition distinguishing it from the holdings that objective excludes. This section defines it, states its components, and marks its relation to the quantities of the surrounding literatures. It proceeds by definition followed by components. The method is stipulative.

Definition 23.1. (Generative capital). *Generative capital is a party's accumulated capacity to bring further relations into being, held in the couplings, standing, and instruments through which that party's contributions reach others and return upon that party.*

Four components compose the holding. Couplings are relations through which a contribution passes and a response returns. Standing is the accumulated attention described in Chapter 18, drawn upon when a contribution is assessed. Instruments are the tools, archives, and venues through which contributions are composed and placed. And admissible form is the acquired capacity to compose contributions that a receiving system will assign, which Chapter 50 established to be a condition of amplification.

The relation to surrounding quantities is one of orientation. Financial capital is a stock drawn down by use; the holding defined here is augmented by the use that places contributions into couplings, and diminished by disuse, since couplings lapse where nothing passes through them.

23.3 THE SEPARATION FROM ESTABLISHED CONSTRUCTS

Two established constructs stand close enough to the definition above that an account failing to separate them would be read as renaming one of them. This section states each, states the respect in which the present construct differs, and marks what the separation costs. It proceeds by two comparisons. The method is comparison.

The first is relational capital, the dimension of social capital comprising the trust, obligations, and identification embedded in existing relations (doctrine, within organisational research). The construct records a stock of what present relations contain. The present construct is oriented forward: it records a capacity to bring relations into being that do not yet exist, and a party may hold extensive trust within a settled set of relations while holding little capacity to form further ones.

The second is network capital, the instrumental resources made available to a party through interpersonal ties (doctrine, within sociology). The construct records what a party may draw from ties already held. The present construct includes the capacity to form ties, and the difference appears in the case of a party whose existing ties are few and whose composed contributions reliably create further ones.

The separation costs the account a claim to novelty of subject matter. Trust, ties, and standing are studied in both literatures, and the present construct redescribes them under an orientation toward formation. What the redescription adds is its combination with the criterion of Chapter 48, under which a holding is assessed by whether the relations composing it return what their maintenance consumes.

23.4 THE ACCOUNT OF CAPITAL FROM WHICH THE CONSTRUCT TAKES ITS FORM

The construct takes its form from an account of capital that treats a holding as structured in place of homogeneous, and stating that debt fixes what the construct claims. This section

reports the account, states the property it supplies, and marks its application. It proceeds by report and application. The method is exposition.

Lachmann (1956) holds that capital is heterogeneous, that its elements stand in relations of complementarity, and that a holding's productive significance lies in the structure of those relations in place of the sum of its elements (doctrine, within economics).

The property supplied is that a holding may be assessed by its structure. Two producers holding the same number of couplings differ where the couplings of one reach parties coupled to one another and the couplings of the other reach parties positioned in regions the producer does not otherwise reach, which is the topological property Chapter 50 established as decisive.

The application is that generative capital admits of no scalar measure, and that the quantities of Chapter 52 assess its components separately. The account inherits the difficulty recorded in Chapter 20, that the objective adopted there computes a growth rate on a holding admitting of no single measure, and it locates the difficulty in the character of the holding in place of a defect of measurement.

23.5 THE ARRANGEMENT IN WHICH GENERATIVE CAPITAL IS HELD

Generative capital is held in an arrangement, and the arrangement requires a definition and an account of what it does. This section defines it, states its three functions, and gives the argument that the three are jointly required. It proceeds by definition, functions, and argument. The method is stipulative followed by analytical.

Definition 23.2. (The generative field). *A generative field is an arrangement performing three functions: it retains, in that a contribution placed within it persists; it couples, in that contributions placed within it may interact; and it amplifies, in that a contribution placed within it may issue in a structure exceeding its own scale.*

The argument that the three are jointly required proceeds by removing each in turn. An arrangement retaining and coupling without amplifying returns each contribution to a fixed circle, and a producer within it accumulates couplings whose number is bounded by the circle. An arrangement retaining and amplifying without coupling transmits contributions to many parties who make no response, which Chapter 47 distinguishes from coupling and which returns nothing to the producer. An arrangement coupling and amplifying without retaining loses each contribution, so that a party encountering the producer later finds nothing to encounter, and the accumulation on which the objective of Part V depends fails.

The three correspond to the terms of the model. Retention holds the state on which the linear term operates; coupling supplies the term nonlinear in the state; and amplification is the transient growth Chapter 47 establishes. The definition is therefore fixed at three functions and admits no fourth, in accordance with the convention recorded in Chapter 2.

23.6 THE CONDITION UNDER WHICH AN ARRANGEMENT CEASES TO CONSUME

Chapter 22 established that maintenance has no terminating condition and rises with adoption, and an account recommending the construction of arrangements owes a statement of how a constructing party is released. This section states the condition, states the two forms it takes, and marks what follows for the design of a construction. It proceeds by stating a condition and its forms. The method is the application of the criterion of Chapter 48.

The condition is the criterion of Chapter 48 applied to the arrangement in place of a relation. An arrangement crosses the generative threshold where the maintenance it consumes is supplied by the parties whose contributions it retains and couples, in place of by the party that constructed it.

The condition takes two forms. Under the first, maintenance is distributed: parties using the arrangement assume portions of the correction, adaptation, and reception the arrangement requires, and the constructing party's share falls toward the share of any other participant. Under the second, maintenance is transferred: a body other than the constructing party assumes it entire, which is the passage from a construction to an institution and the case Chapter 55 treats as infrastructure arising as a consequence.

What follows for design is that a construction admitting neither form is a construction whose maintenance the constructing party bears without terminus. The conditions licensing construction fixed in Chapter 22 are therefore supplemented by a condition on release, and a producer satisfying the first without the second has undertaken a commitment the objective of Part V excludes.

23.7 THE CONDITIONS PRESUPPOSED BY THE NEIGHBOURING CONSTRUCTS

The constructs from which the present one is separated carry presuppositions of their own, and the diagnostic is applied to them here. This section states those conditions and marks the region they leave untreated. It proceeds by applying the categories to the two constructs of Section 23.3. The method is the diagnostic.

Relational capital presupposes a community, since the trust and obligations it records are held within an existing set of relations, and a recognition system, since the identification it records is with a body that identifies its members.

Network capital presupposes a community and a channel, since the resources it records travel along ties already held.

Both presuppose that the relations composing the holding exist. The region left untreated is the formation of the first relations, where a party holds ties too few to draw upon and the holding to be accumulated is the capacity to form further ones. The present construct is oriented to that region, and the orientation is the respect in which it departs from both.

23.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Generative capital is a party's accumulated capacity to bring further relations into being, held in couplings, standing, instruments, and admissible form. It is augmented by the use that places contributions into couplings and diminished by disuse.

The construct is separated from relational capital and from network capital by its orientation toward relations that do not yet exist. The separation costs a claim to novelty of subject matter, and what the redescription adds is its combination with the criterion of Chapter 48.

Capital is heterogeneous and its significance lies in the structure of complementarities among its elements. Generative capital accordingly admits of no scalar measure, and its components are assessed separately.

A generative field retains, couples, and amplifies. The three are jointly required, as removing each in turn establishes, and they correspond to the state, the nonlinear term, and the transient growth of the model of Part XI.

An arrangement ceases to consume the constructing party's effort where its maintenance is supplied by the parties whose contributions it retains and couples, either by distribution among them or by transfer to a body assuming it entire. A construction admitting neither form commits its constructor without terminus.

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PART VI

THE THEORY AND PRACTICE OF SUPPORT

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CHAPTER 24

THE FOUNDATIONS OF ASSISTANCE

24.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part VI examines assistance as a relation between a party bearing a cost and a party whose capacity is at issue, and it opens with the question of why such relations exist at all. The answer bears on the present account at one point in particular: the pattern of return that generative support produces is claimed in Chapter 51 to exceed an established account of reciprocity in a single respect, and the establishment of that respect requires the account to be reported first.

The chapter undertakes five tasks. It reports the explanations of assistance developed in the study of cooperation. It reports the treatment of return that arrives from parties other than the recipient, which is the nearest precedent for the pattern this book describes. It reports the account of the gift and the obligations it carries. It reports the traditions distinguishing solidarity from charity. And it states which axis of the pattern reported in Chapter 51 remains unclaimed by the accounts assembled here.

The chapter proceeds by reporting four bodies of work and closes with a statement of position and the presupposition diagnostic. The normative literature on obligations to assist is reported in Part VII and referred to here. The method is the reporting of formal and doctrinal work under the labels fixed in Chapter 2.

24.2 THE EXPLANATIONS DEVELOPED IN THE STUDY OF COOPERATION

Assistance at a cost to the assisting party requires an explanation within any account treating parties as pursuing their own advantage, and three explanations have been established. This section reports them, states the conditions each requires, and marks the limit they share. It proceeds by report followed by limitation. The method is exposition.

Hamilton (1964) established that assistance directed toward parties sharing a lineage is sustained where the benefit weighted by relatedness exceeds the cost (formally modelled). Trivers (1971) established that assistance is sustained between parties meeting repeatedly, where the prospect of return in a later encounter compensates the present cost (formally modelled). Fehr and Gächter (2002) established that parties incur costs to punish those who

withhold contribution, and that cooperation is sustained at higher levels where such punishment is available (empirically tested; laboratory experiments with substantial replication).

The limit the three share is that each requires a condition the case examined in this book fails. Assistance to a producer outside a lineage, met once, and unable to punish withholding falls outside all three, and the accounts explain the assistance recorded in Chapter 53 only where those conditions happen to obtain.

24.3 RETURN ARRIVING FROM PARTIES OTHER THAN THE RECIPIENT

An account of cooperation without repeated meeting supplies the nearest precedent for the pattern this book describes, and its precision determines what remains for the present account to claim. This section reports the account, states its two forms, and marks what it covers. It proceeds by report, forms, and coverage. The method is exposition.

Nowak and Sigmund (1998, 2005) established that cooperation is sustained without repeated meeting between the same parties, since assistance confers on the assisting party a standing that attracts assistance from third parties, and that the mechanism operates where information about past conduct circulates (formally modelled, with experimental support).

The account takes two forms. Under the first, a party who assists is assisted in turn by others who observe the assistance. Under the second, a party who has been assisted assists a further party, so that assistance travels onward in place of returning (formally modelled).

What the account covers is return separated from the transfer in two respects. Return arrives later than the transfer, and return arrives at or from parties other than those between whom the transfer was made. Both respects are established, and neither is available for the present account to claim.

24.4 THE GIFT AND THE OBLIGATIONS IT CARRIES

A tradition in social anthropology treats transfer as constituting a relation in place of discharging one, and its account bears on the description of support in Chapter 51. This section reports the account, states its central finding, and marks its bearing. It proceeds by report, finding, and bearing. The method is exposition.

Mauss (1925) holds that the gift is a total social fact governed by three obligations, to give, to receive, and to reciprocate, and that a transfer so governed establishes and maintains a relation between the parties (doctrine, foundational, with comparative ethnographic material). Titmuss (1970) examined donation to strangers and held that a system organised around such donation may outperform a market in the same good (doctrine, with comparative material). Godbout and Caillé (1992) hold that the gift combines interest in oneself with interest in another and is irreducible to exchange (doctrine).

The central finding is that a transfer establishing a relation differs in kind from a transfer discharging an obligation, and that the difference resides in what the transfer leaves behind between the parties.

The bearing on this book is that the distinction is drawn on the relation and the obligation it carries, in place of on the recipient's subsequent capacity. The tradition therefore supplies a vocabulary for the relational character of transfer and supplies no criterion of the kind Chapter 51 requires.

24.5 SOLIDARITY, MUTUAL AID, AND THE CRITIQUE OF CHARITY

A further tradition distinguishes assistance conducted among parties standing as equals from assistance conducted from a position of advantage, and the distinction bears on the asymmetry examined in Chapter 30. This section reports the tradition, states the distinction, and reports the critique it makes. It proceeds by report, distinction, and critique. The method is exposition.

Kropotkin (1902) held that mutual aid among members of a species is a factor in its development comparable to competition (doctrine). A contemporary literature distinguishes mutual aid, in which parties assist one another within a shared condition, from charity, in which a party holding advantage assists parties lacking it (doctrine, with movement material).

The critique made by the tradition is that assistance organised as charity leaves the conditions producing the need in place, and that its institutional forms may direct the energies of those who would otherwise contest those conditions into the administration of relief (doctrine, with case material from the funding of social movements).

The bearing on this book is on Chapter 26, where the institutional form of assistance is examined, and on Chapter 30, where the position of the assisting party is treated as a relation rather than a role.

24.6 THE POSITION OF THE CROSS-SCALE RETURN

The accounts reported above establish two of the three respects in which the pattern described in Chapter 51 departs from exchange, and the third is stated here together with its status. This section states the two established respects, states the third, and marks what the present book claims for it. It proceeds by statement and qualification. The method is the placement of a claim against reported prior art.

The two established respects are the separation of return from the transfer in time and its separation in identity. Both are covered by the accounts reported in Section 24.3, and the present book claims neither.

The third respect concerns the level of organisation at which a return arrives. A transfer made to a party may return as a practice adopted by a group, as an arrangement adopted by an institution, or as a distinction available to a field, none of which is an act performed by a

party of the kind that received the transfer. The accounts of Section 24.3 model parties assisting parties, across time and across identity, and they model no passage between levels.

What the present book claims for the third respect is confined. It records that such passages occur, states that the criterion of Chapter 49 applies to them, and supplies no formal treatment. A formal account would require a model in which acts by parties and arrangements adopted by collectivities enter a single accounting, and this book supplies none.

24.7 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a community, since the mechanisms it describes require parties who encounter one another repeatedly or who observe one another's conduct, and a recognition system in the limited form of circulating information about past conduct, on which the account of Section 24.3 depends.

It presupposes a channel along which that information travels, and it presupposes no institution and no resource beyond what the parties transfer.

The region left untreated is assistance where information fails to circulate. The mechanisms reported here are sustained by the standing that assistance confers, and standing requires parties who observe. A transfer to a party whose subsequent conduct is observed by no one supplies the assisting party with nothing these accounts recognise, and the case falls outside their scope.

24.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Assistance at a cost is explained by shared lineage, by repeated meeting, and by the availability of costly punishment. Each requires a condition that the case examined in this book fails.

Cooperation is sustained without repeated meeting where assistance confers a standing that attracts assistance from third parties, and where assistance travels onward to parties other than the source. Return separated from the transfer in time and in identity is thereby established, and neither is available for the present account to claim.

A transfer establishing a relation differs in kind from a transfer discharging an obligation, and the tradition treating the difference supplies a vocabulary for the relational character of transfer without supplying a criterion.

Assistance among parties within a shared condition is distinguished from assistance from a position of advantage, and the critique holds that the second leaves the conditions producing the need in place.

The pattern described in Chapter 51 departs from exchange in three respects, of which two are established elsewhere. The third, in which a return arrives at a different level of organisation from the transfer, is recorded as an observation and receives no formal treatment in this book.

The literature presupposes a community, circulating information about past conduct, and a channel along which it travels, and it leaves untreated assistance where such information fails to circulate.

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CHAPTER 25

THE PSYCHOLOGY OF HELPING AND OF BEING HELPED

25.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The criterion stated in Chapter 48 distinguishes support whose withdrawal leaves a relation standing from support whose withdrawal collapses it, and the criterion was reported there as drawn from a developmental account of scaffolded learning. The present chapter reports that account together with the wider experimental literature on helping relations, which supplies this Part with its strongest evidence.

The chapter undertakes six tasks. It reports the finding that a support input may destroy the capacity it rewards. It reports the distinction between two kinds of help, which is the nearest prior statement of the pair defined in Chapter 51. It reports the reversal of the standard account of passivity under uncontrollable conditions. It reports the finding that support registered as support carries a cost the recipient bears. It reports the developmental account from which the criterion is drawn, together with the boundary of that transfer. And it reports a practice tradition in which accompaniment is distinguished from the supply of solutions.

The chapter proceeds by reporting six bodies of work and closes with the presupposition diagnostic. The method is the reporting of experimental and doctrinal work under the labels fixed in Chapter 2.

25.2 THE UNDERMINING OF MOTIVATION BY ITS REWARD

A support input intended to strengthen a disposition may weaken it, and the finding is established with unusual precision. This section reports the finding, states its magnitude, and marks its bearing on the present argument. It proceeds by report, magnitude, and bearing. The method is the reporting of experimental work.

Deci et al. (1999) assembled experiments examining the effect of extrinsic reward on the disposition to engage in an activity for its own sake, and reported that tangible rewards reduced that disposition across the assembled studies, while positive verbal feedback increased it (empirically tested; meta-analysis of a large number of experiments, with the direction of the effect consistent across contingency types).

The magnitude reported is moderate and the direction is the finding that matters. A transfer supplied to strengthen an activity reduced the disposition to perform that activity in the absence of the transfer, which is a state satisfying the description of extractive support given in Chapter 51 in the strongest available form: the withdrawal of the support left the recipient in a condition worse than the one preceding it.

The bearing on the present argument is that the possibility the criterion is constructed to detect is experimentally established. A support may consume the capacity it addresses, and the consumption is invisible while the support continues.

25.3 TWO KINDS OF HELP AND THE STANDING THEY MAINTAIN

The pair defined in Chapter 51 has a prior statement in social psychology, and the statement is accompanied by an account of why one kind is preferred by those who supply it. This section reports the distinction, reports the mechanism, and states what the present account adds. It proceeds by report, mechanism, and addition. The method is the reporting of experimental work and the placement of prior art.

Nadler (2002) and Nadler and Halabi (2006) distinguish dependency-oriented help, which supplies a complete solution and treats the recipient as unable to reach one, from autonomy-oriented help, which supplies the means by which a recipient reaches a solution, and establish that parties in a higher position preferentially supply the first where the standing between the parties is insecure (empirically tested; experimental studies at the intergroup level, with several replications).

The mechanism identified is the maintenance of relative standing. Supplying a complete solution confirms the recipient's position as one who receives solutions, and the confirmation is available to the supplying party as a means of holding the arrangement in place.

What the present account adds is stated in Chapter 51 and recorded here. The distinction is named and tested in this literature, and no operation is supplied by which a given transfer is assigned to one side. The fading test supplies the operation, and it is the whole of what this book adds to the distinction.

25.4 THE LEARNING OF CONTROL

The standard account of passivity under uncontrollable conditions was reversed by its own authors, and the reversal bears on the account of self-crossing in Chapter 51. This section reports the original account, reports the reversal, and states its consequence. It proceeds by report, reversal, and consequence. The method is the reporting of experimental and neuroscientific work.

Seligman and Maier (1967) reported that subjects exposed to uncontrollable adverse events subsequently failed to escape adverse events that were escapable, and the finding

was described as learned helplessness (empirically tested; animal experiments with extensive subsequent literature).

Maier and Seligman (2016) report that the original interpretation was inverted. Passivity under prolonged adverse conditions is the unlearned default response, and what is learned is the detection of control, which then inhibits the default (empirically tested; the reversal rests on subsequent neuroscientific work identifying the structures involved).

The consequence for the present argument is substantial. A capacity to act upon one's own situation is not a native endowment that adverse conditions erode; it is an acquisition, formed where conditions have permitted the detection of control. The proposition on assisted crossing in Chapter 51 is accordingly read with this finding attached: a party's capacity to cross by its own action is itself produced in prior relations, and the proposition describes a mechanism of coupling in place of a property parties hold antecedently.

25.5 MASTERY AND THE FIRST SUCCESSFUL CYCLE

The detection of control requires an occasion, and an established account identifies the occasion that supplies it most reliably. This section reports the account, states its ordering of sources, and marks its correspondence to the present model. It proceeds by report and correspondence. The method is exposition.

Bandura (1977, 1997) holds that beliefs about one's own efficacy are formed from several sources and that enactive mastery, in which a party performs the activity and observes the performance, is the strongest of them, exceeding vicarious observation, verbal persuasion, and inference from physiological state (doctrine, with an extensive experimental literature).

The correspondence to the present model is direct. Chapter 48 holds that a relation returning what its maintenance consumes supplies the conditions for its own continuation, and the account reported here identifies the psychological counterpart: a completed cycle, observed by the party that completed it, supplies what no description of the cycle supplies.

25.6 THE COST BORNE BY SUPPORT THAT IS REGISTERED

Support that a recipient registers as support carries a cost, and the finding is counterintuitive enough to require careful statement. This section reports the finding, states its status, and marks its consequence for the design of transfers. It proceeds by report, status, and consequence. The method is the reporting of experimental work.

Bolger et al. (2000) examined parties under a sustained stressor and reported that support the recipient did not register as support was associated with better adjustment, while support the recipient did register was at times associated with worse (empirically tested; diary design, single population, with an experimental follow-up reported by Bolger and Amarel in 2007).

The status of the finding requires two qualifications. The populations examined are narrow, and the mechanism is contested, with proposed accounts including the cost to the recipient's sense of efficacy and the signal that the recipient is judged unable.

The consequence for the design of transfers is recorded in Chapter 51, where visibility appears among the three properties determining the kind of a transfer. The consequence is reported there with the qualifications above attached.

25.7 SCAFFOLDING AND ITS FADING

The criterion of Chapter 48 is drawn from a developmental account, and the account is reported here together with the boundary of the transfer. This section reports the account, states its three components, and states what the transfer withholds. It proceeds by report, components, and boundary. The method is the transfer procedure fixed in Chapter 2.

Wood et al. (1976) describe the support a tutor supplies to a learner as scaffolding, and the description is joined to Vygotsky's account of the distance between what a learner achieves alone and what a learner achieves with assistance (doctrine, with an extensive experimental literature).

Three components compose the account. Support is contingent, in that it is calibrated to what the learner presently achieves. Responsibility is transferred, in that the learner assumes portions of the task as competence develops. And support is faded, in that it is progressively withdrawn until the learner performs without it.

The transfer to this book carries the third component as an operation. Withdrawal is the act by which a supported arrangement is assessed, and the consequences of withdrawal are observable where the quantities of the criterion are not.

The transfer withholds the assumption on which the developmental account rests. That account presupposes a learner whose trajectory toward independent performance exists and requires support to be realised, and the existence of such a trajectory is the question at issue in the case this book examines. The fading test is accordingly used as a diagnostic operation and supplies no presumption that fading will succeed.

25.8 ACCOMPANIMENT AND DEPENDENCE IN A PRACTICE TRADITION

A practice tradition outside the experimental literature has developed a distinction closely related to the one reported in Section 25.3, and it is reported here for the vocabulary it supplies. This section reports the tradition, states its distinction, and marks the concept it qualifies. It proceeds by report, distinction, and qualification. The method is exposition.

Japanese social work has developed a form of support described as accompaniment, in which a supporting party maintains a continuing relation alongside the resolution of particular difficulties, and the form is distinguished from support consisting in the resolution of

difficulties alone (doctrine, within a national practice literature). The tradition distinguishes economic hardship from social isolation and directs accompaniment at the second.

The concept the tradition qualifies is dependence itself. A tradition in Japanese psychology treats a sanctioned form of dependence as a normal feature of relations in place of a deficiency (doctrine), and the practice literature accordingly treats the reduction of dependence as an inadequate objective for support.

The bearing on this book is on Chapter 28, where the same national literature is reported to have documented the failure mode of self-reliance support, and on Chapter 51, where the objective of support is stated in terms of what a relation returns in place of what a recipient ceases to require.

25.9 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a community in the form of a dyad or a small group, since its subject is a relation between a supplying party and a recipient, and it presupposes that the two are in contact.

It presupposes a resource in the form of what the supplying party transfers, and it presupposes no institution and no channel beyond the relation itself.

It presupposes a recognition system only in the limited sense that a recipient's standing is at issue in the accounts of Sections 25.3 and 25.6.

The region left untreated is the formation of the relation within which support is supplied. Every study reported here begins from a supplying party and a recipient already in contact, and the case in which no party is positioned to supply support falls outside the literature. Part V examines that case, and the present chapter supplies the account of what follows once a supporting party is present.

25.10 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Tangible reward supplied to strengthen an activity reduces the disposition to perform that activity without the reward, which establishes experimentally that a support may consume the capacity it addresses.

Help supplying complete solutions is distinguished from help supplying the means to reach them, and parties in a higher position preferentially supply the first where standing is

insecure. The distinction is named and tested in this literature, and the operation assigning a transfer to one side is what this book adds.

Passivity under prolonged adverse conditions is the unlearned default and control is what is learned. A capacity to act upon one's own situation is an acquisition formed in prior relations, and the proposition on assisted crossing is read with that finding attached.

Enactive mastery is the strongest source of beliefs about one's own efficacy, which is the psychological counterpart of a completed cycle in the model of Part XI.

Support the recipient registers as support carries a cost, and support the recipient does not register is associated with better adjustment. The finding rests on narrow populations and a contested mechanism.

Scaffolding is contingent, transfers responsibility, and is faded. The transfer carries fading as a diagnostic operation and withholds the presupposition that a trajectory toward independent performance exists.

The literature presupposes a supplying party and a recipient already in contact, and it leaves untreated the formation of the relation within which support is supplied.

CHAPTER 26

ORGANIZATIONS OF ASSISTANCE

26.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 25 examined support as a relation between two parties. Assistance at scale is conducted by organisations, and the properties of those organisations determine which of the two kinds of support distinguished in Chapter 51 an arrangement supplies. The present chapter examines those properties, and it supplies the structural explanation of a pattern the practice literature records and leaves unexplained.

The chapter undertakes five tasks. It reports the accounts of why organisations of this kind arise. It reports the direction in which their accountability runs, which is the mechanism this book identifies as producing extractive arrangements within a sector holding the opposite aspiration. It reports the critique of professionalisation. It reports the sequence from relief to development together with the current movement toward local conduct. And it reports capacity development and empowerment as doctrines, together with the difficulty each encounters.

The chapter proceeds by reporting five bodies of work and closes with the presupposition diagnostic. The method is the reporting of doctrinal and empirical work under the labels fixed in Chapter 2.

26.2 THE GROUNDS ON WHICH ORGANISATIONS OF ASSISTANCE ARISE

An account of what such organisations do requires an account of why they exist, and three have been established. This section reports them, states what each explains, and marks the property they share. It proceeds by report followed by identification of a shared property. The method is exposition.

Weisbrod holds that organisations of this kind arise where a state supplies public goods at a level satisfying a median preference and a portion of the population prefers more, so that unsatisfied demand is met outside the state (formally modelled). Hansmann holds that they arise where a purchaser cannot assess the quality of what is supplied, so that an organisation prohibited from distributing a surplus is more readily trusted than one permitted to do so

(formally modelled). Salamon holds that such organisations arise first and encounter limits of their own, which state provision subsequently addresses, so that the two stand in a relation of partnership in place of substitution (doctrine, with historical material).

The property the three share is that each explains the existence of the organisation by reference to a party other than those the organisation assists: a dissatisfied portion of a population, a purchaser unable to assess, or a state encountering limits. The parties assisted enter the accounts as the object of an activity in place of as a source of the arrangement.

26.3 THE DIRECTION IN WHICH ACCOUNTABILITY RUNS

The property identified in Section 26.2 has a structural consequence that this book treats as the explanation of a pattern recorded throughout the practice literature. This section reports the finding, states the mechanism, and states the consequence for the account of support. It proceeds by report, mechanism, and consequence. The method is the reporting of empirical and doctrinal work.

Edwards and Hulme (1996) reported that organisations receiving official funds face demands from those funds that reshape their conduct, and Ebrahim (2003) established that accountability in such organisations runs upward toward those supplying resources and downward toward those the organisation assists, that the upward direction is enforceable while the downward is not, and that the resulting concentration of effort on donor-facing reporting displaces organisational learning (doctrine, with case material and an analytical framework).

The mechanism is the separation of the party bearing the cost from the party whose capacity is at issue. An arrangement is assessed by the party that pays, that party observes what it funds and receives reports upon it, and no comparable instrument records whether the assisted party's capacity has come to sustain itself.

The consequence for the account of support is the explanation this book adopts. The practice literature holds an aspiration toward arrangements that admit of withdrawal, and it produces arrangements requiring continuation. The pattern requires no attribution of bad faith. Where the feedback that would reward capacity creation is unavailable and the feedback rewarding demonstrated activity is enforceable, arrangements drift toward the second, and Chapter 56 treats the direction of accountability as the lever upon which the design of support depends.

26.4 PROFESSIONALISATION AND THE CHAIN OF TRANSFERS

A critical literature examines what becomes of an organisation as it acquires the practices required to receive institutional funds, and its findings bear on the mechanism reported above.

This section reports the critique, states its central claim, and marks its status. It proceeds by report, claim, and status. The method is exposition.

The critique holds that organisations acquiring the reporting, planning, and evaluation practices required by institutional funders come to resemble the funders, that the transfer of resources proceeds along a chain in which each link imposes its requirements on the next, and that movements formed around political claims are reconstituted as providers of services (doctrine, with case material from several regions).

The central claim is that the requirements attached to resources reshape the organisation receiving them, so that the acquisition of capacity to receive assistance alters what the organisation is able to do.

The status of the critique is doctrinal. Its case material is extensive and its causal claims are not established by designs that separate the effect of funding from the selection of organisations into funding.

26.5 THE SEQUENCE OF ASSISTANCE AND THE MOVEMENT TOWARD LOCAL CONDUCT

Assistance is conducted in phases distinguished by their objectives, and a current movement concerns which parties conduct them. This section reports the sequence, reports the movement, and marks what each contributes to the present argument. It proceeds by report and contribution. The method is exposition.

The sequence distinguishes relief, which sustains parties through an acute period; rehabilitation, which restores what an acute period damaged; and development, which alters the conditions producing vulnerability. The relations among the three have been debated at length, and the debate concerns whether the phases are successive or concurrent (doctrine).

The movement toward local conduct holds that assistance should be conducted by organisations based where it is delivered, and commitments to that effect have been made by donor and agency signatories to a collective agreement (institutional doctrine; the evidence on implementation reports slow movement against the commitments).

The contribution to the present argument is that both concern the routing of a transfer. The sequence concerns what a transfer is for, and the movement concerns which party conducts it, and Chapter 51 holds that the kind of a transfer is settled in part by whose relations it passes through.

26.6 CAPACITY DEVELOPMENT AND EMPOWERMENT AS DOCTRINES

Two doctrines within this literature state objectives closely related to the criterion of Chapter 48, and their treatment establishes what that criterion adds. This section reports both, states what each holds, and states the difficulty each encounters. It proceeds by reporting each in turn. The method is exposition followed by assessment.

Capacity development holds that assistance should develop the capacities of those assisted in place of supplying outputs, and it has been elaborated in an extensive practice literature (doctrine, with programme documentation). The difficulty it encounters is that the capacities to be developed are ordinarily specified by the assisting party, so that the doctrine is implemented as the transfer of practices the assisting party holds.

Empowerment has been defined as the expansion of a party's ability to make strategic choices in a context where that ability was previously denied, with resources, agency, and achievements as its dimensions (doctrine, with an operationalisation for measurement). Related formulations distinguish power exercised over others from power exercised with others and from a party's own sense of capacity (doctrine). The difficulty it encounters is that the term has been adopted by institutions whose arrangements the concept was formulated to criticise, and its measurement has been reduced in practice to indicators of participation.

What the criterion of Chapter 48 adds to both is the operation. Each doctrine states an objective and neither supplies an act by which an arrangement is assigned to one side of it, and the fading test is proposed as that act.

26.7 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes an institution in the strongest form of any literature reported in this book, since its subject is an organisation, its funding, and its practices.

It presupposes a resource, since the organisation disposes of one, and a channel, since the transfers it conducts reach recipients along established routes.

It presupposes a community in the form of the parties the organisation assists, and a recognition system in the form of the reporting and evaluation arrangements through which the organisation is assessed.

The region left untreated is assistance conducted without an organisation. Every account reported here takes an organisation as its unit, and the transfers examined in Chapter 51, which pass between individual parties and are assessed by the consequences of their withdrawal, appear in this literature only where an organisation conducts them.

26.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Organisations of assistance are explained by unsatisfied demand, by the inability of purchasers to assess quality, and by the limits each sector encounters. Each account explains

the organisation by reference to a party other than those it assists.

Accountability runs upward toward those supplying resources and downward toward those assisted, the upward direction is enforceable and the downward is not, and effort concentrates on donor-facing reporting. The separation of the party bearing the cost from the party whose capacity is at issue is the mechanism by which a sector holding the aspiration toward withdrawal produces arrangements requiring continuation.

Organisations acquiring the practices required to receive institutional funds come to resemble the funders, on a critique whose case material is extensive and whose causal claims are not established by separating designs.

The phases of assistance concern what a transfer is for, and the movement toward local conduct concerns which party conducts it. Both bear on the routing of a transfer, which Chapter 51 treats as a determinant of its kind.

Capacity development and empowerment state objectives closely related to the criterion of this book, and neither supplies an operation assigning an arrangement to one side of its objective.

The literature presupposes an institution, a resource, a channel, a community, and a recognition system, and it leaves untreated assistance conducted without an organisation.

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CHAPTER 27

DEPENDENCY, EXIT, AND THE SUSTAINABILITY OF SUPPORT

27.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The criterion stated in Chapter 48 is assessed by the consequences of withdrawal, and the assistance literature has posed a closely related question under the heading of dependency for several decades. The question has acquired a political charge, and an account adopting a criterion of this shape owes an examination of what the charge rests upon.

The chapter undertakes five tasks. It reports the dependency claim and the uses to which it has been put. It reports the evidence bearing on the claim, which runs against it in several respects. It states the reformulation this book adopts in consequence. It reports the evidence on what persists after an arrangement concludes. And it reports the treatment of absorptive capacity and of ownership, which concern the conditions under which a transfer is used.

The chapter proceeds by reporting a claim, its counter-evidence, and two further bodies of work, and closes with the presupposition diagnostic. The method is the reporting of empirical and doctrinal work under the labels fixed in Chapter 2.

27.2 THE DEPENDENCY CLAIM AND ITS USES

The claim examined in this chapter is widely held and carries consequences beyond its analytical content. This section states the claim, states the uses to which it has been put, and marks why its examination is required here. It proceeds by statement, uses, and requirement. The method is exposition.

The claim holds that assistance sustained over an extended period produces in its recipients a reduced disposition to act on their own behalf, so that the assistance becomes necessary to a condition it was supplied to relieve (doctrine, widely held across policy discussion and stated in a strong form in a body of popular argument).

The uses to which the claim has been put include the reduction and the termination of assistance, and the conditioning of assistance upon evidence of effort by recipients. The claim has accordingly operated as a warrant for withdrawal in place of as a hypothesis under examination.

The examination is required here because the criterion of Chapter 48 classifies arrangements by the consequences of their withdrawal, and an account employing such a criterion is readily assimilated to the claim. The sections following establish the distance between them.

27.3 THE EVIDENCE BEARING ON THE CLAIM

The claim has been examined empirically in two literatures, and the findings run against it in the respects those literatures address. This section reports the findings, states their scope, and marks what they establish. It proceeds by reporting each literature and stating the joint result. The method is the reporting of empirical work.

Harvey and Lind (2005) examined the claim in humanitarian settings and reported that recipients depend on relief less than is commonly assumed, that evidence of relief undermining initiative is slight, and that the label is applied to populations remaining in need (a review with field material, conducted for a policy institute).

Evaluations of unconditional transfers report that recipients do not systematically increase expenditure on alcohol and tobacco, and that transfers do not reduce work (empirically tested; the first from a review pooling many studies, the second from an assembly of randomised evaluations across several countries). A wider review of transfer evidence reports outcomes across a range of dimensions without finding the disposition the claim predicts (a review of the empirical literature).

The scope of the findings is the conduct of recipients under transfers and relief. They establish that the disposition asserted by the claim is not observed at the scale the claim asserts, and they leave open the possibility that particular arrangements produce arrangements requiring continuation, which is a claim about design in place of about recipients.

27.4 THE REFORMULATION ADOPTED IN THIS BOOK

The findings reported above require the criterion of this book to be stated in a manner that separates it from the claim, and the separation is made here. This section states the reformulation, gives its ground, and states what it forbids. It proceeds by statement, ground, and prohibition. The method is the fixing of a constraint on the account.

The reformulation holds that the property distinguishing arrangements is a property of their design in place of a disposition of their recipients. An arrangement requiring continuation is one whose routing, visibility, and assigned position leave the supported relation without means of generating what its maintenance consumes, and the recipients of such an arrangement are described by nothing in the criterion.

The ground is the evidence of Section 27.3, which reports that the disposition the claim asserts is not observed, together with the determinants stated in Chapter 51, which locate the difference in properties of the transfer.

Requirement 27.1. (The location of the property). *Extractive and generative are predicates of arrangements. No use of the pair in this book attributes a disposition to a recipient, and no arrangement is classified by reference to the conduct of the party receiving it.*

27.5 WHAT PERSISTS AFTER AN ARRANGEMENT CONCLUDES

The question the criterion poses has been examined directly in a body of design research, and its findings are the closest empirical counterpart the literature supplies. This section reports the research, states its findings, and marks what it establishes and withholds. It proceeds by report, findings, and assessment. The method is the reporting of empirical work.

Rogers and Coates (2015) synthesised a study conducted in four countries examining what remained after programmes concluded, and reported that outcomes persisted where resources, capacity, motivation, and linkages to other parties were established before the conclusion, and that arrangements concluding without these declined (empirically tested; multi-country study with substantial variation in programme type and outcome measure).

Evaluation frameworks maintained by donor bodies include sustainability among their standing criteria and define it as the continuation of benefits after an intervention concludes (institutional doctrine).

What the research establishes is that persistence after conclusion varies systematically with conditions established beforehand, which is the substantive content the criterion of Chapter 48 predicts. What it withholds is an operation applicable in advance. Persistence is assessed after conclusion, and an arrangement is assigned to one side of the distinction only once it has ended.

27.6 ABSORPTIVE CAPACITY AND THE LOCUS OF DECISION

Two further constructs in this literature concern the conditions under which a transfer is put to use, and both bear on the account of Part V. This section reports them, states what each addresses, and marks its bearing. It proceeds by reporting each in turn. The method is exposition.

Absorptive capacity denotes the extent to which a receiving party is positioned to employ a transfer, and the construct is invoked to explain diminishing returns to transfers exceeding what a recipient can direct (doctrine, with empirical work of varying strength).

Ownership denotes the location of decision over the use of a transfer, and a series of international agreements has affirmed that decision should rest with recipient parties (institutional doctrine; assessments of implementation report limited movement).

The bearing on Part V is that both constructs concern the conversion of a transfer into activity, which is the step Chapter 11 treats under conversion factors and Chapter 22 treats for a producer disposing of a constrained endowment. Absorptive capacity is the receiving party's counterpart of the amplitude condition stated in Chapter 47: a transfer exceeding what a party can direct is not thereby amplified.

27.7 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes an institution, since its subject is an arrangement conducted by one, and a resource, since the arrangement transfers one.

It presupposes a channel, since transfers reach recipients, and a community, since the parties assisted are treated as constituting one.

It presupposes a recognition system in the form of the evaluation arrangements by which persistence is assessed.

The region left untreated is the assessment of an arrangement before its conclusion. Every instrument reported here records what followed a conclusion, and the criterion of this book is proposed as an operation applicable while an arrangement continues, by examining the consequences of a withdrawal that may be partial, staged, or hypothetical. Chapter 52 states the quantities by which such an examination proceeds.

27.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

The dependency claim holds that sustained assistance reduces recipients' disposition to act on their own behalf, and it has operated as a warrant for withdrawal in place of as a hypothesis under examination.

Evidence from humanitarian settings and from transfer evaluations reports that the disposition the claim asserts is not observed at the scale asserted, and leaves open the possibility that particular arrangements require continuation, which is a claim about design.

Extractive and generative are accordingly predicates of arrangements in this book. No use of the pair attributes a disposition to a recipient, and no arrangement is classified by reference to the conduct of the party receiving it.

Outcomes persist after conclusion where resources, capacity, motivation, and linkages are established beforehand. The finding is the substantive content the criterion predicts, and

it withholds an operation applicable in advance, since persistence is assessed only once an arrangement has ended.

Absorptive capacity is the receiving party's counterpart of the amplitude condition of Part XI, and ownership concerns the locus of decision over a transfer.

The literature presupposes an institution, a resource, a channel, a community, and a recognition system, and it leaves untreated the assessment of an arrangement before its conclusion.

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CHAPTER 28

WELFARE, SOCIAL INVESTMENT, AND SOCIAL REINTEGRATION

28.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Assistance conducted by a state toward its own members has a longer institutional history than assistance conducted across borders, and the arrangements it has produced supply the present account with its most developed body of practice. A claim advanced in Chapter 51, that support may be designed to admit of withdrawal, has been pursued within that history under several names and has encountered difficulties this book must record.

The chapter undertakes six tasks. It reports the classification of welfare arrangements by the extent to which they release a party from dependence on market participation. It reports the framing of social provision as investment. It reports the objections brought against that framing. It reports arrangements returning parties to participation across three domains, including one whose evidence bears directly on the ordering claimed in Part XI. It reports the treatment of self-reliance in one national practice literature, which has documented the failure mode of the whole approach. And it reports the treatment of educational subsidy as a transfer anticipating a deferred contribution.

The chapter proceeds by reporting six bodies of work and closes with the presupposition diagnostic. The method is the reporting of doctrinal and empirical work under the labels fixed in Chapter 2.

28.2 WELFARE REGIMES AND RELEASE FROM MARKET DEPENDENCE

The classification of welfare arrangements supplies the vocabulary in which the remainder of this chapter proceeds. This section reports the classification, states its organising quantity, and marks its bearing on the present argument. It proceeds by report and bearing. The method is exposition.

Esping-Andersen (1990) classifies welfare arrangements by decommodification, the extent to which a party maintains a livelihood without dependence on the sale of labour, and distinguishes three regime types by the level and the distribution of that release (doctrine, foundational, with comparative quantitative material). Marshall (1950) supplies the

antecedent conception of social citizenship, under which a claim to provision attaches to membership.

The bearing on the present argument is that decommodification is a measure of what a party retains when a particular relation lapses. The criterion of Chapter 48 is assessed by the consequences of withdrawal, and decommodification is the same operation applied to the relation between a party and a labour market, which establishes that measures of this form are already in use.

28.3 SOCIAL PROVISION TREATED AS INVESTMENT

A framing of social provision developed at the end of the twentieth century states an objective closely related to the one this book adopts, and its statement and its record are both instructive. This section reports the framing, states its central claim, and marks its correspondence. It proceeds by report, claim, and correspondence. The method is exposition.

Giddens (1998), Esping-Andersen and colleagues (2002), Morel, Palier, and Palme (2012), and Hemerijck (2013) hold that social provision directed toward capabilities, at the points in a life where they are formed, functions as investment yielding future returns, in place of consumption compensating for a present shortfall (doctrine, adopted in the programmes of several international bodies).

The central claim is that expenditure on childcare, training, and education alters what a party subsequently produces, so that the expenditure is recovered in the participation it enables.

The correspondence to the present account lies in the treatment of a transfer by what it produces in place of what it relieves. The account of Chapter 51 treats a transfer by whether the relation it supports comes to return what its maintenance consumes, and the investment framing treats a transfer by whether the party it supports comes to participate. The two differ in the quantity examined, and the objections reported in the section following bear on both.

28.4 THE OBJECTIONS BROUGHT TO THE INVESTMENT FRAMING

The framing reported above has been criticised from within the literature that produced it, and the criticisms transfer to the present account. This section reports three, states what each holds, and marks its bearing on this book. It proceeds by reporting each in turn. The method is the reporting of critical work.

The first concerns protection. Cantillon (2011) holds that arrangements directing provision toward future capability may reduce provision to parties whose participation is unlikely, and that the shift has coincided with weakened outcomes for the poorest households in several systems (empirically tested; comparative analysis across European systems).

The second concerns distribution. Bonoli, Cantillon (2011), and Van Lancker hold that capacitating services are used disproportionately by parties already advantaged, so that provision framed as investment may widen the inequality it was adopted to reduce (empirically tested; comparative analysis of service use).

The third concerns the standing of the party. The framing values a party by the participation that provision enables, and a party whose participation is not in prospect enters the accounting at zero (doctrine, within social policy).

The bearing on this book is direct and is stated here in place of being deferred. All three objections apply to any account that assesses a transfer by what it subsequently produces. Chapter 42 states the ground on which this book answers the third, and Chapter 54 states the region within which the first and second operate: an account recommending transfers that admit of withdrawal must state what is owed where withdrawal is unavailable, and this book states it.

28.5 ACTIVATION AND THE CONDITIONING OF SUPPORT

Arrangements conditioning provision on the conduct of recipients have accompanied the framing reported above, and their record bears on the firewall fixed in Chapter 51. This section reports the arrangements, states their rationale, and reports the difficulty. It proceeds by report, rationale, and difficulty. The method is exposition.

Activation arrangements condition provision on search, on training, or on acceptance of available work, and the rationale holds that conditioning maintains the connection between provision and participation (doctrine, with programme evaluation of varying strength).

The difficulty reported is that conditioning operates through sanction, that sanctions fall disproportionately on parties facing the greatest difficulty in complying, and that the arrangements are assessed by exits from provision in place of by the condition of those who exit (doctrine, with empirical work in several national systems).

The bearing on this book is that an account distinguishing arrangements that admit of withdrawal carries a standing hazard of being implemented as an account conditioning provision on conduct. The requirement fixed in Chapter 51 forbids that implementation, and the record reported here indicates what the forbidden form produces.

28.6 REINTEGRATION ACROSS THREE DOMAINS

Arrangements returning parties to participation have been developed in several domains, and one carries evidence bearing directly on an ordering claimed in Part XI. This section reports three, states what each establishes, and marks the ordering. It proceeds by reporting each in turn. The method is the reporting of empirical and doctrinal work.

Braithwaite (1989) distinguishes reintegrative shaming, in which disapproval of an act is expressed within a continuing relation and followed by readmission, from stigmatising shaming, in which the party is classified as an offender without readmission, and holds that the first reduces subsequent offending while the second entrenches it (doctrine, with subsequent empirical work of mixed strength).

The recovery model in mental health provision holds that a party may pursue a life of value alongside a continuing condition, in place of awaiting the condition's resolution (doctrine, with practice material).

Supported employment following the model of individual placement and support places a party in ordinary paid work directly and supplies support within the work, in place of training in preparation for it. A randomised trial conducted across six European sites reported that a substantially larger proportion of participants worked at least one day under this arrangement than under the preparatory alternative, with no evidence of increased relapse (empirically tested; randomised design across six sites).

The ordering the third establishes is the one claimed in Chapter 47 and in Chapter 22: participation may precede capability in place of following it, and an arrangement supplying participation first outperforms an arrangement supplying preparation first. The evidence is drawn from a domain remote from knowledge production, and it is carried as mechanism under the transfer procedure fixed in Chapter 2.

28.7 SELF-RELIANCE SUPPORT AND ITS DOCUMENTED COURSE IN IMPLEMENTATION

One national practice literature has pursued the objective of this chapter under an explicit name and has documented what becomes of it in implementation. This section reports the arrangements, reports the critique, and states what the critique establishes. It proceeds by report, critique, and consequence. The method is the reporting of a national practice literature.

Japanese social policy operates a system of self-reliance support for parties in economic difficulty, established in legislation of 2013 and in force from 2015, positioned before the principal public assistance provision and organised around consultation, employment support, and the accompaniment described in Chapter 25 (institutional doctrine, with an extensive practice literature).

The critique holds that self-reliance is narrowed in implementation to economic self-reliance, that the arrangement is assessed by exits from provision, and that the accompanying relation is supplied without a guarantee of livelihood during the period over which it operates (doctrine, within the national practice and academic literature).

What the critique establishes is the failure mode of the entire approach, documented from within a system that adopted it in good faith. An objective stated as the reduction of a party's requirement for support is satisfied by the removal of support, and an arrangement assessed

by exits is satisfied by exits of any kind. The criterion of Chapter 48 is stated in terms of what a relation returns for its own continuation precisely to avoid this substitution, and the present section is the strongest evidence available that the substitution occurs.

28.8 EDUCATIONAL SUBSIDY AND THE ANTICIPATION OF CONTRIBUTION

Transfers supporting a party during formation anticipate a contribution deferred to a later period, and the arrangements developed for them supply a further instance of the pattern reported in Chapter 24. This section reports the arrangements, states the instruments, and marks the correspondence. It proceeds by report and correspondence. The method is exposition.

Human capital theory treats expenditure on education as investment yielding returns in subsequent earnings, and distinguishes returns accruing to the party from returns accruing more widely (formally modelled, with an extensive empirical literature). Income-contingent instruments make repayment of such transfers conditional on the earnings they subsequently produce (formally modelled, with implementation in several national systems).

The correspondence to the present account is that both arrangements transfer to a party in one period against a return arriving in another, and the income-contingent instrument makes the deferral explicit in its terms. The pattern is the one reported in Chapter 24 under return separated from transfer in time, and the instruments show that arrangements of this shape are constructed and administered at scale.

28.9 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes an institution of exceptional scope, since its subject is a state conducting provision, and a resource, since provision disposes of one.

It presupposes a community in the form of a membership to which claims attach, and a channel in the form of the administrative arrangements through which provision reaches members.

It presupposes a recognition system in the form of the assessment determining eligibility and recording outcomes.

The region left untreated is provision to a party outside the membership. Claims in this literature attach to membership in a political community, and a party outside it appears in these arrangements as an exception requiring separate treatment. The account of Chapter 51

attaches no claim to membership, and the difference is recorded here as the respect in which this literature's arrangements are unavailable as a model.

28.10 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Welfare arrangements are classified by the extent to which a party maintains a livelihood when a particular relation lapses, which is a measure of the same form as the criterion of Part XI.

Social provision has been framed as investment yielding returns in subsequent participation, and the framing treats a transfer by what it produces in place of what it relieves.

Three objections apply to any account assessing a transfer by what it produces: provision may be withdrawn from parties whose participation is unlikely, capacitating services are used disproportionately by the already advantaged, and a party whose participation is not in prospect enters the accounting at zero.

Arrangements conditioning provision on conduct operate through sanction, fall disproportionately on parties facing the greatest difficulty in complying, and are assessed by exits in place of by the condition of those who exit.

Participation may precede capability. A randomised trial across six sites reported that placing parties in ordinary work and supplying support within it outperformed preparation followed by placement.

An objective stated as the reduction of a party's requirement for support is satisfied by the removal of support, and the substitution is documented within a national system that adopted the objective in good faith.

The literature presupposes an institution of exceptional scope, a resource, a membership, a channel, and an assessment arrangement, and it leaves untreated provision to a party outside the membership.

CHAPTER 29

INTERNATIONAL COOPERATION AND THE MOTIVATION OF STATE ASSISTANCE

29.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Assistance conducted between states supplies the largest arrangements examined in Part VI, and the explanations advanced for their existence bear on a proposal this book might otherwise advance without examination. An account holding that value consists in the maintenance of generative relations invites an explanation of state assistance in the same terms, and the present chapter establishes what such an explanation would have to satisfy.

The chapter undertakes five tasks. It reports the explanation resting on the interests of the assisting state, which stands as the position any alternative must displace. It reports the institutional and normative explanations advanced alongside it. It reports the theory of goods whose supply depends on the least-provisioned party, which supplies a rigorous reason for investment in the weak. It reports the doctrine pairing protection with the extension of capacity, which is the closest existing counterpart to the account of Chapter 51. And it examines the proposal that assistance maintains a field of generation at the scale of a civilisation, stating the tests such a proposal must pass and the evidence bearing on them.

The chapter proceeds by reporting four explanations and examining a fifth, and closes with the presupposition diagnostic. The method is the reporting of empirical and doctrinal work, followed by the assessment of a proposed explanation against stated criteria.

29.2 THE INTERESTS OF THE ASSISTING STATE

The standing explanation of state assistance rests on the interests of the party supplying it, and any alternative must displace it. This section reports the explanation, reports the evidence, and states what an alternative must therefore establish. It proceeds by report, evidence, and requirement. The method is the reporting of empirical work.

Alesina and Dollar (2000) examined the direction of assistance and reported that it is explained substantially by colonial history, by alignment in international votes, and by strategic ties, and less by the need or the policy conduct of recipients (empirically tested; cross-country analysis, with subsequent work reporting comparable patterns).

What an alternative explanation must establish follows from this finding. An account attributing assistance to a purpose other than the interests of the assisting state must either explain the pattern the evidence reports, or restrict itself to the residual variation that pattern leaves unexplained, or advance a claim about what assistance ought to be in place of what it is.

29.3 INSTITUTIONAL AND NORMATIVE EXPLANATIONS

Two further explanations are advanced within the study of international relations, and both bear on the proposal examined in Section 29.7. This section reports them, states what each holds, and marks their standing. It proceeds by reporting each in turn. The method is exposition.

The institutional explanation holds that states assist because they are engaged in continuing relations across many domains, that assistance sustains the arrangements through which those relations are conducted, and that a reputation for participation carries value within them (doctrine, within a substantial research programme).

The normative explanation holds that assistance originated in and continues to reflect convictions about obligation, that the domestic welfare arrangements of donor states predict their conduct in assistance, and that norms diffuse through international organisations (doctrine, with comparative historical material).

The standing of both is that of accounts explaining a portion of the variation, advanced within a field in which no single explanation commands assent. The present chapter reports them because the proposal examined below must be distinguished from the first in particular.

29.4 GOODS WHOSE SUPPLY DEPENDS ON THE LEAST-PROVISIONED PARTY

One body of work supplies a reason for investment in the weak that rests on the interests of the strong, and it is the most rigorous such reason available. This section reports the theory, states its central distinction, and marks its bearing. It proceeds by report, distinction, and bearing. The method is exposition.

Kaul et al. (1999) and Barrett (2007) distinguish goods by the manner in which individual contributions aggregate into a total: goods whose supply is the sum of contributions, goods whose supply is determined by the largest single contribution, and goods whose supply is determined by the smallest (formally modelled).

The central distinction for the present chapter is the third. Where a good is determined by the least-provisioned party, a state's own protection depends on provision elsewhere, and investment in the weakest party is a requirement of the strongest party's interest in place of a departure from it. Containment of transmissible disease is the standard instance.

The bearing on this book is that a rigorous reason for investment in the weak is available without any appeal to the maintenance of a field, and the availability constrains what the proposal of Section 29.7 may claim to add.

29.5 THE PAIRING OF PROTECTION WITH THE EXTENSION OF CAPACITY

A doctrine developed for international policy states the pair this book employs, and its statement precedes the present account by more than two decades. This section reports the doctrine, states its two pillars, and reports the objection brought against it. It proceeds by report, pillars, and objection. The method is exposition.

The report of the Commission on Human Security (2003) holds that the object of protection is the vital core of human lives, and that this object is pursued through two pillars: protection, supplied by institutions against threats parties cannot address alone, and empowerment, by which parties are enabled to act on their own behalf and on behalf of others (institutional doctrine, with an extensive derived literature).

The objection holds that the doctrine's scope is so wide that it directs no particular action, since a conception of security extending to every source of insecurity supplies no basis for choosing among them (doctrine, within security studies).

The bearing on this book is a concession. The pair distinguished in Chapter 51 between support maintaining a condition and support producing a capacity to act corresponds to these two pillars, and the correspondence is close enough that the present account claims no part of the distinction. What it claims is the operation assigning a given arrangement to one side, which this doctrine, like those reported in Chapter 26, does not supply. The objection reported above bears directly on that absence.

29.6 SELF-HELP EFFORT AND HORIZONTAL FORMULATIONS

Two further doctrines state objectives closely related to the criterion of this book, and both predate it. This section reports them, states what each holds, and marks the difficulty each shares. It proceeds by reporting each in turn. The method is exposition.

Japanese doctrine on development cooperation has directed assistance toward the self-help effort of recipients since its charter of 1992, with subsequent restatements retaining the direction and placing it within a framing of investment in persons and of human security (institutional doctrine, with an extensive programme literature).

Formulations advanced within cooperation among states outside the established donor group hold that assistance should proceed horizontally, on terms of mutual benefit, and should supply capacities in place of goods (institutional doctrine, with programme material).

The difficulty each shares is the one recorded throughout this Part. Each states an objective concerning the recipient's subsequent capacity, and neither states an operation by which a

programme is assigned to one side of that objective. Scholarship on the first has additionally noted that a doctrine directed at self-help effort presupposes a recipient government pursuing development, and supplies no guidance where that presupposition fails (doctrine).

29.7 THE PROPOSAL CONCERNING A FIELD OF GENERATION AND THE TESTS IT MUST PASS

An account of the kind developed in this book invites a proposal about state assistance, and the proposal is examined here in place of being advanced. This section states the proposal, states three tests, and reports the evidence bearing on the third. It proceeds by statement, tests, and evidence. The method is the assessment of a proposed explanation against stated criteria.

The proposal holds that states assist because assistance maintains the conditions under which human societies continue to generate knowledge, arrangements, and forms of life, so that assistance is an investment in a field of generation extending beyond any state.

The first test concerns distinguishability. The proposal must be distinguished from the institutional explanation reported in Section 29.3, which holds that assistance sustains the arrangements through which continuing relations are conducted, and from the theory reported in Section 29.4, which supplies a reason for investment in the weak resting on the interests of the strong. The proposal as stated is distinguished from neither, and an account advancing it would be required to identify a claim the two established positions fail to make.

The second test concerns the form of the explanation. An account holding that a practice exists because its effects are beneficial to a system explains the practice by its consequences, and supplies no mechanism by which those consequences produce the practice. Explanations of that form are rejected in the social sciences for that reason, and the proposal must therefore identify the process by which states come to conduct assistance, in place of the benefit that assistance confers.

The third test concerns discriminating observation. The proposal and the standing explanation of Section 29.2 diverge on one class of case: assistance developing a recipient's capacity to compete with the assisting party. Interest-based explanation predicts that such assistance is withheld, and the proposal predicts that it is supplied.

The evidence bearing on the third test is mixed and is reported as such. Arrangements transferring manufacturing capacity for medical products to recipient regions have been established with state and multilateral funding, which is assistance of the class the test identifies, while commercial holders of the relevant technology declined to participate (institutional reporting; the programme is recent and its outcomes are not established). Assistance directed at higher education, by contrast, is delivered substantially through scholarships tenable in donor countries, which retains the activity within the assisting party (empirically tested; analysis of reported assistance flows).

The proposal is accordingly recorded in this book as unestablished. No argument in the

chapters following rests upon it, and Chapter 56 states its recommendations without reference to any account of why states assist.

29.8 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes an institution in the form of a state and of the organisations through which assistance is conducted, and a resource in the form of the budget from which it is drawn.

It presupposes a community in the form of an international order within which states stand in continuing relations, and a channel in the form of the arrangements through which transfers are conducted.

It presupposes a recognition system in the form of the reporting arrangements by which assistance is recorded and compared.

The region left untreated is assistance conducted by parties other than states and the organisations they fund. The literature's unit is a state or an agency, and transfers between individual parties, which Chapter 51 treats, appear within it only where they are aggregated into programmes.

29.9 SUMMARY OF RESULTS

The chapter has established five results carried forward.

The direction of state assistance is explained substantially by colonial history, by alignment in international votes, and by strategic ties. An alternative explanation must displace this finding, restrict itself to the residual variation, or advance a claim about what assistance ought to be.

Institutional and normative explanations are advanced alongside it, each accounting for a portion of the variation.

Where a good is determined by the least-provisioned party, investment in the weakest is a requirement of the strongest party's interest, and a rigorous reason for such investment is therefore available without any appeal to the maintenance of a field.

The pairing of protection with the extension of capacity precedes this account by more than two decades, and the present book claims no part of the distinction. What it claims is the operation assigning an arrangement to one side, which the doctrine does not supply.

The proposal that assistance maintains a field of generation is unestablished. It is distinguished from neither of two standing explanations, it explains a practice by its consequences

without identifying a producing mechanism, and the evidence on its discriminating prediction is mixed. No argument in this book rests upon it.

The literature presupposes an institution, a resource, an international order, a channel, and a reporting arrangement, and it leaves untreated assistance conducted by parties other than states and the organisations they fund.

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CHAPTER 30

THE ASYMMETRY OF THE HELPING RELATION

30.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The chapters preceding this one examine assistance by what it produces in the party assisted. A relation of assistance also constitutes the party supplying it, and a literature spanning political theory, ethnography, and social philosophy examines that constitution. Its findings bear on the recommendations of Chapter 56 and on the language in which the criterion of this book may be stated.

The chapter undertakes five tasks. It reports the account of how a relation of assistance forms the party supplying it. It reports the treatment of recognition and of humiliation, which supplies a standard applying to arrangements that succeed on every other measure. It examines the case in which the position of giver is held as an identity in place of a role. It reports the treatment of paternalism and of the locus of judgement over a transfer. And it reports the literature on deservingness, which identifies the hazard attaching to any account employing the language of self-help.

The chapter proceeds by reporting four bodies of work and examining one case, and closes with the presupposition diagnostic. The method is the reporting of doctrinal and ethnographic work under the labels fixed in Chapter 2.

30.2 THE CONSTITUTION OF THE ASSISTING PARTY

A relation of assistance forms both parties, and the formation of the supplying party has been examined at length. This section reports the examination, states its central finding, and marks its bearing. It proceeds by report, finding, and bearing. The method is the reporting of ethnographic and critical work.

Illich (1968) addressed volunteers preparing to work abroad and held that their presence imposed itself upon those they intended to assist, and that the good intentions accompanying it altered nothing about the imposition (doctrine). Heron (2007) examined the accounts of development workers and held that the desire to assist is constitutive of the worker's own moral identity, so that the relation supplies the supplying party with something the supplying

party requires (doctrine, with interview material). A related critique holds that narratives of assistance distribute agency to the assisting party and passivity to the assisted (doctrine, within public criticism).

The central finding is that assistance returns something to the party supplying it, and that what it returns is a standing, an identity, or a self-description in place of a material quantity.

The bearing on this book is on the account of return in Chapter 51, which treats returns travelling forward to third parties. The present finding establishes a second return, travelling to the supplying party at the moment of the transfer, and Section 30.4 examines what follows where that return becomes the reason for the arrangement.

30.3 RECOGNITION, HUMILIATION, AND THE STANDARD OF DECENCY

A relation may transfer what it undertakes to transfer and injure the party receiving it, and a standard addressing that possibility has been developed in social philosophy. This section reports the standard, states its criterion, and marks its independence from the criterion of this book. It proceeds by report, criterion, and independence. The method is exposition.

Honneth (1995) holds that a party's practical relation to itself is formed in relations of recognition, and that the withholding of recognition is an injury in place of a mere absence (doctrine). Ricoeur (2005) treats mutual recognition and its relation to the gift (doctrine). Margalit (1996) holds that an institution is decent where it refrains from humiliating those subject to it, and that an institution supplying what it undertakes to supply may fail this standard in the manner of its supplying (doctrine).

The criterion so stated concerns the manner of a transfer and its effect on the standing of the party receiving it, assessed independently of what the transfer conveys.

The independence from the criterion of this book is complete and is stated here to prevent a misreading. An arrangement may satisfy the fading test of Chapter 48 and humiliate those it assists, and an arrangement failing that test may treat them with entire regard. The two criteria assess different properties, and Chapter 56 states its recommendations subject to both.

30.4 THE POSITION OF GIVER HELD AS AN IDENTITY

One case within the material reported above requires separate treatment, since it is the case in which the asymmetry becomes self-sustaining. This section states the case, gives its structure, and marks its relation to the criterion of Part XI. It proceeds by statement, structure, and relation. The method is analytical.

The case is that in which occupying the position of giver becomes constitutive of a party's identity, so that the party requires the position and requires therefore a party occupying its complement. A role is occupied in a relation and vacated when the relation alters; an identity

is held, and its holder has an interest in the persistence of the conditions under which it is held.

The structure is the one reported in Section 30.3, extended in time. A relation of assistance returns a standing to the supplying party; where that return becomes the reason for the arrangement, the supplying party acquires an interest in the continuation of the recipient's condition. The interest requires no bad faith and ordinarily operates without acknowledgement.

The relation to the criterion of Part XI is that this case is the mechanism by which arrangements fail the fading test from the side of the supplier. The account of Chapter 26 located the drift toward continuation in the direction of accountability, which is an institutional mechanism; the present section locates a second in the constitution of the supplying party, which operates at the level of a relation between individuals and is available where no organisation is present.

30.5 PATERNALISM AND THE LOCUS OF JUDGEMENT

Arrangements differ in where judgement over the use of a transfer rests, and the difference has been examined both normatively and empirically. This section reports the examination, states the positions, and marks its bearing on the determinants fixed in Chapter 51. It proceeds by report, positions, and bearing. The method is exposition.

Arrangements supplying goods in kind, or conditioning a transfer on specified conduct, locate judgement with the supplying party. Arrangements transferring unrestricted resources locate it with the recipient. Hanlon et al. (2010) hold that the second respects the recipient's own judgement and that the evidence reports recipients directing transfers to purposes the supplying party would seldom have selected (doctrine, with programme evidence assembled from several countries).

The positions are joined to the evidence reported in Chapter 27, where conditioning falls disproportionately on parties facing the greatest difficulty in complying.

The bearing on this book is that the locus of judgement is a further determinant of the kind of a transfer, operating alongside the three fixed in Chapter 51. An arrangement locating judgement with the supplying party assigns the recipient the position of one whose purposes require approval, which is the third determinant stated there, and the present section supplies its institutional expression.

30.6 DESERVINGNESS AND THE HAZARD IN THE LANGUAGE OF SELF-HELP

An account employing the language of self-help enters a discourse with a documented history, and the literature recording that history identifies the hazard precisely. This section reports the literature, states the criterion it identifies, and states the constraint this book adopts in

consequence. It proceeds by report, criterion, and constraint. The method is the reporting of empirical work followed by the fixing of a constraint.

Van Oorschot (2000) established that populations sort claimants by a small set of criteria, of which control over one's own situation is the most consistently applied, so that a claimant held responsible for a condition is judged less deserving of assistance (empirically tested; comparative survey research across several countries, with subsequent replication). Katz (1989) traces the history of the distinction between the deserving and the undeserving and its use in the design of provision (doctrine, with historical material).

The criterion identified is attribution of control. A claimant whose condition is attributed to that claimant's own conduct is assigned to the undeserving category, and provision is withheld or conditioned accordingly.

The constraint this book adopts is stated in Chapter 51 and repeated here in the form the present evidence requires.

Requirement 30.1. (Separation from the deservingness criterion). *The proposition stated in Chapter 51, that self-crossing supplies the condition on which support enters a generative cycle, describes a mechanism of coupling. It supplies no attribution of control over a party's condition, and no allocation of support in this book is conditioned on a prior demonstration of effort.*

The evidence reported in Chapter 25, that the capacity to act upon one's own situation is itself acquired in prior relations, establishes that an attribution of control is unwarranted in the general case, and the requirement above accordingly rests on a finding in place of a stipulation alone.

30.7 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes a community, since standing and humiliation are constituted in relations with others, and a recognition system, since the judgements it examines are made by parties assessing one another.

It presupposes an institution in the accounts examining provision and its administration, and a resource in the transfers whose manner it assesses.

The region left untreated is the relation of assistance between parties standing in no wider arrangement. The accounts reported here examine assistance conducted within an institutional setting, an occupational identity, or a system of provision, and the constitution of

the supplying party in a relation between two parties standing outside all three is examined only in the limited material reported in Section 30.3.

30.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Assistance returns a standing or a self-description to the party supplying it, and the return travels to that party at the moment of the transfer, alongside the returns travelling forward that Chapter 51 describes.

An institution supplying what it undertakes to supply may humiliate those subject to it, and the standard addressing this possibility is independent of the criterion of this book. An arrangement may satisfy one and fail the other in either direction.

Where the position of giver is held as an identity, the supplying party acquires an interest in the persistence of the recipient's condition. The case supplies a second mechanism by which arrangements fail the fading test, operating at the level of a relation and available where no organisation is present.

The locus of judgement over the use of a transfer is a further determinant of its kind, and an arrangement locating judgement with the supplying party assigns the recipient the position of one whose purposes require approval.

Populations sort claimants by attribution of control, and a claimant held responsible for a condition is judged less deserving. The proposition on assisted crossing supplies no such attribution, and the finding that the capacity to act upon one's own situation is acquired in prior relations establishes that the attribution is unwarranted in the general case.

The literature presupposes a community, a recognition system, an institution, and a resource, and it leaves largely untreated the relation of assistance between parties standing in no wider arrangement.

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CHAPTER 31

GENERATIVE AND REGENERATIVE ECONOMICS AS AN EXISTING FIELD

31.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The vocabulary employed throughout this book is in use elsewhere. A body of work in economics and in the design of enterprises distinguishes extractive from generative arrangements, a second treats the maintenance of productive conditions as the object of economic activity, and a third holds that the economy depends upon activity its accounts fail to record. Part VI closes by reporting these, since an account using their terms owes a statement of what it takes from them.

The chapter undertakes five tasks. It reports the distinction between extractive and generative ownership, which is the nearest terminological precedent for the pair employed in this book. It reports the accounts organised around the regeneration of conditions. It reports the treatment of value circulation in a programme adjacent to this one. It reports the treatment of maintenance in capital theory and in ecological economics. And it reports the literature holding that the economy free-rides upon unpriced activity sustaining the capacity to produce.

The chapter proceeds by reporting five bodies of work and closes with a statement of position and the presupposition diagnostic. The method is the reporting of doctrinal work under the labels fixed in Chapter 2.

31.2 EXTRACTIVE AND GENERATIVE OWNERSHIP

The pair employed throughout this book has a prior statement in the design of enterprises, and the statement is close enough in vocabulary to require explicit acknowledgement. This section reports it, states its content, and states what it supplies and withholds. It proceeds by report, content, and assessment. The method is the placement of prior art.

Kelly (2012) distinguishes extractive ownership, organised around the maximisation of financial extraction for holders standing outside the activity, from generative ownership, organised around the conditions under which the activity continues, and identifies design patterns characterising the second: a purpose fixed in the constitution of the enterprise,

membership rooted in those engaged in its activity, networks organised around a shared mission, finance supplied by stakeholders, and governance held as a commons (doctrine, with case material). Kelly and Howard (2019) extend the account to an economy composed of such enterprises.

What the account supplies is the vocabulary. The terms extractive and generative are used there in a sense compatible with the use in this book, and the present account claims no part of the pair.

What the account withholds is an operation. Kelly supplies a typology of design features, and a party holding an enterprise may compare its arrangements against the patterns described. No test is supplied by which a given arrangement is assigned to one side, and no account is given of the conditions under which an arrangement passes from one to the other. Both are supplied in this book by the criterion of Chapter 48 and the model of Chapter 47.

31.3 REGENERATIVE AND DISTRIBUTIVE DESIGN

A second body of work organises economic design around the regeneration of the conditions on which activity depends, and its relation to the present account is one of shared orientation. This section reports two positions, states their common form, and marks their status. It proceeds by report, form, and status. The method is exposition.

Fullerton (2015) sets out principles of systemic health drawn from the study of living systems, including the circulation of resources through a system and the maintenance of balance between efficiency and resilience (doctrine, with an explicitly normative framing). Raworth (2017) holds that an economy should be distributive and regenerative by design, and specifies a space bounded below by social provision and above by ecological limits (doctrine, with the boundaries specified quantitatively and the design prescription stated normatively).

The common form is the specification of conditions an arrangement should satisfy, drawn from observation of systems that persist.

The status of both is normative. Each supplies an orientation and a set of principles, and neither supplies an operation by which a given arrangement is assessed against them. The observation is the same one recorded of the practice literatures in Chapter 26, and the present chapter records that the pattern extends to the economic literature employing this book's vocabulary.

31.4 THE CIRCULATION OF VALUE IN AN ADJACENT PROGRAMME

A programme adjacent to this one treats the direction in which value moves, and its treatment prefigures the criterion of Chapter 49. This section reports the programme, states its principle, and marks the difference. It proceeds by report, principle, and difference. The method is exposition.

Eglash (2016) holds that value generated by labour, by ecological process, and by expression should circulate back to those who generate it, in place of being extracted and redistributed by a party standing outside the generation, and assembles instances from peer production, from agricultural practice, and from community workshops (doctrine, with case material and derived empirical projects).

The principle is that the destination of generated value determines the character of an arrangement, which is the principle stated as a criterion in Chapter 49.

The difference is confined to two points. The programme states the principle for value generated by identifiable parties and returned to them, and the criterion of this book is stated for a relation in place of a party, which admits the case in which value returns to a relation without returning to any participant severally. And the programme treats circulation as an objective, where this book treats folding as a diagnostic property of an arrangement, in accordance with the restriction fixed in Chapter 42.

31.5 MAINTENANCE IN CAPITAL THEORY AND IN ECOLOGICAL ECONOMICS

A treatment of maintenance as an economic category is available in two literatures, and both bear on the account of Chapter 23. This section reports them, states what each supplies, and marks the correspondence. It proceeds by reporting each in turn. The method is exposition.

Lachmann (1956) holds that capital is heterogeneous, that its elements stand in relations of complementarity, and that the maintenance of a capital structure consists in the maintenance of those relations in place of the replacement of elements (doctrine, within economics).

Daly and the literature on ecological economics hold that an economy operates within a physical system whose capacity is maintained by processes the economy does not price, and that treating the consumption of that capacity as income misstates the position (doctrine, with an extensive derived literature).

What the two supply jointly is the category of maintenance as an economic object: an activity consuming resources, producing no recorded output, and determining whether production continues. Chapter 22 reports maintenance as the recurring cost with no terminating condition, and the present section establishes that the category is recognised in economics independently of the present argument.

31.6 THE UNPRICED SUSTAINING OF THE CAPACITY TO PRODUCE

A further literature holds that the economy depends upon activity its accounts fail to record, and the claim is structurally the one this book makes. This section reports the literature, states its claim, and marks the respect in which it differs from the present account. It proceeds by report, claim, and difference. The method is exposition.

Waring (1988) established that national accounting conventions exclude unpaid work sustaining households and populations, and that the exclusion renders the activity invisible to policy formed upon those accounts (doctrine, with documentary analysis; the argument prompted subsequent revisions to accounting practice). Folbre (2001) holds that the market economy depends upon care work it does not price, and that competitive pressure operates against the conditions under which that work is performed (doctrine, with economic analysis).

The claim is that production depends upon a sustaining activity, that the sustaining activity is unpriced, and that arrangements assessed by priced output therefore misstate what sustains them.

The difference from the present account lies in the object and in the purpose. The literature reported here addresses the sustaining of the human capacity to labour and advances the claim as a critique of measurement. The present account addresses the sustaining of relations through which contributions are received, and advances the claim as a diagnosis. The structure of the claim is common to both, and this book records the correspondence in place of asserting priority.

31.7 THE POSITION OF THE PRESENT ACCOUNT WITHIN THIS FIELD

The materials reported above jointly determine what the present account may claim, and the determination is stated here. This section states what the field already holds, states what the present account adds, and marks the ground of the addition. It proceeds by statement, addition, and ground. The method is the placement of the present account against reported prior art.

The field already holds the vocabulary of extractive and generative arrangements, the orientation toward the maintenance of conditions in place of the maximisation of output, the principle that the destination of generated value determines an arrangement's character, the category of maintenance as an economic object, and the claim that production depends upon unpriced sustaining activity. The present account claims no part of any of these.

What the present account adds is an operation and a dynamics. The operation is the criterion of Chapter 48, assessed by the consequences of withdrawal, which assigns a given arrangement to one side of a distinction the field states as an orientation. The dynamics is the model of Chapter 47, which states the conditions under which an arrangement passes from one side to the other.

The ground of the addition is the pattern recorded throughout Part VI. Every literature reported in this Part states an objective concerning what an arrangement should become and supplies no act by which a given arrangement is assessed against it. Chapter 40 states the resulting position in the form the comparison requires.

31.8 THE CONDITIONS PRESUPPOSED BY THIS LITERATURE

The presupposition diagnostic is applied here, and the result is recorded for assembly in Chapter 9. This section states the conditions the literature assumes and marks the region its questions leave untreated. It proceeds by applying the categories in turn. The method is the diagnostic.

The literature presupposes an institution in the form of the enterprise, the accounting convention, or the economy whose design is at issue, and a resource in the form of what those arrangements dispose of.

It presupposes a community in the form of the parties engaged in the activity, and a channel in the form of the arrangements through which value circulates.

It presupposes a recognition system in the limited form of the accounts by which activity is recorded, which is the object of the critique reported in Section 31.6.

The region left untreated is the formation of an arrangement. Every account reported here examines an enterprise, an economy, or an accounting convention already in operation, and prescribes how it should be constituted. The passage from no arrangement to an arrangement is treated in none of them, and it is the subject of Part XI.

31.9 SUMMARY OF RESULTS

The chapter has established five results carried forward.

The pair extractive and generative has a prior statement in the design of enterprises, which supplies the vocabulary and a typology of design features and withholds an operation assigning a given arrangement to one side.

Accounts organised around regeneration specify conditions drawn from systems that persist, and their status is normative, so that the absence of an assigning operation extends from the practice literatures to the economic ones employing this book's vocabulary.

An adjacent programme holds that generated value should circulate to those who generate it, prefiguring the criterion of this book. The present account differs in stating the criterion for a relation in place of a party, and in treating folding as a diagnostic property in place of an objective.

Maintenance is recognised as an economic category in capital theory and in ecological economics: an activity consuming resources, producing no recorded output, and determining whether production continues.

Production depends upon unpriced sustaining activity, a claim advanced in a further literature as a critique of measurement and advanced here as a diagnosis. The correspondence is recorded in place of an assertion of priority.

The present account claims no part of the field's vocabulary, orientation, or principles. It adds an operation and a dynamics, on the ground that every literature reported in this Part

states an objective and supplies no act by which an arrangement is assessed against it.

The literature presupposes an institution, a resource, a community, a channel, and an accounting arrangement, and it leaves untreated the passage from no arrangement to an arrangement.

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PART VII

WORTH, AGGREGATION, AND THE RELATIONAL UNIT IN ETHICS

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CHAPTER 32

THE CRITIQUE OF AGGREGATIVE EVALUATION

32.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part VII surveys the ethical literatures for the unit at which evaluation proceeds and for the manner in which the worth of a participant is grounded. It opens with the family of positions constructed against the summation of benefits and burdens across parties, since the difficulty identified in Chapter 41 is a difficulty of summation and the resources for answering it were developed here.

The chapter undertakes six tasks. It reports the objection holding that summation disregards the distinctness of the parties summed over. It reports the treatment of worth as holding without price. It reports a distinction in the structure of value that Chapter 42 employs as its central instrument. It reports the objection concerning the commitments a maximising requirement demands of an agent. It reports the contractualist construction and its refusal to aggregate. And it reports two families of distributive position together with the account treating equality as a property of relations.

The chapter proceeds by reporting six positions and closes with the unit each presupposes. The method is the reporting of philosophical work under the labels fixed in Chapter 2, with the qualification that the claims of this Part are argued in place of measured, and are labelled as doctrine throughout.

32.2 THE DISTINCTNESS OF THE PARTIES SUMMED OVER

The foundational objection to summation was stated in a form that has organised the subsequent literature. This section reports the objection, states its ground, and marks its bearing. It proceeds by report, ground, and bearing. The method is exposition.

Rawls (1971) holds that a doctrine directing the maximisation of a sum across parties extends to society a principle of choice appropriate to one person, and thereby disregards the distinction between persons (doctrine, foundational). Nozick (1974) states a related objection, holding that no entity exists whose good is served by a sacrifice imposed upon a party for the benefit of others (doctrine).

The ground of the objection is that summation renders a loss to one party commensurable with a gain to another, so that the party bearing the loss is treated as a location at which a quantity is registered.

The bearing on this book is that the difficulty identified in Chapter 41, in which a party from whom no output is expected enters an accounting at zero, is an instance of the structure this objection identifies. The literature reported here supplies the diagnosis, and Chapter 42 supplies the ground on which this book proceeds.

32.3 WORTH HELD BEYOND PRICE

A treatment of worth developed in the eighteenth century supplies the strongest available statement of unconditional standing, and its formulation is employed in Chapter 42. This section reports the treatment, states its two formulations, and marks its position. It proceeds by report, formulations, and position. The method is exposition.

Kant holds that a party is to be treated as an end and never merely as a means, and that what holds a price admits of replacement by an equivalent while what holds dignity admits of none (doctrine, foundational, with an extensive interpretive literature).

The two formulations state one position from different directions. The first constrains what may be done to a party in the pursuit of an end; the second denies that a party's standing is established by comparison with what might replace it.

The position of the treatment in this book is that it supplies unconditional standing and supplies no account of how standing arises. Chapter 42 requires both, and the section following supplies the second.

32.4 THE DISTINCTIONS DRAWN IN THE STRUCTURE OF VALUE

One distinction in the analysis of value is the instrument on which Chapter 42 depends, and it is reported here at the length its weight requires. This section reports the distinction, states the position it opens, and marks its application. It proceeds by report, position, and application. The method is exposition.

Korsgaard (1983) holds that two distinctions ordinarily conflated are independent of one another. The first concerns the source of a thing's value, which may lie in the thing's own properties or in something outside it, and separates the intrinsic from the extrinsic. The second concerns the way a thing is valued, whether for its own sake or for the sake of something further, and separates the final from the instrumental (doctrine, with an extensive derived literature on final value).

The position the separation opens is that a thing may be extrinsically good and valued as an end. A value whose source lies outside a thing is thereby distinguished from a value a thing holds as a means, and the inference from the first to the second is blocked.

The application in this book is stated in Chapter 42. A participant in a relation holds final value, and the source of that value lies in the relations in which the participant stands. The account thereby grounds worth relationally while declining the implication that a participant is valued for what that participant contributes.

32.5 INTEGRITY AND THE DEMANDS OF A MAXIMISING REQUIREMENT

A further objection concerns what a maximising requirement demands of the party subject to it, and it bears on the recommendations of Part XIII. This section reports the objection, states its content, and marks its bearing. It proceeds by report, content, and bearing. The method is exposition.

Williams (1973) holds that a requirement directing an agent to maximise an aggregate treats the agent's own projects and attachments as inputs to a calculation conducted from no particular position, and thereby demands that the agent be alienated from the commitments constituting that agent (doctrine).

The content of the objection is that the requirement is defective in what it asks of an agent, in place of being defective in the outcomes it selects.

The bearing on this book is on the individual-level material of Part V. An account directing a producer to allocate effort by expected return alone stands under this objection, and the objective adopted in Chapter 20 is stated for a producer holding commitments in place of for an agent maximising an aggregate.

32.6 CONTRACTUALISM AND THE INDIVIDUATION OF OBJECTIONS

A construction developed in the twentieth century supplies an alternative to summation whose structure bears on the unit adopted in this book. This section reports the construction, states its refusal, and marks its limit. It proceeds by report, refusal, and limit. The method is exposition.

Scanlon (1998) holds that an act is wrong where it would be disallowed by principles that no party could reasonably reject, and that objections to a principle are raised by parties severally (doctrine, with an extensive derived literature).

The refusal follows from the second clause. Where every objection is raised by a party, a sum of small benefits accruing to many parties carries no weight against a substantial burden borne by one, since no party enjoys the sum.

The limit is that the construction proceeds from parties able to raise objections. A party unable to do so is accommodated within the construction by devices requiring separate argument, and Chapter 33 reports the objection pressed on this ground against constructions of this family.

32.7 PRIORITY, SUFFICIENCY, AND PROVISION HELD BELOW A THRESHOLD

Two families of distributive position bear on the layered account stated in Chapter 42, and both are reported here. This section reports each, states what each holds, and marks the correspondence. It proceeds by reporting each in turn. The method is exposition.

Parfit (1997) holds that a benefit matters more the worse the position of the party receiving it, without reference to the positions of others, so that the concern for the worse-off is preserved where a concern for equality would recommend levelling downward (doctrine).

Frankfurt (1987) holds that what matters is that each party have enough, in place of that parties have the same, and that a threshold of sufficiency is the appropriate object of concern (doctrine). Casal (2007) holds that a sufficiency threshold requires supplementation, since it supplies no guidance above the threshold (doctrine).

The correspondence to this book is that the layered account of Chapter 42, under which protection holds unconditionally and amplification is selective, has the structure of a sufficiency threshold with a further principle operating above it. The correspondence is recorded here, and the account of this book grounds the threshold in the standing of a participant in place of in a level of a distributive quantity.

32.8 EQUALITY CONSIDERED AS A PROPERTY OF RELATIONS

One position within this literature adopts the unit this book adopts, and it is the closest prior art in Part VII. This section reports the position, states its two components, and marks what it supplies. It proceeds by report, components, and assessment. The method is the placement of prior art.

Anderson (1999) holds that the object of egalitarian concern is the character of the relations in which parties stand, comprising their standing as equals and the absence of domination and of oppressive hierarchy, in place of the distribution of a quantity across them (doctrine, with an extensive derived literature). Scheffler (2003) develops equality as an ideal governing relationships (doctrine).

Two components compose the position. Standing as an equal is a property of a relation, and the distributive arrangements a society adopts are assessed by whether they secure that standing.

What the position supplies is the unit. Chapter 41 adopts the relation as the unit at which evaluation proceeds, and the position reported here holds it already. The position further decouples standing from productive contribution, which is the property Chapter 41 requires. Critics hold that a relational account requires a distributive component to specify what standing as an equal demands materially (doctrine), and the objection bears on this book at the point where recommendations are stated in Chapter 56.

32.9 THE UNIT PRESUPPOSED BY THIS LITERATURE

Part VII is read for the unit at which evaluation proceeds in place of the operating conditions recorded in Chapter 9, and the reading is applied here. This section states the unit each position presupposes and marks what follows. It proceeds by position. The method is the diagnostic adapted to an ethical literature.

The positions reported in Sections 32.2 to 32.6 take the individual as the unit. Each is constructed to protect a party against a summation conducted across parties, and the protection is stated as a constraint on what may be done to that party.

The position reported in Section 32.7 takes a distributive quantity and its threshold as the object, with the individual as the unit at which the quantity is held.

The position reported in Section 32.8 takes the relation as the unit, and it is the sole position in this chapter that does so.

What follows is that the resources for grounding worth in this chapter are constructed for an individual unit, and that the account of Chapter 42 combines a relational unit with an instrument developed within an individualist tradition. The combination is stated there, and Chapter 43 records it among the respects in which the account is composite in place of novel.

32.10 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Summation across parties renders a loss to one commensurable with a gain to another and thereby disregards the distinction between persons. The difficulty identified in Chapter 41 is an instance of that structure.

Worth held without price supplies unconditional standing and supplies no account of how standing arises.

The source of a value and the manner in which it is held are independent, so that a thing may be extrinsically good and valued as an end. The separation is the instrument on which Chapter 42 depends.

A maximising requirement is objectionable in what it demands of an agent, which bears on the objective adopted for a producer in Part V.

Contractualism refuses aggregation by requiring that every objection be raised by a party severally, and it proceeds from parties able to raise objections.

Priority and sufficiency supply the structure of the layered account stated in Chapter 42, and equality considered as a property of relations supplies the unit this book adopts, together with the decoupling of standing from productive contribution.

The positions reported here take the individual as the unit with one exception, so that the account of Chapter 42 combines a relational unit with an instrument developed within an individualist tradition.

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CHAPTER 33

DEPENDENCY, DISABILITY, AND THE BOUNDARY OF PRODUCTIVIST ETHICS

33.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The difficulty identified in Chapter 41 concerns parties from whom no future output is expected, and it has been examined at length in a literature formed around dependency and disability. That literature reached its conclusions before the present account was constructed, and Chapter 42 accordingly systematises its results in place of discovering them.

The chapter undertakes six tasks. It reports the objection holding that constructions built on mutual advantage exclude parties who cannot supply it. It reports the treatment of dependency as a condition of human life. It reports the account of acknowledged dependence within a theory of the virtues. It reports the treatment of vulnerability as universal and of resilience as conferred. It reports the models distinguishing impairment from the conditions that disable. And it reports the examination of allocation measures that assess a benefit by the condition of the party receiving it.

The chapter proceeds by reporting six positions and closes with the unit each presupposes. The method is the reporting of philosophical, legal, and empirical work under the labels fixed in Chapter 2. The material of Section 33.7 concerns the assessment of benefits to parties with disabilities, and it is reported with the positions of both parties to a continuing disagreement.

33.2 THE EXCLUSION PRODUCED BY CONSTRUCTIONS BUILT ON MUTUAL ADVANTAGE

A construction widely adopted in political philosophy encounters a difficulty with parties who cannot participate on the terms it specifies, and the difficulty is the one this book confronts. This section reports the objection, states its ground, and marks its bearing. It proceeds by report, ground, and bearing. The method is exposition.

Nussbaum (2006) holds that constructions deriving principles from an agreement among parties assumed to be roughly equal in capacity, and to be bound together by the advantages of cooperation, cannot accommodate parties whose capacities differ markedly and whose participation supplies no such advantage, and that accommodating them by later extension leaves their standing derivative (doctrine, with an extended argument).

The ground of the objection is that the parties to such a construction are specified by properties that some parties lack, so that those parties enter the resulting principles as objects of provision in place of as parties to whom the principles are owed.

The bearing on this book is direct. The accounting described in Chapter 41, in which a party from whom no output is expected enters at zero, is the same structure appearing in a different construction, and the objection reported here was pressed against that structure two decades before the present account.

33.3 DEPENDENCY TREATED AS A CONDITION OF HUMAN LIFE

One position within this literature addresses the case this book treats as its limit case, and it supplies the ground on which the case is settled. This section reports the position, states its principle, and marks its bearing. It proceeds by report, principle, and bearing. The method is exposition.

Kittay (1999) holds that dependency is a normal and recurring condition of human life in place of an exception to it, that every party has been dependent and many will be again, and that a construction taking independent parties as its subject misdescribes the population it governs (doctrine, with an extended argument and reflection on the author's own circumstances).

The principle stated is one of nested obligation. A party supplying care to a dependent party is owed support by the wider arrangement, so that care is supplied without depleting the party supplying it, and the obligation runs among three positions in place of two. The party receiving care owes no return, and the principle is constructed so that no return is required of that party.

The bearing on this book is that the limit case treated in Chapter 51 is settled here. A relation admitting no withdrawal is owed support on grounds stated in this literature, and the classification supplied by the criterion of Part XI carries no bearing upon it.

33.4 ACKNOWLEDGED DEPENDENCE WITHIN A THEORY OF THE VIRTUES

A further position treats dependence as a condition the virtues are constructed to address, and its account of the passage into independent agency bears on Part XI. This section reports the position, states its central claim, and marks its bearing. It proceeds by report, claim, and bearing. The method is exposition.

MacIntyre (1999) holds that human parties are animals whose rational agency is achieved through relations of giving and receiving, that dependence is the condition from which such agency develops in place of its opposite, and that a virtue of generosity exercised without calculation of return is required by the arrangements through which agency develops (doctrine, with an extended argument).

The central claim is that independent agency is an achievement of relations in place of a property parties hold antecedently.

The bearing on this book is that the claim coincides with the empirical finding reported in Chapter 25, that the detection of control is learned and that passivity is the unlearned default. A philosophical argument and an experimental result reach the same conclusion by independent routes, and Chapter 51 reads the proposition on assisted crossing under both.

33.5 VULNERABILITY TREATED AS UNIVERSAL AND RESILIENCE AS CONFERRED

One position states a distinction that this book employs throughout, and its statement precedes the present account. This section reports the position, states the distinction, and marks its correspondence. It proceeds by report, distinction, and correspondence. The method is exposition.

Fineman (2008, 2010) holds that vulnerability is a universal and continuing feature of the human condition arising from embodiment, and that what differs across parties is resilience, which is conferred by the institutions within which parties stand in place of being held by parties themselves (doctrine, within legal theory, with an extensive derived literature).

The distinction is between a condition common to all parties and a capacity distributed by arrangements.

The correspondence to this book is close. Chapter 44 holds that the substrate supporting expression is supplied by arrangements in place of by the producer, and Chapter 46 holds that the capacity of a contribution to reach valuation is fixed by properties of the receiving system. The position reported here states the same structure for a party's capacity to withstand adversity, and this book records the correspondence in place of asserting priority.

33.6 THE MODELS DISTINGUISHING IMPAIRMENT FROM DISABLING CONDITIONS

A body of work distinguishes a party's impairment from the conditions producing disadvantage, and the distinction bears on the diagnosis of Part X. This section reports the models, states the distinction, and marks the qualification advanced within the literature. It proceeds by report, distinction, and qualification. The method is exposition.

Oliver (1990) holds that disability consists in the barriers a society erects in place of in a party's impairment, and the position has organised a substantial body of scholarship and advocacy (doctrine). A related tradition treats disability as a relation between a party and an environment, so that the same impairment disables in one setting and not in another (doctrine). An international convention adopted in 2006 affirms legal capacity for all parties and directs that support be supplied for its exercise in place of substituted decision (institutional doctrine).

The qualification advanced within the literature holds that an account locating disability wholly in social arrangements understates the effects of impairment itself, and that both require treatment (doctrine, from within disability studies).

The bearing on Part X is structural. The diagnosis of Chapter 45 distinguishes a capacity held by a producer from the conditions under which that capacity is admitted, and the distinction reported here is the same separation drawn for a different subject matter. This book records the parallel and asserts no identity between the conditions, in accordance with the distinction between mechanism and situation fixed in Chapter 2.

33.7 ALLOCATION MEASURES WEIGHTED BY THE CONDITION OF THE RECIPIENT

One controversy within this literature concerns a measure widely used in the allocation of provision, and it supplies the clearest instance of the difficulty this book identifies. This section reports the measure, reports the objection, reports the reply, and marks what the controversy establishes. It proceeds by report, objection, reply, and consequence. The method is the reporting of a continuing disagreement.

The measure assesses an intervention by the quantity of life it produces, weighted by an assessment of the condition in which that life is lived, and it is employed to compare interventions competing for a fixed budget (institutional doctrine, with an extensive methodological literature).

The objection holds that where a party's condition is assigned a lower weight, an intervention extending that party's life is assessed as producing less than an intervention extending the life of a party whose condition is assigned a higher weight, so that the measure directs provision away from parties with disabilities and away from parties with chronic illness (doctrine, with an extended argument first pressed in the 1980s). A national advisory body reported in 2019 that measures of this form place a lower value on interventions extending the lives of parties with disabilities and that arrangements employing them have been found inconsistent with anti-discrimination requirements (institutional reporting).

The reply holds that an allocation assessing benefits impartially is not thereby discriminatory, and that a measure recording the effect of an intervention records a fact about that effect in place of a judgement about the party (doctrine). The disagreement is unresolved within its own literature.

What the controversy establishes for this book is that an accounting assessing a party by the quantity that party is expected to produce, or by the quantity an intervention is expected to produce for that party, is not an abstract hazard. The structure identified in Chapter 41 operates within allocation arrangements in use, it has been contested for four decades, and the requirement fixed in Chapter 42 is stated against a documented practice in place of a hypothetical one.

33.8 THE UNIT PRESUPPOSED BY THIS LITERATURE

Part VII is read for the unit at which evaluation proceeds, and the reading is applied here. This section states the unit each position presupposes and marks what follows. It proceeds by position. The method is the diagnostic adapted to an ethical literature.

The positions reported in Sections 33.2, 33.4, and 33.5 take the individual as the unit and treat that individual as constituted through relations. Standing is attributed to a party, and the conditions producing or withholding it are located in arrangements.

The position reported in Section 33.3 takes a set of nested relations as the unit, since its principle runs among three positions and cannot be stated for two.

The positions reported in Sections 33.6 and 33.7 take an individual and an environment as a pair, and assess the pair in place of either term.

What follows is that this literature has already conducted the movement Chapter 41 performs. The unit is displaced from an individual considered alone toward an individual considered within relations and arrangements, and the displacement is made to solve the same difficulty. The account of Part IX accordingly claims the systematisation of this movement in place of its initiation.

33.9 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Constructions deriving principles from an agreement among parties assumed roughly equal in capacity cannot accommodate parties whose participation supplies no advantage, and the difficulty identified in Part IX appears in that construction two decades before the present account.

Dependency is a normal and recurring condition of human life, and an obligation running among three positions supports the party supplying care while requiring no return from the party receiving it. The limit case treated in Part XI is settled on this ground.

Independent agency is an achievement of relations in place of a property held antecedently, which coincides with the experimental finding that the detection of control is learned.

Vulnerability is universal and resilience is conferred by institutions, which is the structure this book states for the substrate supporting expression and for the capacity of a contribution to reach valuation.

Disability is distinguished from impairment and located in the relation between a party and an environment, which is the same separation this book draws between a capacity and the conditions admitting it. The parallel is recorded and no identity of conditions is asserted.

A measure assessing an intervention by the quantity of life produced, weighted by the condition in which it is lived, has been contested for four decades on the ground that it

directs provision away from parties with disabilities, and the disagreement is unresolved. The requirement fixed in Part IX is accordingly stated against a documented practice.

This literature has already displaced the unit from an individual considered alone toward an individual considered within relations, and the account of Part IX claims the systematisation of that movement in place of its initiation.

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CHAPTER 34

RELATIONAL MORAL PHILOSOPHY

34.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 41 adopts the relation as the unit at which evaluation proceeds and concedes that the adoption is held already by several programmes. The present chapter reports those programmes. It also reports the objections their critics have pressed, since the account of Chapter 42 inherits every hazard attaching to the position it adopts.

The chapter undertakes seven tasks. It reports the tradition treating the caring relation as the moral primitive. It reports the treatment of autonomy as an achievement of relations. It reports a relational moral theory supplying an explicit principle of right action. It reports the objection holding that a relational grounding fails to value a party for that party's own sake. It reports the construction treating persons as constituted by the roles they occupy. It reports the ethics of betweenness together with the historical reading its critics advance. And it reports the charge brought against holist positions in environmental ethics, which transfers to any account locating value in a whole.

The chapter proceeds by reporting six positions and one objection, and closes with the unit each presupposes. The method is the reporting of philosophical work, labelled as doctrine throughout in accordance with Chapter 2.

34.2 THE CARING RELATION TAKEN AS THE MORAL PRIMITIVE

One tradition takes a relation in place of an agent as the elementary object of moral assessment, and its priority in doing so is more than four decades old. This section reports the tradition, states its central move, and marks its bearing. It proceeds by report, move, and bearing. The method is exposition.

Gilligan (1982) reported a mode of moral reasoning organised around responsibilities within relationships in place of the application of principles to cases (doctrine, with interview material whose methods have been contested). Noddings (1984) holds that the caring relation, comprising a party who cares and a party cared for, is the elementary moral object, and that obligations derive from it in place of from a principle applied to it (doctrine). Held (2006)

develops care as a value and a practice and treats persons as relational and interdependent (doctrine).

The central move is that the relation is elementary and the parties are constituted within it, so that an account beginning from an agent and adding relations afterwards has begun in the wrong place.

The bearing on this book is that the move is the one Chapter 41 performs. The tradition reported here performed it first, and Chapter 43 records the concession.

34.3 AUTONOMY CONSIDERED AS AN ACHIEVEMENT OF RELATIONS

A body of work treats the capacity for self-direction as formed within relations, and its conclusions coincide with findings reported in Parts VI and VII. This section reports the position, states its claim, and marks the convergence. It proceeds by report, claim, and convergence. The method is exposition.

Mackenzie and Stoljar (2000) assemble positions holding that autonomy is exercised by parties who are socially and historically situated, that the capacities composing it are developed in relations of recognition and support, and that an account treating autonomy as independence from others misdescribes it (doctrine, with an extensive derived literature).

The claim is that a party's capacity for self-direction is supplied in part by the relations within which that party stands.

The convergence is threefold and is recorded here because three literatures reach one conclusion by independent routes. The position reported in this section argues it philosophically; the account of acknowledged dependence reported in Chapter 33 argues it within a theory of the virtues; and the experimental finding reported in Chapter 25 establishes that the detection of control is learned. Chapter 51 reads the proposition on assisted crossing under all three.

34.4 A RELATIONAL MORAL THEORY AND ITS PRINCIPLE OF RIGHT ACTION

One programme supplies what the tradition reported in Section 34.2 leaves implicit, namely an explicit criterion of right action stated in relational terms. This section reports the programme, states its principle, and marks its standing. It proceeds by report, principle, and standing. The method is the placement of prior art.

Metz (2007, 2022) holds that an act is right insofar as it honours relationships in which parties identify with one another and act in solidarity, and wrong insofar as it prizes discord, and develops the principle as a moral theory with an African pedigree, applying it across questions in which competing theories have been the standard instruments (doctrine, with an extended argument and an applied literature).

The principle is stated in a form permitting application, which distinguishes the programme from the tradition reported in Section 34.2. A relation is the object assessed, and

identification and solidarity are the properties by which assessment proceeds.

The standing of the programme within this Part is that it is the most fully developed relational moral theory available, and that it therefore supplies the strongest instance of the position Chapter 41 adopts. The objection reported in the section following is pressed against it in particular, and this book inherits the objection along with the position.

34.5 THE OBJECTION CONCERNING A PARTY'S OWN SAKE

The objection reported here is the principal hazard attaching to a relational grounding of worth, and it remains unresolved within the programme against which it is pressed. This section states the objection, states its ground, and marks its bearing. It proceeds by statement, ground, and bearing. The method is the reporting of a critical position.

Molefe holds that a theory grounding a party's worth in a relationship values that party by the contribution the party makes to the relationship's character, and therefore fails to value the party for that party's own sake (doctrine, pressed against the programme reported in Section 34.4).

The ground of the objection is that where the object of assessment is a relation, a party enters as one of its terms, and an account of that shape appears to assess parties as constituents.

The bearing on this book is that the objection applies to Chapter 41 as directly as to the programme against which it was pressed, and that Chapter 42 answers it by separating the source of a value from its object. The reply depends upon the distinction reported in Chapter 32, and it is unavailable to an account declining that distinction.

34.6 PERSONS CONSTITUTED BY THE ROLES THEY OCCUPY

A construction developed in comparative philosophy states the relational position for a tradition of long standing, and its treatment of the person bears on the unit adopted in this book. This section reports the construction, states its claim, and reports the objection advanced against it. It proceeds by report, claim, and objection. The method is exposition.

Ames and Jr. (2011) hold that the Confucian tradition understands a person as constituted by the roles that person lives, that the vocabulary of that tradition resists translation into terms presupposing discrete individuals, and that an ethics so constructed assesses conduct by the manner in which roles are performed (doctrine, with textual argument and an extensive disagreement in its reception).

The claim bearing on this book is that the person is constituted in relations in place of standing prior to them, which is the ontological position on which Chapter 41 rests.

The objection advanced within the literature holds that the construction either collapses into a theory of virtues or cannot accommodate the resources the tradition itself supplies for a party who resists a role, and the disagreement continues (doctrine, within comparative

philosophy). The objection is the one reported in Section 34.5 in a second form, and its recurrence across two programmes indicates that the difficulty attaches to the position in place of to any particular statement of it.

34.7 BETWEENNESS IN JAPANESE ETHICS AND THE READING ITS CRITICS ADVANCE

One programme develops the relational position at the level of a social ontology, and its subsequent reception supplies this book with a warning it must record. This section reports the programme, states its construction, and reports the reading its critics advance. It proceeds by report, construction, and reception. The method is exposition followed by the reporting of a critical reception.

Watsuji holds that the human being is constituted in betweenness, that an ethics is accordingly a study of the human understood through the relations in which parties stand, and that these relations are organised in successively wider forms, proceeding from the family through intermediate associations to the state (doctrine, with an extended systematic work).

The construction places the individual within relations at every level, and it treats the wider forms as realising what the narrower ones begin.

The reading its critics advance holds that the treatment of the state as the widest ethical form, published in the period in which it was written, lent support to the collectivism of that period, and the reception of the later portions of the work is dominated by this question (doctrine, within the scholarship on the programme; the interpretive dispute continues).

The warning this book records is structural in place of historical. A relational ontology that treats wider arrangements as realising narrower ones supplies no barrier against the subordination of a party to an arrangement, and Chapter 42 accordingly fixes the priority of protection over every accounting and separates the relation from the system as units of registration.

34.8 HOLISM AND THE CHARGE OF SACRIFICING INDIVIDUALS

A charge brought against holist positions in environmental ethics transfers to any account locating value in a whole, and it is the third form of the hazard reported in this chapter. This section reports the charge, reports the reply developed against it, and marks its bearing. It proceeds by report, reply, and bearing. The method is exposition.

Leopold's land ethic assesses conduct by its tendency to preserve the integrity, stability, and beauty of a biotic community, and Callicott develops the position systematically (doctrine). Regan (1983) holds that a position of this form licenses the sacrifice of individuals to the condition of the whole, and applies a term of severe criticism to it (doctrine, within animal ethics; the term has been widely quoted and its aptness disputed).

The reply developed within the position orders obligations so that duties arising in nearer and more intimate communities take precedence over duties arising in wider ones, and critics hold that the ordering is introduced to meet the objection in place of following from the position (doctrine).

The bearing on this book is that the same charge applies to any account assessing arrangements by what they sustain, and that the reply available to this book differs from the one just reported. Chapter 42 orders protection prior to every generative accounting, and the ordering follows from the account of worth given there in place of being appended to it.

34.9 THE UNIT PRESUPPOSED BY THIS LITERATURE

Part VII is read for the unit at which evaluation proceeds, and the reading is applied here. This section states the unit each position presupposes and marks what follows. It proceeds by position. The method is the diagnostic adapted to an ethical literature.

The positions reported in Sections 34.2, 34.4, and 34.6 take the relation as the unit, and each was stated before the present account.

The position reported in Section 34.3 takes the individual as the unit and treats the capacities composing that individual's agency as supplied within relations.

The position reported in Section 34.7 takes successively wider arrangements as units, terminating in the widest, and the position reported in Section 34.8 takes a whole as the unit.

What follows is that the relational unit is thoroughly occupied, and that the range of positions occupying it runs from those taking a dyad as elementary to those taking a whole. The hazards reported in Sections 34.5, 34.6, and 34.8 attach to the second end of that range, and Chapter 41 separates the relation from the system precisely to remain at the first.

34.10 SUMMARY OF RESULTS

The chapter has established seven results carried forward.

The caring relation has been treated as the elementary moral object for more than four decades, and the move Chapter 41 performs was performed there first.

Autonomy is an achievement of relations, a conclusion reached independently by philosophical argument, by a theory of the virtues, and by experimental work.

A relational moral theory supplying an explicit principle of right action is the most fully developed instance of the position this book adopts.

The objection that a relational grounding fails to value a party for that party's own sake is unresolved within the programme against which it is pressed, and this book answers it by separating the source of a value from its object.

Persons are treated as constituted by the roles they live in a further construction, against which a form of the same objection is advanced, so that the difficulty attaches to the position

in place of to any statement of it.

An ethics of betweenness organises relations in successively wider forms terminating in the state, and the reception of that construction supplies a structural warning: a relational ontology treating wider arrangements as realising narrower ones supplies no barrier against the subordination of a party.

The charge that holism licenses the sacrifice of individuals applies to any account assessing arrangements by what they sustain. The reply available to this book orders protection prior to every accounting, and the ordering follows from its account of worth in place of being appended to it.

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CHAPTER 35

THE ETHICS OF ASSISTANCE

35.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part VI examined assistance as a practice conducted by parties and organisations. The present chapter examines the normative literature treating what is owed and on what ground, since Chapter 51 classifies transfers by a criterion and declines to settle whether any transfer is owed.

The chapter undertakes four tasks. It reports the principles governing action in humanitarian settings, one of which is constructed to exclude assessment of the kind this book's criterion conducts. It reports the positions establishing an obligation to assist and the disagreement concerning its ground. It reports the programme directing assistance by expected effect, together with the criticisms advanced against it, since that programme is the practical embodiment of the accounting Part IX rejects. And it reports the treatment of what is at stake for the party receiving assistance.

The chapter proceeds by reporting four bodies of work and closes with the unit each presupposes. The method is the reporting of philosophical and institutional work under the labels fixed in Chapter 2.

35.2 THE PRINCIPLES GOVERNING ACTION IN HUMANITARIAN SETTINGS

A set of principles governs assistance supplied during acute emergencies, and one of them stands in a definite relation to the criterion of this book. This section reports the principles, states the tension they contain, and marks the bearing. It proceeds by report, tension, and bearing. The method is exposition.

The principles direct that assistance be supplied to preserve life and relieve suffering wherever it is found, that it be apportioned by need alone without distinction among recipients, that the supplying party abstain from taking sides, and that the supplying party act independently of other objectives (institutional doctrine, codified in professional standards and elaborated in a scholarly literature).

The tension they contain is between apportionment by need and apportionment by effect. A supplying party holding fixed resources and seeking the greatest effect will apportion them

otherwise than one apportioning by need alone, and the principle of impartiality forbids the second consideration from entering the apportionment.

The bearing on this book is that impartiality is a constraint of the form Chapter 42 fixes. Assistance apportioned by need is assistance apportioned without regard to what the recipient will subsequently produce, and the criterion of Part XI is accordingly excluded from the apportionment while remaining available for the design of what is supplied.

35.3 THE OBLIGATION TO ASSIST AND THE DISAGREEMENT CONCERNING ITS GROUND

An obligation to assist parties in severe need is asserted across this literature, and its ground is disputed in a manner bearing on how this book states its recommendations. This section reports the positions, states the disagreement, and marks the bearing. It proceeds by report, disagreement, and bearing. The method is exposition.

Singer (1972) holds that a party able to prevent something bad at no comparable cost is required to do so, and that distance and the presence of other parties able to act alter nothing (doctrine, with an argument that has organised the subsequent literature). Cullity (2004) examines how far such a requirement extends before it becomes unreasonably demanding (doctrine).

Rawls (1999) treats assistance across societies as a duty owed until a society is able to conduct its own affairs, so that the obligation has a terminus (doctrine). Pogge (2002) holds that the obligation is grounded in a negative duty, since the arrangements through which advantaged parties benefit contribute to the condition of those in need, so that assistance discharges a responsibility for harm in place of a duty of benevolence (doctrine).

The disagreement is whether assistance is owed as benevolence or as rectification, and the two grounds yield different terminations, different addressees, and different attitudes on the part of the supplying party.

The bearing on this book is that Chapter 56 states recommendations concerning the design of support and declines to settle the ground on which support is owed. The criterion of Part XI applies under either ground, and the account is silent on the disagreement.

35.4 ASSISTANCE DIRECTED BY EXPECTED EFFECT AND THE CRITICISMS IT HAS DRAWN

One programme directs assistance by the effect a transfer is expected to produce, and it is the practical embodiment of the accounting rejected in Part IX. This section reports the programme, reports three criticisms, and marks what the exchange establishes. It proceeds by report, criticisms, and consequence. The method is the reporting of a continuing disagreement.

The programme holds that a party seeking to do good should direct resources where the expected effect per unit is greatest, and that comparison across causes requires a common

measure of effect (doctrine, with an extensive derived literature and an associated body of practice).

The first criticism holds that a programme comparing interventions by measured effect selects interventions whose effects are measurable, and thereby directs resources away from work whose value resists measurement, including work altering the arrangements producing the need (doctrine). The second holds that the programme leaves the arrangements producing need unexamined, and that its analysis is conducted from within those arrangements in place of upon them (doctrine). The third holds that the common measure employed for comparison across interventions carries the difficulty reported in Chapter 33, since a measure weighting a benefit by the condition of the party receiving it assesses parties differently (doctrine, advanced from within disability scholarship).

What the exchange establishes for this book is that the accounting rejected in Part IX is in operation, is defended, and is contested on grounds this book adopts. The requirement fixed in Chapter 42 is accordingly a position within a live disagreement in place of a precaution against a hypothetical practice.

35.5 WHAT IS AT STAKE FOR THE PARTY RECEIVING ASSISTANCE

A smaller literature treats the position of the party receiving, and it supplies what the positions reported above leave unexamined. This section reports the literature, states its concerns, and marks its bearing. It proceeds by report, concerns, and bearing. The method is exposition.

The literature treats the standing of a party who receives, the conditions under which receipt is compatible with that standing, and the obligations receipt is taken to impose. It joins the material reported in Chapter 30, where the constitution of the supplying party is examined, and the material reported in Chapter 25, where the cost borne by a recipient who registers support as support is reported experimentally (doctrine, with the experimental component reported elsewhere in this book).

The concerns are three. Receipt may be accompanied by an expectation of gratitude that the supplying party is in a position to enforce. Receipt may be conditioned on conduct, which locates judgement over a party's purposes with the supplying party. And receipt may be conducted in a manner that marks the recipient publicly.

The bearing on this book is that the three concerns correspond to the three determinants fixed in Chapter 51. The routing of a transfer, the position it assigns, and its visibility are the properties this literature identifies as bearing on the standing of the recipient, and the account of Part XI classifies transfers by the same properties for a different purpose. The correspondence indicates that the determinants are not arbitrary, and it establishes that an arrangement selected by the criterion of Part XI will ordinarily be an arrangement this literature also approves.

35.6 THE UNIT PRESUPPOSED BY THIS LITERATURE

Part VII is read for the unit at which evaluation proceeds, and the reading is applied here. This section states the unit each position presupposes and marks what follows. It proceeds by position. The method is the diagnostic adapted to an ethical literature.

The principles reported in Section 35.2 take the individual in need as the unit, and apportionment by need alone is a refusal to evaluate at any wider unit.

The positions reported in Section 35.3 take the individual as the unit, whether as the bearer of a claim or as the party owed rectification.

The programme reported in Section 35.4 takes an aggregate as the unit, since its comparisons proceed across parties and its measure is summed.

The literature reported in Section 35.5 takes the relation between the supplying and the receiving party as the unit.

What follows is that this Part contains the whole range of units in a single chapter, and that the programme taking an aggregate is the one whose practical arrangements this book's requirement excludes. The exclusion is stated in Chapter 42 and applies to apportionment in place of to design.

35.7 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Assistance in humanitarian settings is apportioned by need alone, and the principle forbids apportionment by expected effect. The criterion of Part XI is accordingly excluded from apportionment and remains available for the design of what is supplied.

An obligation to assist is asserted across this literature, and its ground is disputed between benevolence and rectification. This book states recommendations concerning design and declines to settle the disagreement.

A programme directing assistance by expected effect is in operation and is contested on the grounds that it selects for measurable effects, that it leaves the arrangements producing need unexamined, and that its common measure assesses parties differently according to their condition.

The concerns raised for a party receiving assistance correspond to the routing of a transfer, the position it assigns, and its visibility, which are the three determinants fixed in Part XI. The correspondence indicates that the determinants are not arbitrary.

This chapter contains the whole range of units, and the programme taking an aggregate is the one whose arrangements the requirement of Part IX excludes from apportionment.

CHAPTER 36

THE ETHICS OF KNOWLEDGE PRODUCTION UNDER CONSTRAINT

36.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The chapters preceding this one examine what is owed to a party and by what unit worth is assessed. The present chapter examines the conduct of a producer working under the conditions Part X describes, since an account stating what such a producer may do owes an examination of what such a producer ought to do.

The chapter undertakes seven tasks. It reports the treatment of scholarship as a calling conducted under material conditions its practitioners do not control. It reports the norms governing scientific conduct and the account of their displacement. It reports the evidence on conduct under assessment pressure. It reports the disagreement concerning publication outside sanctioned arrangements. It reports the treatment of unpaid scholarly labour. It reports the virtues an inquirer working without institutional validation requires. And it reports the literature on self-presentation, which supplies the objection this book must answer concerning its own recommendations.

The chapter proceeds by reporting seven bodies of work and closes with the unit each presupposes. The method is the reporting of doctrinal and empirical work under the labels fixed in Chapter 2.

36.2 SCHOLARSHIP CONDUCTED UNDER MATERIAL CONDITIONS

A lecture delivered at the close of the First World War treats the material conditions of scholarly work with a directness the subsequent literature seldom matches, and its treatment supplies this chapter with its opening. This section reports the treatment, states its two claims, and marks its bearing. It proceeds by report, claims, and bearing. The method is exposition.

Weber (1919) describes the position of a scholar holding a teaching qualification without a salaried appointment, dependent upon fees and upon the prospect of advancement, and holds that whether such a scholar reaches a chair is governed to an unusual degree by chance in place of by accomplishment (doctrine, with the author's own observations of two national systems).

Two claims compose the treatment. Scholarly work is conducted under material conditions that its practitioners do not control, and the relation between accomplishment and advancement is loose enough that a scholar cannot regard advancement as a measure of the work.

The bearing on this book is that the figure Part X examines is described here at the origin of the sociology of science. A producer holding capacity and lacking position appears in that literature's founding statement, and the condition is accordingly long-standing in place of recent.

36.3 THE NORMS GOVERNING SCIENTIFIC CONDUCT AND THEIR DISPLACEMENT

An account of the norms internal to scientific work supplies the standard against which the evidence of Section 36.4 is assessed. This section reports the account, reports two revisions, and marks the bearing. It proceeds by report, revisions, and bearing. The method is exposition.

Merton (1942) holds that scientific work is governed by norms directing that findings be held in common, that claims be assessed without regard to the personal attributes of those advancing them, that inquiry be conducted without regard to personal advantage, and that claims be subjected to organised scepticism (doctrine, foundational).

Two revisions have been advanced. The first holds that a counter-norm accompanies each norm and that practitioners draw upon both according to circumstance (doctrine). The second holds that the conditions under which research is now conducted have displaced the original norms toward a set appropriate to commissioned and proprietary work (doctrine).

The bearing on this book is that the norms supply the standard by which conduct under pressure is assessed, and that the revisions establish that the standard is itself a variable in place of a constant. Chapter 18 reports the mechanism by which assessment alters conduct, and the present section supplies the normative counterpart.

36.4 CONDUCT UNDER ASSESSMENT PRESSURE

The relation between assessment pressure and conduct has been measured, and the measurements bear on any account recommending conduct to a producer. This section reports the measurements, states what they establish, and marks the bearing. It proceeds by report, establishment, and bearing. The method is the reporting of empirical work.

John et al. (2012) surveyed practitioners in one discipline under a design intended to elicit truthful admission, and reported that practices of questionable standing were admitted at substantial rates, with the mildest admitted by a majority of respondents (empirically tested; large survey with an incentive-compatible design, single discipline). Gopalakrishna et al. (2022) surveyed practitioners across disciplines in one country and reported that a majority admitted frequent engagement in at least one such practice, that fabrication and

falsification were admitted at low single-digit rates, and that reported publication pressure was associated with higher odds of frequent engagement, with junior position carrying elevated odds (empirically tested; large survey, single national system).

What the measurements establish is that conduct varies with assessment pressure and that parties in junior positions are more exposed to the variation.

The bearing on this book is a constraint stated here and observed in Part XIII. An account recommending that a producer compose contributions a receiving system will assign operates in a setting where such recommendations have documented failure modes, and Chapter 56 states its recommendations with the failure modes attached.

36.5 PUBLICATION BEYOND SANCTIONED ARRANGEMENTS

A disagreement within this literature concerns arrangements publishing contributions without the assessment their titles imply, and the disagreement bears on a producer holding no institutional position. This section reports both positions, reports the evidence, and marks what the account may conclude. It proceeds by report, evidence, and conclusion. The method is the reporting of a continuing disagreement.

The first position holds that arrangements charging authors while supplying no substantive assessment deceive readers as to the standing of what they publish, and it has produced lists identifying such arrangements (doctrine, with the lists themselves contested as to method).

The second position holds that the parties publishing in such arrangements are largely early in their careers and located in systems with limited access to established venues, that the criteria by which arrangements are identified as illegitimate track features correlated with region, and that the classification therefore operates in part as a boundary maintained against parties at the margins of the system (doctrine, with a study of authorship reporting the composition of the population and a subsequent literature examining the classification itself).

What this book may conclude is limited. The deception of readers is a wrong to readers, and the exclusion of parties by criteria correlated with position is a wrong of the kind Part X examines, and both may obtain in the same case. This book takes no position on the classification of any arrangement, and it records the disagreement because a producer under the conditions of Part X encounters it as a practical matter and because Chapter 46 treats the criteria by which venues are classified as one determinant of admissible form.

36.6 SCHOLARLY LABOUR SUPPLIED GRATUITOUSLY

A substantial portion of the labour sustaining scholarly arrangements is supplied without payment, and its treatment bears on the account of maintenance in Part V. This section reports

the treatment, states its concerns, and marks the bearing. It proceeds by report, concerns, and bearing. The method is exposition.

The treatment covers assessment supplied to journals without payment, editorial labour supplied on the same terms, maintenance of shared infrastructure supplied by unpaid parties, and teaching supplied under contingent arrangements at rates below those attaching to established positions (doctrine, with survey material of varying strength and an extensive advocacy literature).

The concerns raised are that the arrangements depend upon labour they do not recognise, that the labour is distributed unequally, and that parties holding insecure positions supply it under conditions in which declining carries a cost.

The bearing on this book is that the recurring cost reported in Chapter 22 is the same quantity examined here from a normative direction. What Part V treats as a cost borne by a producer, this literature treats as a contribution the arrangement fails to recognise, and the two descriptions are compatible.

36.7 THE VIRTUES REQUIRED OF AN UNAFFILIATED INQUIRER

A producer working without institutional validation requires dispositions that an inquirer within an institution acquires from the arrangement, and a literature in epistemology treats such dispositions directly. This section reports the literature, identifies the dispositions at issue, and marks the difficulty. It proceeds by report, identification, and difficulty. The method is exposition.

Code (1987) treats responsibility in the conduct of inquiry as an epistemic matter in place of a purely moral one (doctrine). Zagzebski (1996) develops an account of intellectual virtues, and her later work treats the rational grounds of self-trust and of trust in others (doctrine). Cassam (2019) treats intellectual vices and the conditions under which they are culpable (doctrine).

The dispositions at issue for the case Part X examines are two. An inquirer receiving no external assessment requires self-trust sufficient to continue, and the same inquirer requires the scepticism that external assessment would otherwise supply.

The difficulty is that the two stand in tension and that the arrangement ordinarily supplying their balance is absent. An inquirer holding insufficient self-trust ceases; an inquirer holding insufficient scepticism proceeds without correction. This book states the difficulty and supplies no resolution, and it records that the condition Part X describes places a burden upon the producer that an institution ordinarily discharges.

36.8 SELF-PRESENTATION AND THE OBJECTION IT RAISES FOR THIS ACCOUNT

A literature on the presentation of academic work bears on the recommendations of Part XI more directly than any other material in this Part, since it supplies an objection to them. This section reports the literature, states the objection, and states the reply. It proceeds by report, objection, and reply. The method is the examination of an objection to this book's own account.

Strathern (2000) assembles studies of arrangements in which parties are assessed against explicit measures and examines the effects upon the conduct assessed (doctrine, with ethnographic material). Bröckling (2015) treats the formation of parties who conduct themselves as enterprises (doctrine). Duffy and Pooley (2019) examine the presentation of academic identity under conditions of insecure employment (doctrine, with case material).

The objection this literature raises is that an account directing a producer to place contributions where they may be encountered, to select them by the couplings they create, and to attend to timing and to form, is an account directing a producer to conduct self-promotion, and that the conduct so directed is among the effects the literature criticises.

The reply available to this book applies its own criterion reflexively. A placement is generative where the value it generates returns to the relations it forms, and it converges where the value accrues to the producer's standing considered apart from any relation. The two are distinguished by the fading test: a placement forming couplings that persist without further placement differs from a placement whose effect lapses when placement ceases. The criterion of Chapter 49 therefore classifies the conduct this book recommends alongside the conduct it does not, and the objection is answered by the instrument the book already holds in place of by a distinction introduced for the purpose.

36.9 THE UNIT PRESUPPOSED BY THIS LITERATURE

Part VII is read for the unit at which evaluation proceeds, and the reading is applied here. This section states the unit each position presupposes and marks what follows. It proceeds by position. The method is the diagnostic adapted to an ethical literature.

The positions reported in Sections 36.2, 36.5, and 36.7 take the individual producer as the unit, and assess conduct or condition at that level.

The positions reported in Sections 36.3 and 36.4 take a community of practitioners as the unit, since norms are held by a community and prevalence is measured across one.

The positions reported in Sections 36.6 and 36.8 take an arrangement as the unit, and assess what the arrangement extracts from or imposes upon the parties within it.

What follows is that the conduct of a producer under constraint is assessed at three units in this literature and that the three yield different verdicts on the same act. An act increasing a producer's visibility is prudent at the first unit, is assessed against norms at the second, and

is an effect of an assessment regime at the third. Part XIII states its recommendations at the first unit and records the assessments available at the other two.

36.10 SUMMARY OF RESULTS

The chapter has established seven results carried forward.

Scholarly work is conducted under material conditions its practitioners do not control, and the relation between accomplishment and advancement is loose enough that advancement is no measure of the work. The figure Part X examines appears in the founding statement of this literature.

The norms governing scientific conduct supply the standard against which conduct under pressure is assessed, and revisions establish that the standard is itself variable.

Practices of questionable standing are admitted at substantial rates, reported publication pressure is associated with higher odds of engagement, and junior position carries elevated odds.

The classification of publishing arrangements as illegitimate is contested, since the parties publishing in the arrangements so classified are largely early in their careers and located at the margins of the system. This book takes no position on the classification of any arrangement.

A substantial portion of the labour sustaining scholarly arrangements is supplied without payment, and the cost Part V attributes to a producer is the contribution this literature holds the arrangement fails to recognise.

An inquirer receiving no external assessment requires self-trust sufficient to continue and the scepticism that assessment would otherwise supply. The two stand in tension, and the arrangement ordinarily supplying their balance is absent.

The recommendations of Part XI are open to the objection that they direct self-promotion, and the objection is answered by applying the folding criterion reflexively: a placement forming couplings that persist without further placement differs from one whose effect lapses when placement ceases.

CHAPTER 37

VALUE DERIVED FROM SELF-MAINTENANCE

37.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The criteria developed in Part XI classify relations by whether what they generate meets what their maintenance consumes. A criterion of that form stands in a definite relation to a philosophical programme deriving value from the self-maintenance of living things, and Part VII closes by reporting that programme together with the objection it has drawn.

The chapter undertakes five tasks. It reports the treatment of metabolism as an assertion against its own cessation. It reports the imperative derived from the vulnerability of what is so asserted. It reports the enactive accounts developing the derivation within cognitive science. It reports the objection holding that a value cannot be derived from a fact of self-maintenance. And it states the restriction this book adopts in consequence, which was fixed in Part IX and is grounded here.

The chapter proceeds by reporting three positions and one objection, and closes with a restriction and the unit each position presupposes. The method is the reporting of philosophical work, labelled as doctrine throughout, with the objection reported at the strength its proponents give it.

37.2 METABOLISM TREATED AS AN ASSERTION OF CONTINUATION

The programme reported in this chapter begins from a description of living organisation that carries an evaluative term, and the carrying is the whole of what is at issue. This section reports the description, states the term it carries, and marks the move. It proceeds by report, term, and move. The method is exposition.

Jonas (1966) holds that a living thing maintains itself by continuously exchanging its material constituents, so that its identity consists in a form maintained through the passage of matter, and that this maintenance is an assertion against its own cessation in place of a fact of equilibrium (doctrine, within the philosophy of biology).

The term carried is that the maintenance is directed. A living thing is described as holding its own continuation as an end, and the description is offered as a report of what living

organisation is in place of an interpretation placed upon it.

The move at issue is the passage from that description to the claim that life is a value. Where maintenance is directed toward continuation, continuation is held as good by the thing maintaining it, and the programme takes this to establish that value is present in the world independently of any party assessing it.

37.3 THE IMPERATIVE DERIVED FROM THE VULNERABILITY OF WHAT IS ASSERTED

The programme proceeds from the presence of value to an obligation, and the passage supplies the form of argument this book must decline. This section reports the passage, states the imperative, and marks the case on which the programme rests it. It proceeds by report, imperative, and case. The method is exposition.

Jonas (1979) holds that what asserts itself and is vulnerable places a claim upon a party able to protect or destroy it, that human capacities have grown to a scale at which they bear upon the continuation of life in general, and that an imperative follows directing that the effects of action be compatible with the continuation of life (doctrine, with an extended systematic argument).

The imperative is stated for a party holding power over what is vulnerable, and its addressee is therefore determined by capability in place of by agreement or by membership.

The case on which the programme rests it is the relation between a parent and an infant, which it treats as the elementary instance of an obligation that is neither chosen nor reciprocal, arising from the presence of something vulnerable that asserts its own continuation.

The bearing on this book is that the case so treated is the case treated in Chapter 51 as the limit of the criterion, and that the programme grounds the obligation in the vulnerability of the party in place of in what the relation returns. The grounds differ, and the conclusions coincide.

37.4 SELF-PRODUCTION AND SENSE-MAKING IN ENACTIVE ACCOUNTS

A programme in cognitive science develops the derivation reported above within a formal account of living organisation, and it is the nearest existing counterpart to the construction of Part XI. This section reports the programme, states its central claim, and marks the correspondence. It proceeds by report, claim, and correspondence. The method is exposition.

Weber and Varela (2002) hold that a system producing its own components establishes thereby a perspective from which the conditions of its continuation are significant, so that value is anchored in the organisation of the system in place of being attributed from outside (doctrine, within theoretical biology and philosophy). Thompson (2007) develops the position, holding that a self-producing system specifies an interior in relation to which an exterior

carries significance, and that sense-making is accordingly value-constituting (doctrine, with an extended systematic treatment).

The central claim is that a criterion of self-maintenance and a criterion of value coincide for systems of this kind.

The correspondence to this book is close and the difference is decisive. Part XI states a criterion of self-maintenance for a relation and declines the second step, in which the criterion is held to establish value. Chapter 42 grounds worth on materials reported in Chapter 32, and the criterion of Part XI classifies without grounding.

37.5 THE OBJECTION CONCERNING THE DERIVATION OF A VALUE FROM A FACT

The programme reported above has drawn an objection of long standing, and it is reported here at the strength its proponents give it, since this book's restriction is adopted to meet it. This section states the objection, reports its application to this programme, and marks its application to this book. It proceeds by statement, application, and bearing. The method is the reporting of a critical position.

The objection holds that a description of what a system does supplies no evaluative conclusion without an evaluative premise, and that an argument passing from self-maintenance to value introduces such a premise while presenting it as a report of the facts (doctrine, of long standing in moral philosophy).

Its application to the programme has been pressed directly. Critics hold that the attribution of directedness to metabolic organisation is an interpretation in place of an observation, and that the normativity so attributed is not normativity in the sense the argument requires (doctrine, within philosophy of biology and of mind; the disagreement continues, and a sympathetic commentator has held that the derivation is firm for metabolism and intuitive in place of demonstrated when extended).

Its application to this book would be direct were the second step taken. A criterion holding that a relation sustains itself is a description, and a conclusion that such a relation therefore possesses value, or that it ought to be sustained, would introduce the premise the objection identifies.

37.6 THE RESTRICTION ADOPTED IN CONSEQUENCE

The restriction meeting the objection was fixed in Part IX and is grounded here. This section restates it, states what it forbids, and marks what it costs. It proceeds by restatement, prohibition, and cost. The method is the application of a constraint fixed earlier.

Requirement 37.1. (The diagnostic restriction). *The threshold, folding, and fading criteria classify relations. They confer no worth on a participant and withdraw none, and*

every claim about what is owed to a participant rests on grounds stated independently of them.

What the restriction forbids is the inference the objection identifies. No passage in this book proceeds from the classification of a relation to a conclusion about what is owed to a party standing in it, and a passage doing so is an error of drafting in place of a position.

What the restriction costs is the ambition of the programme reported above. A book taking the second step would supply an account in which the criterion of Part XI grounded the ethics of Part IX, and the two would compose a single structure. This book keeps them apart, at the price of requiring an independent ground for worth and of leaving the coincidence between the two unexplained.

37.7 THE UNIT PRESUPPOSED BY THIS LITERATURE

Part VII is read for the unit at which evaluation proceeds, and the reading is applied here. This section states the unit each position presupposes and marks what follows. It proceeds by position. The method is the diagnostic adapted to an ethical literature.

The positions reported in Sections 37.2 and 37.4 take the self-maintaining system as the unit, and value is anchored in its organisation.

The position reported in Section 37.3 takes a relation between a party holding power and a party that is vulnerable as the unit, since the imperative is stated for the first with respect to the second.

What follows is that this chapter supplies the only positions in Part VII taking a self-maintaining system as the unit, and that they are the positions from which this book most carefully separates itself. The account of Part XI shares their criterion and declines their grounding, and Chapter 43 records the separation among the respects in which the contribution is stated narrowly.

37.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Living organisation is described in one programme as an assertion against cessation, and the description carries the term that its maintenance is directed toward continuation.

An imperative is derived from the vulnerability of what so asserts itself, addressed to parties holding power over it, and grounded in the relation between a parent and an infant as the elementary instance of an unchosen and unreciprocated obligation. The case coincides with the limit case of Part XI, and the grounds differ.

Enactive accounts develop the derivation formally, holding that a criterion of self-maintenance and a criterion of value coincide. Part XI shares the first criterion and declines

the second step.

The objection holds that no evaluative conclusion follows from a description without an evaluative premise, and it has been pressed directly against the programme. Its application to this book would be direct were the second step taken.

The restriction adopted forbids any passage from the classification of a relation to a conclusion about what is owed to a party standing in it. Its cost is that worth requires an independent ground and that the coincidence between the two criteria is left unexplained.

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PART VIII

PRIOR ART, THE LIMITS OF TRANSFER, AND THE STATEMENT OF THE GAP

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CHAPTER 38

THE TERMINOLOGICAL POSITION OF THE ACCOUNT

38.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part VIII states what this book claims and what it declines to claim, and it opens with the vocabulary. The central term of the account is in established use in three literatures, and two further constructions stand close enough to the terms fixed in Parts V and XI that an account using them without acknowledgement would be read as renaming existing work.

The chapter undertakes five tasks. It reports the established use of the central term in the study of technical platforms. It reports its established use in the study of psychosocial development. It reports the use of the adjectival form in research on digital infrastructure. It records the two constructions reported at length in Parts V and VI that stand nearest to the terms of this account. And it states the sense fixed in this book together with the distinctions required to hold it apart from the others.

The chapter proceeds by reporting three established uses, recording two adjacent constructions, and stating the sense adopted. The method is the placement of a vocabulary against prior use, under the labels fixed in Chapter 2.

38.2 THE CENTRAL TERM IN THE STUDY OF TECHNICAL PLATFORMS

The most prominent established use of the central term arose in the study of technical platforms, and it is the use with which the present account is most readily confused. This section reports the use, states its content, and marks the respects in which it differs. It proceeds by report, content, and difference. The method is exposition.

Zittrain (2006, 2008) holds that a technical platform is generative to the extent that it admits unanticipated contributions from a broad and uncoordinated body of parties, and identifies the properties supporting this capacity, comprising the leverage a platform supplies, its adaptability to varied purposes, the ease with which it is mastered, its accessibility, and the transferability of what is built upon it (doctrine, within law and technology policy, with extensive uptake).

The content of the use is a property of a deployed artefact, assessed by what parties may build upon it and by how widely the possibility extends.

Two differences separate it from the sense fixed here. The bearer differs: a platform in the established use, and a relation in the present account. And the assessment differs: the capacity to admit unanticipated contribution in the established use, and the returns a relation produces for its own continuation in the present account. A platform of the kind that use describes may figure in this account as an instrument held within a generative field, and the two terms are accordingly related as an object to a property of a relation.

38.3 THE CENTRAL TERM IN THE STUDY OF PSYCHOSOCIAL DEVELOPMENT

A second established use is older than the first and belongs to a different discipline, and its distance from the present account is greater. This section reports the use, states its content, and marks the difference. It proceeds by report, content, and difference. The method is exposition.

Erikson holds that a disposition to establish and guide those who follow characterises a stage of adult development, and that its failure is a condition of stagnation (doctrine, within developmental psychology, with extensive derived measurement).

The content of the use is a disposition held by a party at a period of life, assessed by that party's orientation toward those who come after.

The difference is that the bearer is a party and the property is motivational. The present account attributes nothing to the dispositions of parties, and its criterion is satisfied or failed by a relation irrespective of what any party intends, as Chapter 51 states for the kind of a transfer.

38.4 THE ADJECTIVAL FORM IN RESEARCH ON DIGITAL INFRASTRUCTURE

A third use stands nearer to this account than either of the preceding two, since it applies the adjectival form to the evolution of infrastructure. This section reports the use, states its content, and marks the relation. It proceeds by report, content, and relation. The method is exposition.

Henfridsson and Bygstad (2013) identify mechanisms by which digital infrastructure evolves, comprising innovation, adaptation, and scaling, and describe these mechanisms as generative in that they produce outcomes exceeding what any party designed (doctrine, within information systems research, with case material).

The content of the use is a mechanism producing unplanned growth in an infrastructure already in operation.

The relation to this account is proximity with a difference of object. The mechanisms so described operate upon an infrastructure that exists, and Part XI treats the passage into existence. Chapter 40 records the difference among the statements of prior art.

38.5 TWO CONSTRUCTIONS STANDING NEAREST TO THE TERMS OF THIS ACCOUNT

Two constructions reported at length elsewhere in this book stand nearest to its terms, and they are recorded here so that the vocabulary is placed in one location. This section records each, states what each supplies, and refers the treatment. It proceeds by recording each in turn. The method is cross-reference.

The first is the distinction between extractive and generative arrangements developed in the design of enterprises, reported in Chapter 31. It supplies the pair of terms this book employs for support, together with a typology of design features, and it supplies no operation assigning a given arrangement to one side.

The second comprises the constructs recording resources held within relations, reported in Chapter 23. They supply the stock of trust and obligation embedded in existing relations and the resources available through ties already held, and the construct fixed in this book differs from both by its orientation toward relations that do not yet exist.

38.6 THE SENSE FIXED IN THIS BOOK AND THE DISTINCTIONS REQUIRED

The account requires a statement of its own vocabulary sufficient to hold it apart from the uses reported above, and the statement is made here. This section states the sense, states four distinctions, and marks the convention governing their use. It proceeds by statement, distinctions, and convention. The method is stipulative.

The sense fixed in this book attributes generativity to a relation, and assesses it by what the relation returns for its own continuation. The bearer is a relation, the property is dynamical in place of motivational, and the assessment concerns returns in place of the admission of contributions.

Four distinctions hold the sense apart from its neighbours. The bearer is a relation and not a platform, an artefact, or a party. The property concerns returns and not the breadth of contribution a system admits. The property is assessed irrespective of what any party intends, which separates it from the developmental use. And the object treated is the passage into existence of a structure, which separates it from the research on infrastructure already in operation.

The convention governing their use was fixed in Chapter 2. Where the neighbouring literatures are in view, the text writes relational generativity, and the qualifier carries the distinctions stated here. Elsewhere the unqualified term is used with the sense fixed in this section.

38.7 SUMMARY OF RESULTS

The chapter has established five results carried forward.

The central term is established in the study of technical platforms for the capacity of a deployed artefact to admit unanticipated contributions, and the present account differs in bearer and in the property assessed.

The term is established in developmental psychology for a disposition held by a party toward those who follow, and the present account attributes nothing to the dispositions of parties.

The adjectival form is applied in research on digital infrastructure to mechanisms producing unplanned growth, and the object there is an infrastructure in operation where Part XI treats the passage into existence.

The pair of terms employed for support is established in the design of enterprises, which supplies a typology and no assigning operation, and the construct fixed for a producer's holding differs from its neighbours by its orientation toward relations that do not yet exist.

The sense fixed in this book attributes generativity to a relation, assesses it by what the relation returns for its own continuation, holds irrespective of what any party intends, and concerns the passage into existence of a structure. Where the neighbouring literatures are in view, the qualified form carries the distinction.

CHAPTER 39

THE BOUNDARIES OF THE TRANSFERS

39.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 2 fixed three conditions licensing the transfer of a mechanism between domains and required each transfer to be accompanied by a statement of the inferences it withholds. Those statements were made at the point of use throughout Parts III to VII, and the present chapter assembles them.

The chapter undertakes six tasks. It restates the distinction on which every transfer in this book rests. It assembles the boundary of the transfer from the study of deprivation. It assembles the boundary of the transfer from the stability theory of shear flows. It assembles the boundaries of the transfers from the study of assistance and from the psychology of helping. It states the boundary of the materials carried from the ethical literatures, which differ from the others in kind. And it states the rules governing a borrowed mechanism in the form the remainder of the book observes.

The chapter proceeds by restating a distinction, assembling five boundaries, and stating a set of rules. The method is assembly from statements made at the point of use, adding no material of its own.

39.2 THE DISTINCTION ON WHICH EVERY TRANSFER RESTS

Every transfer conducted in this book rests on one distinction, and its restatement governs the assemblies that follow. This section restates the distinction, states its strongest form, and marks what follows for the chapter. It proceeds by restatement, form, and consequence. The method is the application of a constraint fixed in Chapter 2.

What is carried in a transfer is a mechanism: a specified relation among specified variables together with the conditions under which the relation obtains. What remains behind is the situation: the stakes, the moral weight, the phenomenology, and the consequences of failure attaching to the setting in which the mechanism was established.

The strongest form of the distinction is that a shared mechanism entails nothing about the comparability of two situations in any other respect. Two settings may instantiate one relation

among variables while differing in everything that matters about them.

What follows for this chapter is that each assembly below states two things: the relation carried, and the respects in which the situations diverge. The second is stated at equal length with the first, since an assembly reporting only the first would misdescribe what the book has done.

39.3 THE BOUNDARY OF THE TRANSFER FROM THE STUDY OF DEPRIVATION

The transfer from the study of persistent deprivation supplies Part XI with the shape of its threshold, and it is the transfer most open to misreading. This section states what is carried, states what remains behind, and states the condition under which the transfer lapses. It proceeds by statement, exclusion, and condition. The method is assembly.

What is carried is a shape: accumulation admitting multiple stable equilibria, a critical level dividing trajectories that diverge, protective conduct in the neighbourhood of that level, and the requirement of a single sufficient increment where a stream of insufficient ones leaves a party where it began.

What remains behind is threefold. The measured stock is left behind, since the holdings of that literature are counted and generative capital admits of no scalar measure. The prevalence is left behind, since the frequency of stagnant low equilibria is disputed within the source literature. And the situation is left behind: deprivation of the kind studied there threatens subsistence, and the condition examined in this book leaves subsistence untouched in the ordinary case.

The third exclusion carries a consequence for the manner in which this book may be read. No passage in this book asserts that the condition it examines is comparable in gravity to material deprivation, and a reading attributing that assertion to the account mistakes a transferred mechanism for a claim about stakes.

The condition under which the transfer lapses is a demonstration that the accumulation of generative capital is monotone in effort, without the region of divergence the shape requires.

39.4 THE BOUNDARY OF THE TRANSFER FROM THE STABILITY THEORY OF SHEAR FLOWS

The transfer from hydrodynamic stability supplies Part XI with its central mechanism, and its boundary was fixed before the model was stated. This section states what is carried, states what remains behind, and states the discipline governing its use. It proceeds by statement, exclusion, and discipline. The method is assembly.

What is carried is a structural relation among variables: that stability against infinitesimal disturbance is compatible with large transient amplification where the governing operator is non-normal, that the amplitude and the structure of a disturbance jointly determine whether

transition follows, and that a control parameter fixes the regime within which these relations hold.

What remains behind is everything quantitative, the conservation laws constraining a fluid, the ontology of the medium, and the whole theory of the developed turbulent state. No numerical result from fluid mechanics enters this book, and no claim about knowledge production is supported here by a calculation performed on a fluid.

The discipline governing its use requires that every term carried from that theory receive, at its first appearance, an interpretation in the domain of knowledge production stated in terms identified independently of the physical model. Chapter 47 supplies the interpretations, and Chapter 46 supplies the components of the control parameter on independent grounds.

39.5 THE BOUNDARIES OF THE TRANSFERS FROM THE STUDY OF ASSISTANCE

Two transfers are conducted from the literatures on assistance, and their boundaries differ. This section states each, and marks the respect in which the second is the more constrained. It proceeds by stating each in turn. The method is assembly.

The first transfer concerns the operation by which support is assessed. What is carried is withdrawal as a diagnostic act, drawn from the developmental account of scaffolded learning. What remains behind is that account's presupposition that a trajectory toward independent performance exists in the learner and requires only support to be realised, which is the question at issue in the case this book examines. The fading test accordingly supplies a diagnostic operation and carries no presumption that fading will succeed.

The second transfer concerns the pattern of return. What is carried is the observation that returns arrive later than a transfer and at parties other than the supplier, which the theory of indirect reciprocity establishes. What remains behind is the claim to have established that returns arrive at a different level of organisation from the transfer, which this book records as an observation and supports with no formal treatment.

The second is the more constrained of the two, since the element this book adds to the pattern is precisely the element for which it supplies no formal account. Chapter 40 states the resulting position.

39.6 THE BOUNDARY OF THE MATERIALS CARRIED FROM THE ETHICAL LITERATURES

The materials carried from Part VII differ in kind from those carried from the empirical and formal literatures, and their boundary is stated separately. This section states what is carried, states what is declined, and marks the respect in which the account remains composite. It proceeds by statement, refusal, and assessment. The method is assembly.

What is carried is an instrument and a unit. The instrument is the separation of the source of a value from the manner in which it is held, and the unit is the relation. The first is drawn

from a tradition taking the individual as its unit, and the second from traditions that developed it independently of this account.

What is declined is the second step taken by the programme deriving value from self-maintenance. Part XI shares that programme's criterion and declines the inference from a relation's sustaining itself to any conclusion about worth, and the restriction was fixed for this reason.

The respect in which the account remains composite is that its ground of worth and its criterion of classification come from different sources and are held apart by a requirement in place of being derived from a common premise. Chapter 43 records the composition, and Chapter 37 records what holding them apart costs.

39.7 THE RULES GOVERNING A BORROWED MECHANISM

The assemblies above yield a set of rules, and the rules are stated here in the form the remainder of the book observes. This section states four rules and marks their status. It proceeds by stating each. The method is the fixing of constraints on the account.

Requirement 39.1. (Rules governing a borrowed mechanism). *A mechanism carried from another domain is stated at the level of description both domains instantiate; the variables it ranges over are identified in the target domain on grounds independent of the transfer; the conditions under which it was established are shown to have counterparts obtaining in the target domain; and the transfer is accompanied at the point of use by a statement of the inferences it withholds.*

The status of the rules is that they govern drafting in place of stating a result. A passage carrying a mechanism without its boundary is an error to be corrected, and the assemblies above are the record against which such passages are identified.

39.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

A transfer carries a specified relation among specified variables and leaves behind the stakes, the moral weight, and the consequences of failure attaching to the source setting. A shared mechanism entails nothing about the comparability of two situations in any other respect.

The transfer from the study of deprivation carries the shape of a threshold dividing diverging trajectories, and leaves behind the measured stock, the disputed prevalence, and the stakes. No passage in this book asserts that the condition it examines is comparable in gravity to material deprivation.

The transfer from the stability theory of shear flows carries a structural relation among variables, and leaves behind everything quantitative, the conservation laws, the ontology of the medium, and the theory of the developed state.

The transfer from the developmental account of support carries withdrawal as a diagnostic act and leaves behind the presupposition that a trajectory toward independence exists. The transfer concerning the pattern of return carries two established respects and adds a third for which no formal treatment is supplied.

The materials carried from the ethical literatures supply an instrument and a unit drawn from different sources, held apart from the criterion of Part XI by a requirement in place of being derived from a common premise.

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CHAPTER 40

THE NEAREST PRIOR ART AND THE STATEMENT OF THE GAP

40.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Six Parts of survey precede this chapter, and each closed by recording what its literature assumes and what its questions leave untreated. The present chapter draws the conclusion those records support. It treats the accounts standing nearest to the present one, states the region they jointly leave open, and states the conditions under which the statement would be withdrawn.

The chapter undertakes five tasks. It examines the accounts that address the formation of an arrangement directly, of which three are formal and one is institutional. It examines the accounts that address the phenomena of Part X and supply an alternative explanation of them. It examines the accounts that hold the position of Part IX or supply an objective resembling that of Part XI. It records the unit presupposed by the ethical literatures, deferred here from Chapter 9. And it states the gap together with the observations that would close it.

The chapter proceeds by examining three families of prior art, recording a deferred result, and stating a conclusion with its withdrawal conditions. The method is comparison, conducted against the transfer procedure and the presupposition diagnostic fixed in Chapter 2.

40.2 THE ACCOUNTS ADDRESSING FORMATION DIRECTLY

Four accounts address the passage into an arrangement, and each supplies part of what Part XI supplies. This section examines them in turn and states for each what it resolves and what it leaves. It proceeds account by account. The method is comparison.

The first states the difficulty in its institutional form, holding that parties perceive participation in an arrangement as advantageous once the arrangement exists, so that formation presents a circularity, and resolving it by supposing that parties act upon an erroneous belief that an arrangement exists already (formally modelled; a preprint at the time of writing). The resolution rests upon misperception, and the present account rests upon the amplification of contributions placed into a field, so that the two supply different mechanisms for one difficulty. A system in which no party held such a belief would be described by the present account and

left undescribed by that one.

The second establishes that a collection may sustain itself where no member of it does, and that the level of interaction required grows slowly with the size of the system (formally modelled). The result is carried into Chapter 48 and supplies the possibility on which the small-group case rests. What it leaves is the domain: the result concerns reaction networks whose elements are specified in advance, and the case at issue concerns parties whose identity becomes determinate through the process forming the structure.

The third establishes that a small and heterogeneous group bearing an initial cost may induce wider contribution where the production function accelerates (formally modelled). The result is carried into Chapter 48 and supplies the asymmetry between a first crossing and later ones. What it leaves is the collective good, which that account takes as defined before formation begins.

The fourth reports that governance in a community producing open software followed production and was constructed from conduct already established (empirically tested). The finding supplies the order this book asserts between production and institution. What it leaves is the formation of the contributor community, which that study takes as given.

The four together supply a mechanism resting on misperception, a possibility for small groups, an asymmetry between crossings, and an order between production and governance. What none supplies is an account of the passage in which the parties and the object are both indeterminate at the outset.

40.3 THE ACCOUNTS SUPPLYING AN ALTERNATIVE EXPLANATION OF THE PHENOMENA

Three accounts explain phenomena this book explains, and each must be distinguished by an observation in place of by assertion. This section examines them and states the discriminating observation for each. It proceeds account by account. The method is comparison against stated predictions.

The first holds that recognition accrues to parties already holding it, and explains concentration and persistence without reference to the operative criteria of a receiving system (formally modelled, with causal evidence at a funding threshold). It is the principal competing explanation of the phenomena of Part X. Two observations discriminate. That account predicts a monotone relation between prior standing and subsequent growth and predicts nothing about a position of maximal admissibility, and it predicts that additional channels raise the share of relations meeting their own costs, since it locates the difficulty in access. Part XI predicts an intermediate position of maximal admissibility and predicts that additional channels leave that share unaltered where value converges outside the relations producing it.

The second holds that small early events select a trajectory that increasing returns entrench (formally modelled). The discriminating observation concerns the parameter values at which

large growth occurs. That account requires an accumulating path along which returns rise, and Part XI predicts large intermediate growth against a background of decay, at values remote from any point of instability.

The third applies non-normal amplification to socio-economic systems, establishing that hierarchical and asymmetric interaction structures produce transient surges at parameter values far from any critical point (formally modelled, with empirical illustration). It employs the apparatus this book employs, and it is accordingly the nearest prior art in respect of mechanism. The difference is the phenomenon: that work treats the transient destabilisation of a market populated by parties standing in existing relations, and Part XI treats the formation of relational structure where little exists. The discriminating observation concerns the initial condition in place of the dynamics, and this book claims the application in place of the apparatus.

40.4 THE ACCOUNTS HOLDING THE POSITION OR THE OBJECTIVE OF THIS ONE

Four further accounts hold a position this book adopts or state an objective this book states, and each was reported in the Part concerned. This section records them and states what remains. It proceeds account by account. The method is comparison.

The capability approach applied to universities holds that the capacity to make epistemic contributions is a component of wellbeing and that institutional conditions marginalise it (doctrine). Part X asserts nothing about the condition that this account has left unasserted, and what remains is the dynamics and the criterion.

The programmes taking the relation as the unit of moral evaluation were reported in Chapter 34, and one supplies an explicit principle of right action. Part IX claims no part of the relational turn, and what remains is the combination of that unit with an instrument separating the source of a value from the manner in which it is held.

The distinction between support supplying solutions and support supplying means was reported in Chapter 25, and doctrines directing assistance toward a recipient's own effort were reported in Chapters 29 and 28. Each names the pair this book employs. What remains is the operation assigning a given arrangement to one side, and the record reported in Chapter 28 establishes that an objective stated without such an operation is satisfied by the removal of support.

The distinction between extractive and generative arrangements was reported in Chapter 31, which supplies the vocabulary and a typology of design features. What remains is again the operation.

40.5 THE UNIT PRESUPPOSED BY THE ETHICAL LITERATURES

Chapter 9 deferred the ethical literatures to this chapter, since they are read for a unit in place of a set of operating conditions. This section records the result. It proceeds by stating the distribution of units and its consequence. The method is the diagnostic adapted to an ethical literature.

The literatures reported in Part VII take four units. The positions constructed against aggregation take the individual, with one exception taking the relation. The positions treating dependency and disability take an individual constituted through relations, with one taking a set of nested relations. The positions in relational moral philosophy take the relation, ranging from a dyad to a whole. The positions deriving value from self-maintenance take a self-maintaining system.

The consequence is that the relational unit is thoroughly occupied and that its occupants extend to units this book declines. Chapter 41 separates the relation from the system for that reason, and the hazards recorded in Chapter 34 attach to the wider end of the range.

40.6 THE STATEMENT OF THE GAP

The materials assembled above support a statement of a definite and limited kind, and the statement is made here. This section states the gap, states its form, and marks what it does not assert. It proceeds by statement, form, and exclusion. The method is the drawing of a conclusion from assembled comparisons.

The gap is the conjunction of three elements. No account examined in this book combines a relational unit of evaluation, an operation assigning a given arrangement to one side of a distinction between arrangements that sustain themselves and arrangements requiring continued supply, and a dynamics stating the conditions under which an arrangement passes from the second to the first.

The form of the statement is a conjunction in place of a novelty. Each element is held separately. The relational unit is held by five programmes in moral philosophy. Operations assessing what persists after support concludes are held in the design literature of assistance, applied after the fact. A dynamics of amplification under non-normal operators is held in fluid mechanics, in ecology, in neuroscience, in network science, and in one application to socio-economic systems. What is unoccupied is the position holding all three at once, and the claim of this book is confined to that position.

What the statement does not assert is that the region has gone unexamined, that the phenomena are undescribed, or that the diagnosis is new. Chapter 5 records that the diagnosis is inherited, Chapter 15 records that it is stated at global scale in a further literature, and Chapter 43 states what remains once both are conceded.

40.7 THE CONDITIONS UNDER WHICH THE STATEMENT WOULD BE WITHDRAWN

A statement of this form requires the conditions of its own withdrawal, and they are stated here. This section states four and marks their status. It proceeds condition by condition. The method is the specification of defeating observations.

The statement would be withdrawn upon the production of an account combining the three elements named in Section 40.6, whether within one of the literatures surveyed or outside them.

It would be withdrawn in part upon the production of an operation, within the design literature of assistance, assigning an arrangement to one side of its distinction while the arrangement continues, since the second element would then be held elsewhere.

It would be withdrawn in part upon the application of non-normal amplification to the formation of a structure where parties stand in no prior relations, since the third element would then be held elsewhere in the form this book claims.

It would be narrowed upon the extension of any surveyed literature to the region identified, since Chapter 9 records the central question of each literature in place of the extensions its practitioners may construct.

The status of the four conditions is that they are stated in advance and that the account is committed to them. The scope of the statement is the literatures selected on the grounds given in Chapter 2, and a conjunction held in a literature outside that selection would defeat the statement equally.

40.8 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Four accounts address formation directly, supplying a mechanism resting on misperception, a possibility for small groups, an asymmetry between a first crossing and later ones, and an order between production and governance. None supplies an account of a passage in which the parties and the object are both indeterminate at the outset.

Three accounts supply alternative explanations of the phenomena, and each is distinguished by a stated observation: the position of maximal admissibility and the effect of additional channels discriminate against cumulative advantage; the parameter values at which large growth occurs discriminate against increasing returns; and the initial condition discriminates against the application of non-normal amplification to markets, where this book claims the application in place of the apparatus.

Four further accounts hold the position or state the objective of this one, and what remains in each case is the operation, the dynamics, or the combination of a unit with an instrument.

The ethical literatures take four units, the relational unit is thoroughly occupied, and its occupants extend to units this book declines.

The gap is a conjunction of a relational unit, an assigning operation, and a dynamics of passage. Each element is held separately and the position holding all three is unoccupied. Four conditions are stated under which the statement would be withdrawn or narrowed.

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PART IX

THE CONTRIBUTION OF GENERATIVE RELATIONAL BEING

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CHAPTER 41

THE UNIT OF EVALUATION

41.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 2 recorded that this book takes the relation as the unit at which evaluation proceeds, described the choice as prior to the arguments it governs, and deferred its defence to the present Part. The defence is owed because the choice carries substantive commitments, because the surveys of Part VII established that the choice is held by several existing programmes, and because the hazards attaching to it have been documented at length by the critics of those programmes.

This chapter undertakes four tasks. It sets out the four units available and states what each renders askable. It shows that a difficulty widely treated as a difficulty about assistance is generated by one of the four. It states the position adopted here, records the programmes that hold it already, and names the hazards inherited along with it. And it separates the relation from the system, since the two are readily conflated and the conflation reintroduces the difficulty the choice was made to dissolve.

The chapter proceeds by enumeration, by the analysis of a case, by concession, and by a distinction. The method is conceptual, and the positions carried from Part VII are labelled at the point of use.

41.2 THE UNITS AVAILABLE FOR EVALUATION

An account of what is owed to a producer requires a unit at which evaluation proceeds, and four are available in the literatures surveyed. This section names them, states for each the question it renders askable, and states what each leaves outside its reach. It proceeds unit by unit and closes with the property that distinguishes them. The method is enumeration.

The first unit is the individual together with the outputs attributable to that individual. Evaluation proceeds by identifying what a person produces and comparing it against what the person consumes. The question rendered askable is whether an allocation returns more than it costs. What falls outside reach is any consideration arising from the person's position within a set of relations, since such positions leave no trace in the accounts.

The second unit is the capability set available to a person: the real opportunities to achieve states of being and doing that the person has reason to value (doctrine, with an established measurement programme at population level). Evaluation proceeds by asking what a person is in a position to do. The question rendered askable concerns the conversion of resources into opportunities. What falls outside reach is the standing of the person in relation to others, which the capability set records only where a capability is defined to include it.

The third unit is the relation in which parties stand. Evaluation proceeds by examining what the relation generates, sustains, and returns. The question rendered askable concerns the character of a connection between parties. What falls outside reach is any property of a party considered in abstraction from every connection.

The fourth unit is the system within which relations are situated. Evaluation proceeds by examining aggregate properties: the health, the stability, or the productive capacity of a whole. The question rendered askable concerns the condition of that whole. What falls outside reach is any claim of a part against the whole, since the accounting proceeds at the level at which such claims are summed.

The property distinguishing the four is the level at which a claim may be registered. The first two register claims at the level of a person; the third registers them at the level of a connection; and the fourth registers them at the level of an aggregate. A great deal follows from this difference, and the following section shows what.

41.3 THE GENERATION OF THE DIFFICULTY BY THE CHOICE OF UNIT

One difficulty recurs in every literature on assistance surveyed in Part VI, and its recurrence is ordinarily attributed to the hardness of the subject matter. This section shows that the difficulty is generated by the first unit, states the form it takes there, and states what becomes of it under the third. It proceeds by posing the question in each of the two settings. The method is the analysis of a case.

Under the first unit the question takes this form: given that resources are scarce, and given a person from whom no future output is expected, what warrants the allocation of resources to that person. The cases are familiar. A person with profound cognitive disability, a person whose capacity for work has ended, a person in the final period of an illness, and a very young child all occupy the position the question describes.

The question admits no satisfactory answer at that level, and the reason lies in the accounting rather than in the cases. Where worth enters the accounts as attributable output, a person from whom no output is expected enters at zero, and every allocation to that person shows as a loss. Answers offered within the accounts take one of two forms. The first appeals to expected future output, which fails for the cases as described. The second appeals to indirect returns accruing elsewhere in the system, which succeeds only where the indirect returns are

positive and leaves the cases undefended wherever they fall short.

Under the third unit the question takes a different form: what does this relation generate, sustain, and return. A relation of care with a person from whom no output is expected generates a great deal. It produces obligations, a practice, a transformation in those who sustain it, and a set of distinctions available to a community for describing what it owes. The question that admitted no answer under the first unit receives a straightforward one under the third, and it receives it without any appeal to what the cared-for person will produce.

The observation to be drawn is precise. The difficulty was a property of the accounting rather than a discovery about the cases, and a change of unit dissolves it in place of solving it. Chapter 42 states the ground of worth that the change of unit makes available, and the present section establishes only that the difficulty has a formal source.

41.4 THE POSITION ADOPTED AND THE PROGRAMMES ALREADY HOLDING IT

The position adopted here is held by several existing programmes, and the concession is made before the position is stated. This section records the programmes, states what each supplies, and names the hazards that attach to the position in their hands. It proceeds by concession followed by the naming of three hazards. The method is comparison.

Five programmes take the relation as the unit. Relational egalitarianism holds that equality is a property of social relations, consisting in the standing of parties as equals and the absence of domination, and it decouples that standing from productivity (doctrine, within political philosophy). An African relational moral theory holds that an act is right insofar as it honours relationships of identity and solidarity, and supplies an explicit principle of right action on that basis (doctrine, within moral philosophy). Confucian role ethics holds that persons are constituted by the roles they occupy rather than existing as discrete agents prior to them (doctrine, within comparative philosophy). The Japanese ethics of betweenness holds that the human being is constituted in the between, and builds an entire ethics on that constitution (doctrine, within twentieth century philosophy). Care ethics holds that the caring relation is the moral primitive (doctrine, within moral philosophy).

The relational turn is therefore established, and this book claims no part of it. Chapter 43 states what remains, and the present section records the concession in the form the drafting principles require: what others hold is stated before what is added.

Three hazards attach to the position, each documented by the critics of the programmes just named. The first is the focus problem: worth grounded in a relationship may fail to value the individual for that individual's own sake, an objection pressed against the African relational theory and unresolved in its own terms. The second is the historical record of the ethics of betweenness, whose subordination of the individual to successively wider ethical organisations, terminating in the state, has been read as underwriting the collectivism of

the period in which it was written. The third is the charge brought against holist positions in environmental ethics, that an account locating value in a whole licenses the sacrifice of individuals to the condition of that whole.

The three hazards share a structure. Each arises where the relation, having been made the unit of evaluation, becomes also the bearer of value, so that a participant figures as a component of something whose value is assessed independently. Chapter 42 answers all three at that point.

41.5 THE SEPARATION OF THE RELATION FROM THE SYSTEM

The third and fourth units are readily conflated, and the conflation reinstates the difficulty dissolved in Section 41.3. This section distinguishes them, states the consequence of the distinction for the arguments of this book, and fixes a constraint on drafting. It proceeds by contrast and closes with a requirement. The method is conceptual.

A relation holds between identified parties. Claims registered at its level are claims of parties standing in it, and such claims resist summation, since a claim registered in one relation is a claim of the parties to that relation rather than a quantity to be added to a claim registered in another.

A system comprises many relations, and its properties are aggregates. Claims registered at its level are claims about the aggregate, and they permit summation by construction. An account evaluating at the level of the system therefore admits the trade of one relation against another whenever the aggregate improves.

The consequence for this book is direct. An argument of the form that assistance to a party sustains the generative capacity of the whole is registered at the level of the system, and it carries the properties of that level: it licenses withdrawal wherever the aggregate effect turns negative. Such an argument reinstates the accounting that Section 41.3 identified as the source of the difficulty, with a wider boundary and the same structure. Chapter 42 declines it on this ground.

Requirement 41.1. (The level of registration). *Claims about what is owed to a participant are registered at the level of the relation in which that participant stands. An argument registered at the level of the system enters this book as an observation about aggregates, and supplies no ground for a claim about what any participant is owed.*

41.6 SUMMARY OF RESULTS

The chapter has established four results carried forward.

Four units of evaluation are available: the individual together with attributable outputs, the capability set available to a person, the relation in which parties stand, and the system within which relations are situated. They differ in the level at which a claim may be registered.

The difficulty concerning assistance to a person from whom no output is expected is generated by the first unit. Under an accounting in which worth enters as attributable output, such a person enters at zero, and every allocation shows as a loss. Under the relation as unit, the question concerns what the relation generates, and it receives an answer without appeal to what the cared-for person will produce. The difficulty is dissolved in place of being solved.

The relation as unit is held already by relational egalitarianism, by an African relational moral theory, by Confucian role ethics, by the Japanese ethics of betweenness, and by care ethics. Three hazards attach to it: the focus problem, the historical record of subordination to successively wider organisations, and the charge that holism licenses the sacrifice of individuals.

The relation and the system are distinct units. Claims registered at the level of a relation resist summation; claims registered at the level of a system permit it by construction. An argument that assistance sustains the capacity of the whole is registered at the second level and reinstates the accounting that generated the difficulty. Claims about what is owed to a participant are registered at the level of the relation.

Draft

CHAPTER 42

CONSTITUTIVE WORTH IN A RELATIONAL ONTOLOGY

42.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 41 established that the relation is the unit at which evaluation proceeds in this book, recorded that the position is held already by five programmes, and named three hazards that attach to it in their hands. Each hazard arises at the same place: where the relation, having become the unit of evaluation, becomes also the bearer of value, so that a participant figures as a component of something whose value is assessed independently.

This chapter supplies the ground of worth that answers all three. It undertakes six tasks. It states a distinction in the structure of value that permits a participant to be valued as an end while the source of that value lies in relations. It distinguishes two layers at which generativity is predicated, and fixes what follows from each. It states the justification this book declines, and gives the ground for declining it. It states the constraint that holds the account away from the hazard named third in Chapter 41. It restricts the criteria of this book to a diagnostic office, and answers the objection that the restriction is designed to meet. And it returns to the first hazard with the resources the preceding sections supply.

The chapter proceeds by stating a distinction, applying it, declining an alternative, and fixing two constraints. The method is conceptual, and the positions carried from Part VII are labelled at the point of use.

42.2 FINAL VALUE CONFERRED BY RELATIONS

The hazards named in Chapter 41 rest on an assumption about the structure of value that a distinction in the philosophical literature dissolves. This section states the distinction, applies it to the position adopted here, and states the formulation the remainder of the book employs. It proceeds by stating the distinction and drawing one consequence. The method is conceptual, and it draws on a result established in the theory of value (doctrine, within analytic philosophy).

The assumption at work is that a thing valued for its own sake must be valuable in isolation from everything else, so that a value depending on relations is thereby reduced to a value as

a means. Two distinctions are conflated in that assumption. The first concerns the source of a thing's value, which may lie in the thing's own properties or in something outside it, and separates the intrinsic from the extrinsic. The second concerns the way a thing is valued, whether as an end or as a means to something further, and separates the final from the instrumental. The two distinctions are orthogonal, and their separation opens a position that the assumption conceals: a thing may be extrinsically good and valued as an end.

Definition 42.1. (Constitutive worth). *A participant in a relation holds final value, which is to say value as an end and never as a means to a further result, and the source of that value lies in the relations in which the participant stands.*

One consequence follows immediately and governs the chapter. Grounding worth in relations carries no implication that a participant is valued for what the participant contributes. The relation supplies the source of the value; the participant is what is valued; and the question of contribution does not arise at either place. The dilemma that appeared to force a choice between an isolated individual and a contributor to a whole was produced by the conflation, and it lapses with the conflation.

42.3 THE LAYERS OF PREDICATION

Generativity is predicated in this book at two layers, and running them together produces the impression that worth is being made conditional on productive capacity. This section distinguishes the layers, states what each supports, and fixes two constraints on their use. It proceeds by definition followed by the constraints. The method is stipulative.

Definition 42.2. (Ontological and functional generativity). *Generativity is ontological where it consists in a participant's standing within relations that generate, and functional where it consists in a capacity to produce artefacts, results, or contributions that a system of recognition receives.*

Any life constituted in relations exhibits ontological generativity, and the exhibition requires nothing of the participant. A person who produces no artefact alters the relations in which that person stands, transforms those who sustain them, and figures in the distinctions a community draws in describing what it owes. The generativity in question belongs to the relation, and the participant's standing within it is what the predication records.

Functional generativity is the subject of the remainder of this book. Academic poverty as defined in Chapter 45, the threshold of Chapter 48, and the account of support in Chapter 51 all concern the functional layer, and their results are confined to it.

Two constraints govern the use of the pair. The first is that the layers form no ranking. A participant exhibiting ontological generativity alone holds the standing that Section 42.2 describes, entire and undiminished, and the further predicate marks a different subject matter in place of a higher grade.

The second is that the ontological layer confers no licence to withhold at the functional one. An affirmation of a participant's standing settles nothing about what that participant is owed in the way of channels, resources, or occasions, and an account that offered the first while declining the second would have used the distinction to perform a refusal.

42.4 THE SYSTEMIC JUSTIFICATION AND THE GROUND FOR DECLINING IT

An argument is available at this point which appears to support the conclusions of this book and which the book declines. This section states the argument, gives the ground for declining it, and records the residual use to which its content is put. It proceeds by statement, analysis, and disposal. The method is the examination of an inference.

The argument runs as follows. A society that maintains relations of care with its most dependent members preserves the trust, the practices, and the distinctions on which its capacity to generate depends; a society that permits those relations to lapse suffers a decline in that capacity; and assistance to the most dependent is therefore warranted by its contribution to the generative capacity of the whole.

The argument is registered at the level of the system, in the sense fixed in Chapter 41, and it carries the properties of that level. Worth enters it as a contribution to an aggregate, which is the structure identified in Section 41.3 as the source of the difficulty, with a wider boundary and an unchanged form. Its warrant is conditional on the sign of the aggregate effect, so that a case in which the effect turned negative would fall outside its protection as a matter of the argument's own logic. The cases at issue are precisely those for which such an effect is hardest to establish.

The argument is therefore declined as a ground. Its content is retained in one place: as an observation about aggregates, of the kind the requirement in Section 41.5 admits, and bearing on the description of systems in Chapter 56. No claim about what a participant is owed rests on it anywhere in this book.

42.5 THE PRIORITY OF PROTECTION OVER ACCOUNTING

The third hazard named in Chapter 41 is answered by a constraint on the ordering of considerations, and the constraint is stated here in the form that governs the remainder of the book. This section states it, gives the test by which compliance is checked, and records the precedent for the device. It proceeds by requirement followed by test. The method is stipulative, with a precedent drawn from Part VII.

Requirement 42.3. (The lexical firewall). *Protection of dignity holds prior to every generative accounting, and remains in force at any value of the return that accounting yields.*

The requirement is lexical in the strict sense. Protection is settled before any accounting begins, and no result of an accounting reopens it. An arrangement in which protection were weighed against generative return, with a heavy thumb on the side of protection, satisfies a different and weaker constraint, and the difference appears exactly in the cases the constraint exists to govern.

Compliance is checked by a single test, applied to every formulation in this book that concerns what a participant is owed: whether any value of the generative return could, on that formulation, withdraw protection. A formulation that admits such a value has failed the test and is rewritten.

The device is not novel. Holist positions in environmental ethics have answered the charge of licensing the sacrifice of individuals by ordering obligations so that duties to nearer and more intimate communities take precedence, and the ordering has been criticised in that setting as a supplement introduced to meet an objection (doctrine, within environmental ethics). The criticism has less purchase here, since the ordering adopted in this book follows from the account of worth given in Section 42.2 rather than being appended to it: where the source of a participant's value lies in relations and the participant is valued as an end, no accounting over aggregates has standing to revise it.

42.6 THE DIAGNOSTIC RESTRICTION AND THE OBJECTION IT MEETS

The criteria developed in Part XI classify relations by a property those relations possess, and an inference from such a classification to a judgement of worth would carry the account across a boundary that philosophy has policed with care. This section states the restriction that blocks the inference, states the objection in the form its proponents give it, and gives the manner in which the restriction meets it. It proceeds by requirement, objection, and reply. The method is the specification of a constraint on inference.

Requirement 42.4. (The diagnostic restriction). *The threshold, folding, and fading criteria classify relations. They confer no worth on a participant and withdraw none, and every claim about what is owed to a participant rests on grounds stated independently of them.*

The objection the restriction meets has a long history. That a system maintains itself, or that a relation returns energy for its own continuation, is a description of how things stand. A conclusion that such a relation therefore possesses value, or that it ought to be

sustained, introduces an evaluative term absent from the premises. The objection has been pressed against every attempt to derive value from organic self-maintenance, including the most developed of them, in which the self-assertion of metabolism is offered as the origin of value and thence of an imperative of responsibility (doctrine, within the philosophy of biology, with the objection pressed in the same literature).

The reply available here is structural. This book derives no worth from its criteria. The criteria identify which relations sustain themselves and which persist on external supply, and the identification serves the description of systems and the design of support. The ground of worth is stated in Section 42.2 and rests on the structure of value rather than on any property of self-maintenance. The two are held apart by the requirement above, and a passage in which a criterion did normative work would be an error of drafting in this book in place of a position to be defended.

42.7 THE FOCUS PROBLEM AND THE REPLY AVAILABLE

The first hazard named in Chapter 41 remains, and it is the one its own proponents have found hardest to answer. This section states it, gives the reply the preceding sections make available, and marks what the reply leaves open. It proceeds by statement, reply, and residue. The method is the examination of an objection.

The objection holds that an account grounding worth in a relationship fails to value the individual for that individual's own sake. Where what is valued is a relation, a participant enters as one of its terms, and an account of that shape appears to value each party for the contribution each makes to the relation's character. The objection has been pressed against the African relational moral theory and remains unresolved within it (doctrine, within moral philosophy).

The reply available here turns on the distinction stated in Section 42.2. The objection assumes that a value whose source lies in relations is a value for the sake of those relations. The assumption conflates the source of a value with the object of it. On the account adopted here the object of the value is the participant, valued as an end; the source of the value lies in the relations in which the participant stands; and the two are separated by the orthogonality of the distinctions set out above. A participant is therefore valued for that participant's own sake, and the relations supply the ground on which the valuation stands.

Two matters are left open by the reply, and they are recorded rather than resolved. The first is the position of a participant standing in no relation whatever, which the account has no resources to describe and about which it declines to speak. The second is the weight the reply carries against a critic who rejects the distinction in the structure of value on independent grounds; against such a critic the reply is unavailable, and the account rests at that point on a commitment it shares with a substantial body of work in the theory of value.

42.8 SUMMARY OF RESULTS

The chapter has established six results carried forward.

A participant in a relation holds final value, which is to say value as an end, and the source of that value lies in the relations in which the participant stands. The dilemma that appeared to force a choice between an isolated individual and a contributor to a whole rested on a conflation of two orthogonal distinctions and lapses with it.

Generativity is predicated at two layers. It is ontological where it consists in a participant's standing within relations that generate, and functional where it consists in a capacity to produce contributions a system of recognition receives. The layers form no ranking, and the ontological layer confers no licence to withhold at the functional one.

The argument that assistance to the dependent is warranted by its contribution to the generative capacity of the whole is registered at the level of the system, carries a warrant conditional on the sign of the aggregate effect, and is declined as a ground. Its content is retained as an observation about aggregates.

Protection of dignity holds prior to every generative accounting and remains in force at any value of the return that accounting yields. Compliance is checked by asking whether any value of the return could withdraw protection on a given formulation.

The threshold, folding, and fading criteria classify relations and confer no worth. The objection that value cannot be derived from self-maintenance is met structurally, since this book derives none.

The objection that a relational grounding fails to value the individual for that individual's own sake conflates the source of a value with its object. The account separates them, and it declines to describe the position of a participant standing in no relation whatever.

CHAPTER 43

THE BOUNDARY OF THE CONTRIBUTION

43.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part IX has adopted a unit of evaluation and a ground of worth, and both were shown to be held already by programmes that developed them independently of this account. A Part making such concessions owes a statement of what survives them, and the present chapter supplies it.

The chapter undertakes five tasks. It records the concessions the survey Parts have accumulated, so that they stand together in one place. It states the position that survives them. It states the two standing objections and the answers adopted. It states the observations that would withdraw the claim. And it marks the respect in which the account is composite, which is a property of its construction in place of a defect in it.

The chapter proceeds by recording concessions, stating a residue, reporting two objections, and specifying withdrawal conditions. The method is the assembly of results established in earlier Parts, adding no material of its own.

43.2 THE RELATIONAL UNIT RECORDED AS HELD ALREADY

The unit adopted in Chapter 41 is held by five programmes, and the concession is recorded here in the form the drafting principles require. This section records the programmes, states what each supplies, and marks the consequence. It proceeds by record and consequence. The method is assembly.

The programmes are those reported in Chapter 34 and Chapter 32: care ethics, which takes the caring relation as the elementary moral object; a relational moral theory supplying an explicit principle of right action; a construction treating persons as constituted by the roles they live; an ethics of betweenness developing the position as a social ontology; and relational egalitarianism, which takes the character of relations as the object of egalitarian concern and decouples standing from productive contribution.

The consequence is that this book claims no part of the relational turn. The turn was made in moral philosophy, in comparative philosophy, and in political philosophy, and Chapter 41

adopts a position rather than establishing one.

43.3 WORTH INDEPENDENT OF PRODUCTION RECORDED AS HELD ALREADY

The conclusion reached in Chapter 42 concerning parties from whom no output is expected was reached earlier in a literature examining that case directly. This section records the earlier treatment, states what it establishes, and marks the consequence. It proceeds by record and consequence. The method is assembly.

The treatment reported in Chapter 33 holds that constructions built on mutual advantage exclude parties who supply none, that dependency is a recurring condition of human life, that an obligation running among three positions supports the party supplying care while requiring no return from the party receiving it, and that resilience is conferred by institutions in place of held by parties.

The consequence is that the limit case treated in Chapter 51 is settled on grounds established two decades before this account, and that Part IX systematises a movement already conducted in place of initiating one.

43.4 THE VOCABULARY AND THE DIAGNOSIS RECORDED AS HELD ALREADY

Two further concessions were accumulated in Parts II, III, and VI, and they are recorded here. This section records each and states what it removes from the claim. It proceeds by recording each in turn. The method is assembly.

The vocabulary of extractive and generative arrangements is established in the design of enterprises, as Chapter 31 reports, and the distinction between support supplying solutions and support supplying means is established experimentally, as Chapter 25 reports. The pair of terms is accordingly held, and what is removed from the claim is the distinction itself.

The diagnosis stated in Part X is inherited. Chapter 5 records that the accrual of recognition to parties already holding it, the concentration of positions, the conversion of standing, and the condition in which an interpretive apparatus admits no application of a capacity are each established in existing literatures, and Chapter 15 records that the mechanism is stated at the scale of a global system. What is removed from the claim is the assertion that the condition is undescribed.

43.5 THE POSITION THAT SURVIVES THE CONCESSIONS

The concessions recorded above leave a position, and it is stated here in the form the account maintains. This section states the position, states its three elements, and marks its scope. It proceeds by statement, elements, and scope. The method is the statement of a residue.

The position is that stated in Chapter 40: the conjunction of a relational unit of evaluation, an operation assigning an arrangement to one side of a distinction between arrangements that sustain themselves and arrangements requiring continued supply, and a dynamics stating the conditions under which an arrangement passes from the second to the first.

The three elements are held separately across the literatures surveyed, and the position holding all three at once is unoccupied among them.

The scope of the position is narrow in three respects. It concerns a conjunction in place of any element. It is stated against the literatures selected on the grounds given in Chapter 2. And it is a claim about what has been assembled in place of a claim about what could be.

43.6 THE STANDING OBJECTIONS AND THE ANSWERS ADOPTED

Two objections attach to the position, each pressed against programmes holding one of its elements, and the answers adopted are recorded here. This section states each objection and its answer, and marks what the answer requires. It proceeds by objection and answer. The method is assembly from Part IX.

The first objection holds that a value grounded in relations fails to value a party for that party's own sake, and it was reported in Chapter 34 in three forms. The answer adopted separates the source of a value from its object: the object valued is the participant, valued as an end, and the source of that value lies in the relations within which the participant stands. The answer requires the distinction reported in Chapter 32, and it is unavailable to an account declining that distinction.

The second objection holds that no evaluative conclusion follows from a description of what a system does, and it was reported in Chapter 37 as pressed against the programme deriving value from self-maintenance. The answer adopted restricts the criteria of Part XI to a diagnostic office and grounds worth independently of them. The answer requires that no passage in the book proceed from the classification of a relation to a conclusion about what is owed, and Chapter 37 records what the restriction costs.

43.7 THE OBSERVATIONS THAT WOULD WITHDRAW THE CLAIM

The position stated in Section 43.5 is defeasible, and the observations defeating it are stated here. This section states three and marks their relation to the conditions given in Chapter 40. It proceeds observation by observation. The method is the specification of defeating conditions.

The claim would be withdrawn upon the production of an account holding the three elements together, whether within the literatures surveyed or outside them. The condition is the one stated in Chapter 40 and is recorded here because it defeats the claim of this Part as well as the statement of that one.

The claim would be withdrawn in respect of its second element upon the production of an operation assigning an arrangement to one side of the distinction while the arrangement continues, since the design literature of assistance would then supply what this book supplies.

The claim would be narrowed upon a demonstration that the criteria of Part XI fail to classify arrangements consistently, since a criterion returning different assignments for one arrangement under different applications supplies no operation at all. Chapter 54 states the observations bearing on this.

43.8 THE COMPOSITE CHARACTER OF THE ACCOUNT

The account assembled in this book draws its unit, its instrument, and its criterion from different sources, and the character so produced is stated here in place of being left for a reader to infer. This section states the composition, states what holds it together, and marks what the composition costs. It proceeds by statement, cohesion, and cost. The method is assessment.

The composition is threefold. The unit is drawn from traditions in moral and political philosophy. The instrument grounding worth is drawn from a tradition taking the individual as its unit. The criterion is constructed in this book and its shape is drawn from the study of persistent deprivation and from the stability theory of shear flows.

What holds the composition together is a requirement in place of a derivation. The ground of worth and the criterion of classification are held apart by the restriction fixed in Chapter 42, and no premise common to both is asserted anywhere in the book.

What the composition costs is stated in Chapter 37. An account taking the second step available to it would derive its ethics from its criterion and would compose a single structure, and this book declines that step and accepts the resulting looseness. The coincidence between what the criterion classifies as self-sustaining and what the ethics holds to be owed remains unexplained, and the account records the coincidence in place of resolving it.

43.9 SUMMARY OF RESULTS

The chapter has established six results carried forward.

The relational unit is held by five programmes, and this book claims no part of the relational turn.

The conclusion concerning parties from whom no output is expected was reached two decades earlier in a literature examining that case directly, and Part IX systematises a movement already conducted.

The vocabulary of extractive and generative arrangements and the distinction between two kinds of support are held elsewhere, and the diagnosis of Part X is inherited from existing literatures, including one stating its mechanism at global scale.

The position surviving the concessions is a conjunction of a relational unit, an assigning operation, and a dynamics of passage, and its scope is narrow in three respects.

Two standing objections attach to the position. The first is answered by separating the source of a value from its object, which requires a distinction drawn in Part VII. The second is answered by restricting the criteria to a diagnostic office, which requires that no passage proceed from a classification to a conclusion about what is owed.

The account is composite. Its unit, its instrument, and its criterion are drawn from different sources and are held together by a requirement in place of a derivation, and the coincidence between the criterion and the ethics is recorded in place of being explained.

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PART X

THE STRUCTURE OF SUPPRESSION

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CHAPTER 44

THE RELATIONAL INFRASTRUCTURE OF EXPRESSION

44.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The diagnosis developed in this Part rests on a claim about what stands between a capacity and its expression. Where that claim is left unstated, the condition this book examines collapses into a familiar and uninteresting one, in which a producer has too little money and would do better with more. The chapters that follow distinguish a capacity that is absent from a capacity that is present and blocked, and the distinction requires a prior account of what does the blocking.

This chapter establishes that account. It undertakes to show that the expression of intellectual capacity runs through a relational substrate; that recognition is a property of the system in which a contribution circulates; that the passage from capacity to resources proceeds through a chain of distinct steps, each with its own condition; and that the withdrawal of the substrate produces observations indistinguishable, at the surface, from the absence of capacity.

The chapter proceeds by describing the substrate behind a single published contribution, stating the sense in which recognition belongs to an ecosystem, setting out the chain of transformations linking capacity to reinforcement, and examining what the chain yields when the substrate is withdrawn. The method is analytical, and the empirical claims carried from the surveys of Parts II and IV are labelled at the point of use.

44.2 THE SUBSTRATE BEHIND A SINGLE CONTRIBUTION

A published contribution presents itself as the work of its authors. This section examines what stands behind such a contribution and remains invisible while it functions. It proceeds by enumerating the conditions a single publication consumes, distinguishing those that are purchased from those that are supplied by position, and stating the sense in which the enumeration bears on the argument. The method is descriptive.

Consider the conditions a completed and published contribution has consumed. Time was purchased, ordinarily by a salary that permitted attention to be given to the work rather

than to subsistence. Access was supplied, to a literature held behind institutional subscription and to the instruments or archives the work required. Criticism was supplied, by colleagues who read drafts under no obligation and returned objections early enough to matter. Passage was supplied, by an editor willing to send the work to reviewers and by reviewers willing to spend unpaid hours on it. A reception was supplied, by a body of readers already oriented to the questions the work addresses, and by a citation environment in which the work could be found.

Each of these is a relation, and each was maintained by parties other than the author. The salary was paid by an institution; the subscription was negotiated by a library; the readers of drafts were colleagues acquired through a position; the editor's willingness was shaped by the author's affiliation and by prior acquaintance. What appears in the finished object as individual accomplishment was, in its production, distributed across a standing arrangement that the author did not build.

The enumeration bears on the argument in one respect. Every item on it is a condition of expression rather than a condition of capacity. A person able to formulate a problem, construct an argument, and see what follows possesses that ability whether or not a library subscription is available. The conditions enumerated here govern whether the ability issues in something others encounter.

44.3 RECOGNITION AS A PROPERTY OF THE SYSTEM OF CIRCULATION

The substrate is ordinarily invisible because a competing account of recognition is available and widely held. This section states that account, sets against it the findings of the sociology of science, and fixes the sense in which recognition is treated in this book as a property of a system. It proceeds by stating the individual-merit account, reporting the evidence bearing on it, and drawing the consequence. The method is a comparison of two accounts against the same evidence.

On the individual-merit account, a contribution of quality attracts attention in proportion to its quality, and the surrounding arrangement transmits without distorting. The account is attractive because it licenses a simple inference: where a contribution has attracted no attention, its quality was low.

The evidence assembled in Chapter 5 tells against the transmission assumption. Recognition accrues disproportionately to those already recognised, a finding established for citation, for funding, and for appointment (empirically tested; large observational samples across several fields, with one causal design at a funding threshold). Position within the system of appointment is concentrated, with a small minority of institutions supplying most of those who occupy positions (empirically tested; large administrative sample, single national system). Evaluators score highly novel proposals lower than less novel ones (empirically

tested; randomised evaluation experiment at a single institution).

The consequence is that the transmission assumption fails in a specific way. The system of circulation applies a transformation of its own to what enters it, and the transformation depends on properties of the entrant that are distinct from the content of the contribution. Recognition is therefore treated in what follows as a joint product of a contribution and the system receiving it, and the inference from absent attention to low quality lapses.

44.4 THE CHAIN FROM CAPACITY TO REINFORCEMENT

The passage from a capacity to the resources that sustain it proceeds through several steps, and treating the passage as a single transition obscures the diagnosis. This section sets out the steps, states the condition each requires, and marks the property of the chain that the remainder of the Part exploits. It proceeds by naming the steps in sequence and then examining the chain as a whole. The method is analytical decomposition.

Five steps compose the chain. A capacity is exercised, which requires time and access. An exercise issues in an artefact, which requires the instruments and the criticism by which a formulation is brought to a communicable state. An artefact enters circulation, which requires a channel. A circulated artefact is valued, which requires a recognition system whose operating criteria admit it. A valued artefact returns resources, which requires an allocation procedure attached to the recognition system.

Two properties of the chain matter for the diagnosis. The first is that the conditions differ at each step: time, instruments, channel, admitting criteria, and allocation are distinct, and the presence of one implies nothing about the presence of another. A producer with abundant time and no channel occupies a different position from one with a channel and no time, and both are described in ordinary language as lacking resources.

The second property is that the chain closes. Resources returned at the fifth step supply the time and access consumed at the first, and a producer positioned within the closed chain finds each traverse cheaper than the last. Chapter 48 treats this closure as the phenomenon the model must explain. What matters here is that the chain closes for some and remains open for others, and that the open case is not merely a slower version of the closed one.

44.5 THE WITHDRAWAL OF THE SUBSTRATE AND ITS SURFACE APPEARANCE

The chapter's final task is to establish why the condition it describes is hard to identify from outside. This section examines what an observer sees when the substrate is withdrawn, states the identification problem this creates, and fixes the problem as the task of the chapter following. It proceeds by describing the observation, distinguishing the causes consistent with it, and stating what would be required to separate them. The method is the analysis of an inference from evidence.

An observer of the system of circulation sees artefacts that circulate. Where the substrate behind a producer has been withdrawn, the observer sees little or nothing: few artefacts, in channels of low reach, attracting little citation. The observation is consistent with several distinct histories. The producer may lack the capacity. The producer may possess the capacity and lack the time to exercise it. The producer may possess capacity and time, and lack a channel. The producer may possess capacity, time, and channel, and find the recognition system's criteria closed to what is offered.

The four histories are equivalent at the surface and distinct in what they call for. Chapter 45 takes up the second, third, and fourth together, under the name of suppressed generativity, and separates them from the first. The separation carries a burden of its own, since every unrecognised producer has an interest in claiming it, and Chapter 46 supplies the quantity that makes the separation something other than a matter of assertion.

44.6 SUMMARY OF RESULTS

The chapter has established four results carried forward.

The expression of intellectual capacity consumes a substrate of relations that the producer ordinarily does not build: purchased time, supplied access, supplied criticism, supplied passage, and a reception already oriented to the questions at issue. Every item in the substrate is a condition of expression, and none is a condition of capacity.

Recognition is a joint product of a contribution and the system receiving it. The evidence assembled in Part II tells against the assumption that the system transmits without transformation, and the inference from absent attention to low quality lapses.

The passage from capacity to reinforcement proceeds through five steps with distinct conditions, and the chain closes for producers positioned within it. The open case differs in kind from a slower closed one.

The withdrawal of the substrate produces observations indistinguishable at the surface from the absence of capacity. Four histories are consistent with the same observation, and the work of separating them falls to the two chapters that follow.

CHAPTER 45

SUPPRESSED GENERATIVITY

45.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 44 established that the withdrawal of the relational substrate yields observations indistinguishable at the surface from the absence of capacity. This chapter supplies the distinction that the observation obscures, and it is the chapter on which the diagnosis of the book rests.

The chapter undertakes five tasks. It defines the pair of conditions that the surface observation confounds. It states the constraint operating in the second of them, and gives its analogues in three literatures already surveyed. It defines the condition that this book calls academic poverty, and fixes its relation to the vocabulary of exclusion. It treats the case in which the operative criteria change while a capacity remains constant. And it states the requirement that keeps the distinction from becoming a consolation available to anyone.

The chapter proceeds by definition, by comparison with the analogues, and by the analysis of a case the definitions must accommodate. It closes by separating suppression from a neighbouring condition treated later in the book. The method is conceptual throughout, and the empirical claims carried from earlier Parts are labelled at the point of use.

45.2 THE CONDITIONS THE SURFACE OBSERVATION CONFOUNDS

The diagnosis turns on a distinction that ordinary usage collapses. This section states the distinction, fixes the terms, and marks what follows from each side of it. It proceeds by definition and by the specification of what each condition calls for. The method is stipulative.

Definition 45.1. (Suppressed and absent generativity). *Generativity is absent where the capacity to generate is lacking, and suppressed where the capacity is present and the interpretation in force admits no application of it.*

The two conditions call for different things. Absent generativity calls for formation: training, apprenticeship, the acquisition of a practice. Suppressed generativity calls for an

opening: a channel, a coupling, or an alteration in the criteria by which contributions are admitted. Supplying formation where the condition is suppression leaves the condition untouched, and the producer is trained in what the producer already possesses.

The word interpretation carries a specific sense here. It denotes the operative procedure by which a system of recognition assigns a contribution to a category and thereby fixes what may be done with it. The procedure is not a belief held by any individual within the system, and reformulating it as a belief obscures the difficulty: a system may consist entirely of parties who would, on reflection, value a contribution that the operative procedure assigns to no category at all.

45.3 THE EXPRESSION CONSTRAINT

The second condition in the pair requires a statement more precise than its definition supplies, since what is blocked is a relation between a capacity and its occasion. This section states the constraint, gives its analogues in three surveyed literatures, and marks for each analogue the inferences the transfer withholds. It proceeds by definition and by three comparisons. The method is the transfer procedure fixed in Chapter 2, applied at the point of use.

Definition 45.2. (The expression constraint). *A capacity stands under expression constraint where the rule it would apply remains valid, and the interpretation currently in force admits no occasion of its application.*

The formulation separates two things that scarcity language runs together. A producer under expression constraint holds a rule: a way of formulating problems, a set of distinctions, a technique. The rule is intact and would generate its consequences if applied. What is unavailable is an occasion on which the application registers.

The first analogue lies in the philosophy of epistemic injustice. Hermeneutical injustice occurs where a gap in collective interpretive resources places a person at an unfair disadvantage in making sense of experience (doctrine, within analytic philosophy; the concept is argued rather than measured). The structural parallel is exact at one point, in that the deficiency lies in the interpretive resources rather than in the person, and it withholds one inference: the philosophical account concerns a person's capacity to render experience intelligible, while the constraint defined here concerns the passage of a formulated contribution through a system of valuation.

The second analogue lies in the capability approach. Conversion factors of the social kind, which include norms, hierarchies, and discriminating practices, determine whether a resource becomes a capability and whether a capability issues in a functioning (doctrine, with an established measurement programme attached at the level of aggregate deprivation). The transfer licenses treating the operative criteria of a recognition system as a social conversion factor, and

withholds the aggregate measurement apparatus, which is constructed for populations and household-level deprivations.

The third analogue lies in the economics of information. The value of information to a buyer remains unknown until the buyer has the information, at which point it has been acquired without payment (formally modelled). The parallel is that value cannot be assessed in advance of an occasion that itself constitutes the thing being allocated. The transfer withholds the resolution available in the economic case, where rivalry among buyers restores appropriability under stated conditions, since a producer under expression constraint ordinarily faces no rivalry among evaluators.

The three analogues converge on the same structure and originate in different disciplines with different evidentiary standards. Their convergence supports the claim that the structure is general, and it supports no claim about the magnitude of the effect in any particular setting.

45.4 THE DEFINITION OF ACADEMIC POVERTY

The condition this book examines is a specific instance of expression constraint, occurring within the system that produces and values knowledge. This section defines it, fixes its relation to the vocabulary of exclusion, and states the mechanism by which it operates. It proceeds by definition followed by two clarifications. The method is stipulative, with support drawn from Parts III and IV.

Definition 45.3. (Academic poverty). *Academic poverty is the condition in which intellectual generativity is present and the relational infrastructure required for its expression, recognition, and amplification is withheld.*

The first clarification concerns the vocabulary. Exclusion suggests a position outside a system, and the condition defined here is ordinarily occupied from within. A producer in academic poverty holds a degree, reads the literature, submits to the journals, and receives their decisions. The applicable description is incorporation on disadvantageous terms, a formulation developed in the study of chronic poverty to displace the language of exclusion (doctrine, supported by qualitative fieldwork in southern Africa). The term is used in this book with the boundary stated in Chapter 14, and it withholds the claim that the terms of incorporation are the product of anyone's intention.

The second clarification concerns the mechanism. A producer holds capital of one kind, which is the accumulated capacity to formulate and to argue, and requires its conversion into capital of another kind, which is standing within a system of recognition. The theory of the forms of capital treats such conversion as ordinary and treats its rate as variable with context (doctrine, within sociology). Academic poverty is the state in which the conversion rate between the two has fallen toward zero while the first stock remains intact. The formulation

has the advantage of making the condition a property of a relation between two positions rather than a property of the producer.

45.5 THE ALTERATION OF CRITERIA UNDER A CONSTANT CAPACITY

One case bears on the definitions with particular force, since it separates the condition from any account that locates the difficulty in the producer. This section examines that case, states what it shows, and marks its evidentiary status. It proceeds by describing the case and drawing two consequences. The method is the analysis of a reported phenomenon.

The case is the alteration of evaluative criteria during the period over which a producer is assessed. A body of work is undertaken under one set of operative criteria and assessed under another, with the consequence that completed work ceases to count. The phenomenon is reported across several national systems, in discussions of probationary assessment conducted in professional and press sources (doctrine and journalism; no measurement programme addresses it, and the reports do not permit an estimate of its frequency in any system).

Two consequences follow. The first is that the capacity and the work are held constant across the alteration, and the change of status occurs entirely on the side of the interpretation. Accounts that locate the difficulty in the producer's ability have no purchase on the case, since nothing on that side has changed.

The second is that the interpretation in force is revealed as a moving object. The expression constraint defined above admits of a static reading, in which a producer holds a rule that a fixed interpretation fails to admit. The case shows that the interpretation may move beneath a rule that was previously admitted, and that a producer may enter the condition without having changed anything. Chapter 46 accordingly treats the operative criteria as a variable quantity.

45.6 THE DISTINCTION BETWEEN SUPPRESSION AND DEFICIENCY

The distinction on which this chapter rests is available to every producer whose work has gone unrecognised, and a distinction available to everyone who wants it establishes nothing. This section states the requirement that answers this difficulty, gives the reason the requirement cannot be satisfied from within the condition, and assigns the outstanding work to two later chapters. It proceeds by stating a requirement and drawing its consequences. The method is the specification of a condition on the account's own admissibility.

Requirement 45.4. (Separability). *An account distinguishing suppressed from absent generativity is admissible only where it specifies conditions under which the distinction fails to hold, and identifies the observations that would place a given case on the side of absence.*

The requirement rules out one form of the account immediately. An account on which every unrecognised capacity is suppressed, and on which no observation could place a case

on the side of absence, describes nothing. Its content would be exhausted by the consolation it offers.

The requirement cannot be satisfied from within the condition. A producer under expression constraint has, by the terms of the definition, no occasion on which the rule held is applied and assessed, and therefore no evidence about the rule beyond the producer's own conviction. The conviction is compatible with both sides of the distinction. The separation is therefore made on structural grounds, by examining the system rather than the producer: Chapter 46 specifies the quantity that fixes whether any contribution whatever could pass, and Chapter 54 states the regime in which the answer is that none could.

45.7 THE DISTINCTION BETWEEN SUPPRESSION AND CAPTURE

A second condition resembles suppression at the surface and calls for a different description. This section distinguishes them, states why the distinction matters for the diagnosis, and refers the full treatment forward. It proceeds by contrast. The method is conceptual.

Under suppression, a contribution fails to pass: the interpretation in force admits no occasion of application, and the returns that would have followed are never generated. Under capture, contributions pass and returns are generated, and the returns accrue to an attractor lying outside the relation that produced them. The forms of the generative relation are retained in the second case. Openness, curiosity, community, and disinterested inquiry remain in the vocabulary and in the procedures, while what the activity returns folds outward to rankings, to metrics, and to the renewal of position.

The distinction matters here for one reason. The two conditions prescribe differently. A system under suppression requires an opening, and a system under capture already has openings in abundance and returns their yield elsewhere. A diagnosis that ran them together would prescribe more channels for a system whose difficulty is the destination of what already flows through the channels it has. Chapter 49 treats capture in full, and this chapter records only that academic poverty and captured generativity are distinct conditions that may hold simultaneously in the same system.

45.8 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Generativity is absent where the capacity to generate is lacking, and suppressed where the capacity is present and the interpretation in force admits no application of it. The two conditions call for formation and for an opening respectively.

A capacity stands under expression constraint where the rule it would apply remains valid and the interpretation currently in force admits no occasion of its application. The structure

has analogues in the philosophy of epistemic injustice, in the capability approach, and in the economics of information, and the transfer from each withholds stated inferences.

Academic poverty is the condition in which intellectual generativity is present and the relational infrastructure required for its expression, recognition, and amplification is withheld. It is ordinarily occupied from within the system, under incorporation on disadvantageous terms, and it operates through the collapse of a conversion rate between two stocks of capital.

The interpretation in force is a moving object. A producer may enter the condition through an alteration of criteria while holding capacity and completed work constant.

An account distinguishing suppression from deficiency is admissible only where it specifies the conditions under which the distinction fails, and the specification cannot be supplied from within the condition. The work falls to Chapter 46 and to Chapter 54.

Suppression and capture are distinct. Under the first, contributions fail to pass; under the second, contributions pass and their returns fold outward. The conditions may hold together, and they prescribe differently.

CHAPTER 46

THE CONTROL PARAMETER

46.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 45 placed a requirement on the account and declined to satisfy it. An account that distinguishes suppressed from absent generativity is admissible only where it specifies conditions under which the distinction fails, and the specification cannot be drawn from the producer's own conviction. This chapter supplies the quantity by which the specification is made.

The chapter undertakes four tasks. It states the offices the quantity is required to perform. It identifies the variable that occupies the position, and separates it from a neighbouring variable with which it is easily confused. It decomposes the quantity into components and supplies each with an interpretation in the domain of knowledge production. And it states what follows for the testability of the account.

The chapter proceeds by specification, identification, decomposition, and consequence. The method is constructive: the quantity is assembled from components identified independently of the model that will employ it, in satisfaction of the second condition on transfer fixed in Chapter 2.

46.2 THE OFFICES REQUIRED OF THE CONTROL PARAMETER

The account requires a quantity performing offices that are easily conflated, and stating them in advance constrains what may occupy the position. This section states the three offices and the constraints they impose. It proceeds by naming each office and drawing the constraint it entails. The method is specification in advance of construction.

The first office is regime fixing. The quantity must divide the states of a system into regions within which the relations among the remaining variables differ in kind. A quantity that merely orders systems from worse to better performs no such division and leaves the account with a continuum on which every position is a lesser version of every higher one.

The second office is the admission of a negative region. The quantity must take values at which no contribution of any structure or amplitude passes. Without such values, the account

asserts that any producer might succeed under some perturbation, which returns the difficulty of Chapter 45 in a new form and converts the model into an exhortation.

The third office is estimability in principle. The quantity must be assembled from components that an observer of the system could in principle measure, without recourse to the producer's report of the producer's own capacity. The office follows directly from the finding that the distinction cannot be settled from within the condition.

46.3 THE CONCENTRATION OF PATHWAYS

The variable occupying the position is identified in this section and separated from a variable with which it is regularly confused. The section proceeds by definition, by the separation, and by the ground for preferring the definition given. The method is stipulative, with support drawn from Parts II and III.

Definition 46.1. (Pathway concentration). *Pathway concentration is the degree to which the routes by which a contribution may reach valuation are held by few parties, so that the number of independent occasions on which a given contribution may be assessed is small.*

The variable with which this is confused is position in a geography of centre and periphery. The literature on academic dependency surveyed in Chapter 15 documents severe asymmetries between regions in authorship, in editorial composition, and in citation (empirically tested; large bibliometric samples). The asymmetries are real, and reading them as the operative variable produces a moral geography in which one region suppresses and another is suppressed.

Three considerations favour concentration over geography. Mechanisms of categorical closure operate wherever a bounded network sequesters access to a resource, and the boundary need not be regional (doctrine, within historical sociology). Networks that supply access also exclude those outside them, and the exclusion is a general property of such networks rather than a property of any particular one (doctrine, within the sociology of social capital). And the asymmetry reproduces itself within regions as well as between them, so that a moral geography would have to be redrawn at every scale at which it was applied.

Concentration also satisfies the first office in a way geography does not. Where routes to valuation are numerous and independent, a contribution refused on one route may be assessed on another, and refusal carries little information about the contribution's fate. Where routes are few and correlated, a single refusal is close to final. The relations among the remaining variables differ in kind across this division, which is what regime fixing requires.

46.4 THE COMPONENTS OF PATHWAY CONCENTRATION

Pathway concentration is composite, and the account requires its parts to be named and interpreted. This section decomposes the quantity into four components, supplies each with an interpretation in the domain of knowledge production, and states how they combine. It proceeds component by component and closes with the combination rule. The method is constructive, and it discharges the requirement on physical terms fixed in Chapter 2.

The first component is coupling density: the number of parties with whom a producer stands in a relation through which a contribution may be transmitted and returned upon. Its domain interpretation is the count of standing correspondences, collaborations, and readerships in which a producer's formulations are received by someone positioned to respond to them.

The second component is channel bandwidth: the volume and the reach of the routes available for placing a contribution where others may encounter it. Its domain interpretation covers the venues open to the producer and the size and orientation of the readerships those venues carry.

The third component is interpretive admissibility: the range of forms a contribution may take and still be assigned to a category by the operative criteria of the receiving system. Its domain interpretation is the breadth of what the system's procedures are equipped to score, and it is the component that the case of altered criteria in Chapter 45 showed to be variable over time.

The fourth component is attention supply: the quantity of assessing capacity available to be spent on contributions of the kind at issue. Its domain interpretation is the standing scarcity established in Chapter 18, where attention rather than infrastructure is identified as the binding constraint on reception (doctrine, with a formal treatment in the economics of scientific communication).

The four combine as follows. Concentration rises as coupling density falls, as bandwidth narrows, as admissibility narrows, and as attention supply falls relative to the volume seeking it. The account does not require a weighting among them, and it requires that each be assessed separately, since a system may be concentrated in one component while remaining open in another. Chapter 52 states the observable signatures associated with each.

46.5 THE SUBCRITICAL REGION AND ITS MARKS

The second office required values of the quantity at which no contribution passes. This section identifies that region, states its marks, and gives its relation to the diagnosis. It proceeds by characterising the region and listing the observations that identify it. The method is the specification of a limiting case.

The region is that in which concentration is high in every component simultaneously.

Routes are few and held by parties who consult one another; the operative criteria admit a narrow range of forms; and the assessing capacity available is small relative to the volume seeking it. In such a region a contribution's fate is settled on its first encounter, and the first encounter is governed by criteria that a contribution of unfamiliar form fails to satisfy.

Three marks identify the region in practice. Refusals across nominally independent routes are correlated, which indicates that the routes share their operative criteria. The distribution of attention is concentrated to a degree that leaves the lower portion of the distribution with no assessing capacity at all. And the criteria in force are stated in terms that presuppose the substrate described in Chapter 44, so that satisfying them requires the very position whose absence defines the condition.

The relation to the diagnosis is direct. Within this region, the observation that a producer has attracted no attention carries no information about the producer's capacity, and the separation of suppression from deficiency is unavailable on that evidence. Outside the region, the same observation carries information, and the account is committed to reading it accordingly.

46.6 THE CONSEQUENCES FOR THE TESTABILITY OF THE ACCOUNT

The quantity constructed here bears on what the book may claim, and the consequences are stated rather than left to be inferred. This section states three of them. It proceeds by drawing each consequence from the construction above. The method is the derivation of constraints on the account's own use.

The first consequence concerns the range of the diagnosis. Academic poverty as defined in Chapter 45 is a condition that obtains at high values of pathway concentration. At low values, a producer whose contributions attract no attention faces a system with many independent routes, admitting criteria of wide range, and assessing capacity available to be spent, and the diagnosis of suppression is correspondingly weak.

The second consequence concerns the direction of intervention. Where the quantity is decomposed into four components assessed separately, an intervention is identified by the component it addresses. Chapter 56 treats the consequence in full, and this chapter records that an intervention supplying bandwidth to a system whose concentration lies in its admissibility leaves the concentration where it was.

The third consequence concerns falsification. The account now carries a commitment that may fail: that the marks listed above co-occur, that they co-occur with the phenomena the model predicts, and that at low concentration those phenomena are absent. Chapter 54 states the commitment in the form required for it to be tested.

46.7 SUMMARY OF RESULTS

The chapter has established four results carried forward.

The account requires a quantity performing three offices: dividing states into regions within which the relations among the remaining variables differ in kind, admitting values at which no contribution passes, and assembling from components an observer could in principle measure.

The quantity is pathway concentration, defined as the degree to which the routes by which a contribution may reach valuation are held by few parties. It is separated here from position in a geography of centre and periphery, on the grounds that closure and exclusion are general properties of bounded networks and that the asymmetry reproduces itself at every scale.

The quantity has four components: coupling density, channel bandwidth, interpretive admissibility, and attention supply. Each carries an interpretation in the domain of knowledge production, each is assessed separately, and no weighting among them is required.

The subcritical region is that in which concentration is high in every component at once. It is identified by correlated refusals across nominally independent routes, by a distribution of attention that leaves its lower portion unassessed, and by criteria whose satisfaction requires the position whose absence defines the condition. Within the region, absent attention carries no information about capacity; outside it, the same observation carries information, and the account is committed to reading it so.

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PART XI

THE MODEL OF GENERATIVE PERTURBATION

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CHAPTER 47

THE GENERATIVE PERTURBATION MODEL

47.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part X established a diagnosis and a quantity. A capacity may be present while the interpretation in force admits no occasion of its application, and the states of a system of recognition are divided into regions by the concentration of the pathways along which a contribution may reach valuation. Neither result explains how a structure capable of sustaining a capacity comes into being where none existed.

This chapter supplies the model that explains it. The chapter undertakes five tasks. It fixes the scope of the physical analogy on which the model draws. It defines the four terms in which the model is stated and supplies each with an interpretation in the domain of knowledge production. It gives the formal statement of the model and identifies its components. It establishes the property on which the whole account turns, that a state stable against small disturbances admits large transient growth, and locates the source of that property in the operative criteria of the receiving system. And it separates the resulting mechanism from three neighbouring mechanisms with which it is readily confused.

The chapter proceeds by scope-fixing, definition, formal statement, analysis of the central property, and separation. The method is the construction of a model under the discipline governing physical analogies fixed in Chapter 2.

47.2 THE SCOPE OF THE ANALOGY

The model draws on the stability theory of shear flows, and the discipline governing that drawing was fixed in Chapter 2. This section restates the scope in the form the model requires, marks the phenomenon that lies outside it, and states what the restriction costs. It proceeds by identifying the phenomenon at issue and contrasting it with the phenomenon the word ordinarily denotes. The method is the specification of a boundary in advance of use.

The phenomenon at issue is the onset of turbulence. A flow at rest in its laminar state may be disturbed, and under some conditions the disturbance grows until the flow is carried into a different regime. The transition consists in the growth of the disturbance, and the conditions

under which growth occurs are the subject matter of the theory this model borrows.

The phenomenon lying outside the scope is turbulence in its developed form. A developed turbulent flow carries energy injected at large scales down to small ones, where it dissipates. An account built on that phenomenon would describe the fragmentation of large structures into small ones, which is the reverse of the process at issue here.

The restriction costs the model every result that depends on the developed state, which includes the whole of the statistical theory of turbulence. What remains is the theory of the transition, and it is on that theory alone that the model draws.

47.3 THE TERMS OF THE MODEL

The model is stated in four terms, and each requires an interpretation in the domain of knowledge production, identified independently of the physical setting. This section supplies the four definitions and their interpretations. It proceeds term by term. The method is stipulative, and it discharges the requirement on physical terms fixed in Chapter 2.

Definition 47.1. (Perturbation). *A perturbation is a contribution placed by a producer into a field in such a manner that a party positioned to respond to it may encounter it.*

The definition covers a short paper, an argument stated in public, a released tool, an approach to a possible collaborator, and a formulation circulated to a correspondent. It excludes work held privately, since a contribution encountered by no one has been placed into no field.

Definition 47.2. (Coupling). *A coupling is a relation through which a perturbation placed by one party alters the state of another party, and through which the alteration may return upon the first.*

The requirement that the alteration may return distinguishes a coupling from a transmission. A contribution read by a party who is positioned to respond and does not is transmitted; a contribution read by a party whose subsequent formulations are altered by it, in a manner the original producer may encounter, is coupled.

Definition 47.3. (Amplification). *Amplification is the growth of the effect of a perturbation beyond the magnitude of the perturbation itself, measured by the extent of the relational field in which the effect registers.*

Definition 47.4. (Onset). *Onset is the passage from a state in which the effects of perturbations decay to a state in which a structure persists, where the persisting structure supplies the couplings through which subsequent perturbations are received.*

47.4 THE FORMAL STATEMENT OF THE MODEL

The four terms admit a statement in the form of an evolution equation, and the statement identifies the components whose properties the remainder of the chapter examines. This section gives the statement, identifies each component, and marks the status of the formalism. It proceeds by presenting the equation and interpreting its parts. The method is formal specification at the level of structure.

Let x denote the state of a producer's relational field, in the components fixed by Chapter 46. The model states

$$\frac{dx}{dt} = Ax + N(x) + \eta, \quad (47.1)$$

in which A is a linear operator representing the response of the receiving system to the current state of the field, N collects the interactions among couplings that are nonlinear in the state, and η represents the placement of perturbations by the producer.

Three properties are assumed and are interpreted as follows. The spectrum of A lies in the region of decay, which represents a receiving system in which a producer's standing declines in the absence of continued placement. The operator A is non-normal, which represents a receiving system whose response to a contribution is expressed in components distinct from the components in which that contribution was placed. The nonlinearity N is of the kind that redistributes among components in place of supplying energy of its own, which represents couplings that transform contributions without adding standing from outside.

The formalism is structural. No numerical value is assigned to any of its terms in this book, and no result is derived by computation. Its office is to state, in a form that makes the relations among the assumptions visible, the properties on which the mechanism of Sections 47.5 and 47.6 depends.

47.5 TRANSIENT GROWTH UNDER A DECAYING OPERATOR

The property on which the account turns is the compatibility of decay with large intermediate growth, and it is the property that ordinary intuition about stability denies. This section establishes it, gives its interpretation in the domain, and states the inference it blocks. It proceeds by stating the mathematical situation, supplying the interpretation, and drawing the consequence. The method is analytical.

Where an operator is normal, the long-term behaviour of a system it governs is read off its spectrum, and a spectrum lying in the region of decay entails that every disturbance decays from the outset. Where an operator is non-normal, the spectrum continues to determine the behaviour as time grows without bound, and the intermediate behaviour is governed by other quantities. A disturbance may then grow by a large factor before the decay predicted by the

spectrum asserts itself, and the growth may exceed the initial magnitude by orders.

The interpretation in the domain is direct. A producer placing contributions into a system whose response to that producer declines is in the position of a disturbance under a decaying operator. The spectral reading of the producer's situation states that standing decays and that contributions come to nothing. The transient reading states that a contribution of the right structure may, over an interval, generate an effect far larger than itself, and that the interval may be long enough for the nonlinear term to engage.

The inference blocked is the one drawn most often about producers in this position. From the observation that a producer's standing decays in the absence of institutional support, it is inferred that no contribution from that producer can generate a structure. The inference is valid for normal operators and fails for non-normal ones, and Section 47.7 gives the reason for holding that the operator in this domain is non-normal.

47.6 THE REQUIREMENT OF FINITE AMPLITUDE

Transient growth establishes possibility and settles nothing about which perturbations realise it. This section states the amplitude condition, gives its interpretation, and marks the practical consequence that Chapter 50 develops. It proceeds by stating the condition and drawing two consequences. The method is analytical.

The transition described by the model is subcritical. A disturbance of infinitesimal amplitude is carried by the linear term alone, grows transiently, and decays; the nonlinear term engages only where the transient growth has carried the state far enough for the terms nonlinear in x to become comparable with the linear ones. A threshold in amplitude therefore separates disturbances that transition the system from disturbances that grow and subside.

The interpretation in the domain connects the condition to a result established in Part IV. A contribution placed below the amplitude at which a receiving system registers it at all is carried by the linear term and decays, and the number of such contributions is immaterial, since each decays independently of the others. The dead zone identified in the economics of attention in Chapter 18 is the amplitude threshold of this model, arrived at from a different direction.

Two consequences follow. The first is that a strategy of accumulating contributions below the threshold fails as a matter of the model's structure rather than as a matter of degree. The second is that amplitude alone is insufficient, since the transient growth factor depends on the structure of the disturbance as well as its size, and Chapter 50 takes up the structural condition.

47.7 THE OPERATIVE CRITERIA AS THE SOURCE OF NON-NORMALITY

The model's central assumption is that the operator governing the receiving system is non-normal, and an assumption of that weight requires a ground in the domain rather than an

appeal to the physical setting. This section supplies the ground, states what follows for the relation between a contribution and its eventual effect, and connects the result to the diagnosis of Part X. It proceeds by identifying the source and drawing the consequence. The method is the interpretation of a formal property.

The operative criteria of a system of recognition assign an incoming contribution to a category, and the assignment is made in the terms the system maintains. A contribution formulated in terms the system does not maintain is assigned to whichever of its categories the contribution most nearly approaches, and the components of the contribution that fall outside every category are discarded in the assignment. The receiving system therefore responds in components distinct from those in which the contribution was composed, which is the property that renders the operator non-normal.

The consequence for the relation between a contribution and its effect is substantial. Where the operator is non-normal, the disturbance that achieves the largest transient growth differs in structure from the state that growth produces. A contribution that eventually generates a durable structure therefore need not resemble that structure, and a producer selecting contributions by their resemblance to the intended outcome selects by the wrong criterion.

The connection to Part X is the following. Expression constraint was defined as the condition in which a valid rule finds no occasion of application under the interpretation in force, and interpretive admissibility was fixed as one component of pathway concentration. The present section identifies the same feature of the receiving system as the source of the model's central property. The condition that suppresses is the condition that makes transient amplification possible, and the two results describe one feature of the system from two directions.

47.8 THE SEPARATION FROM NEIGHBOURING MECHANISMS

Three mechanisms in the literature produce large effects from small beginnings, and each has been offered as an account of the phenomena at issue here. This section separates the present model from all three, stating for each what it requires that the present model does not. It proceeds by three contrasts. The method is comparison.

The first is the threshold model of collective behaviour, in which an individual acts once the number of others already acting exceeds that individual's threshold, and the second is the theory of critical mass, in which a small and heterogeneous group bearing the start-up costs of a collective good triggers wider contribution under an accelerating production function (both doctrine, with the second supported by formal modelling and the first by experimental work on convention change). Both require a population already assembled and a good already defined. The present model addresses the case in which neither obtains, and the two accounts stand to it as descriptions of a later stage.

The third is path dependence, in which increasing returns to adoption lock a system into a trajectory selected by small early events (doctrine, with formal treatments in economics). Path dependence requires a stable accumulating path along which returns increase, and it produces its effects without any appeal to non-normality or to subcritical transition. The present model addresses a state in which the accumulating path has yet to form, and the two accounts describe successive phases in place of rival explanations of one phase.

A fourth account requires separate treatment, since it employs the same mathematical apparatus as the present model. Non-normal amplification has been applied to socio-economic systems, where hierarchical and asymmetric interaction structures produce transient surges in collective behaviour at parameter values far from any critical point (formally modelled, with empirical illustration). That work treats the transient destabilisation of a market already populated by traders standing in existing relations. The present model treats the formation of relational structure where little exists, and Chapter 40 states the differentiation in the form the comparison requires.

47.9 SUMMARY OF RESULTS

The chapter has established six results carried forward.

The analogy is restricted to the onset of turbulence, and the whole theory of the developed state lies outside the scope of the model.

The model is stated in four terms. A perturbation is a contribution placed so that a party positioned to respond may encounter it; a coupling is a relation through which a perturbation alters another party and the alteration may return; amplification is growth of effect beyond the magnitude of the perturbation; and onset is the passage to a state in which a persisting structure supplies the couplings for subsequent perturbations.

The formal statement assumes a receiving system whose response declines in the absence of continued placement, whose response is expressed in components distinct from those in which contributions are composed, and whose couplings redistribute in place of supplying standing from outside.

A state stable against small disturbances admits large intermediate growth where the governing operator is non-normal. The inference from declining standing to the impossibility of generating a structure is valid for normal operators and fails here.

The transition is subcritical. Contributions placed below the amplitude at which the receiving system registers them decay independently of one another, and their number is immaterial.

The source of non-normality is the assignment of incoming contributions to the categories a receiving system maintains. The feature that suppresses a capacity is the feature that makes transient amplification possible, and a contribution that generates a durable structure need

not resemble it.

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CHAPTER 48

THE GENERATIVE THRESHOLD

48.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 47 established the conditions under which a perturbation placed into a field may be amplified in place of decaying. The model states what may grow, and it settles nothing about what a grown structure must satisfy in order to continue without further placement. The distinction between a structure that persists on continued supply and a structure that supplies itself is the distinction on which the account of Parts XI to XIII depends.

This chapter states that distinction. It undertakes six tasks. It states the criterion in its locked form and the two tests by which it is applied. It records the restriction under which the criterion is used. It compares the criterion with three precedents and states for each what the precedent supplies and what it withholds. It establishes that the boundary the criterion identifies is a saddle in place of a line, with the consequence that its crossing is repeated. It states the sense in which a set may sustain itself though no member of it does. And it gives the account of resource-rich systems that the criterion makes available.

The chapter proceeds by statement, restriction, comparison, and four analyses. The method is conceptual, with the precedents carried from Parts III, VI, and II under the transfer procedure fixed in Chapter 2.

48.2 THE CRITERION AND ITS TWO TESTS

The criterion is stated here in the form employed throughout the remainder of the book, together with the two tests by which it is applied from the two sides of a supported relation. This section gives the statement, gives the tests, and establishes that the tests express one criterion. It proceeds by statement followed by analysis. The method is stipulative.

Criterion 48.1. (The generative threshold). *A relation crosses the generative threshold at the point where the energy it returns for its own continuation equals the energy its maintenance consumes; above that point the relation sustains itself, and below it the relation persists on external supply.*

The word energy carries a domain interpretation fixed here and used without variation. The maintenance of a relation consumes attention, time, and standing, contributed by the parties to it and by any party supporting it. The continuation of a relation is supplied by attention, time, and standing returned through the relation itself: a correspondent who writes because the last exchange repaid the writing, a reader who returns because the previous contribution was worth the reading, a collaborator whose own work now requires the collaboration.

Two tests apply the criterion. The first is applied from within the relation and asks whether the returns generated through it meet its maintenance costs.

Test 48.2. (The fading test). *A support is generative where its withdrawal leaves the supported relation intact, and extractive where its withdrawal collapses the relation it sustained.*

The second is applied from the side of a supporting party. The two express one criterion in the following sense. Where the returns generated through a relation meet its maintenance costs, the external supply is surplus, and its withdrawal leaves the relation standing. Where the returns fall short, the external supply is meeting the difference, and its withdrawal removes what the relation lacks the means to replace. The first test states the condition; the second states the observation by which the condition is checked, and it is the more useful of the two, since maintenance costs and returns are hard to measure directly while withdrawal and its consequences are observable.

The second test is drawn from the developmental account of scaffolded learning, in which support is calibrated to a learner's current state, responsibility is transferred, and the support is faded until the learner is self-regulating (doctrine, with a substantial experimental literature attached). The transfer licenses the use of withdrawal as the diagnostic operation. It withholds the developmental setting's assumption that a trajectory toward self-regulation exists in the learner and requires only to be supported, which is precisely the question at issue in the present case.

48.3 THE RESTRICTION UNDER WHICH THE CRITERION IS USED

The criterion classifies relations, and a criterion of that shape invites an inference that Chapter 42 blocked in advance. This section records the restriction, states the inference it blocks, and marks its scope. It proceeds by restating a requirement and drawing its application to the present chapter. The method is the application of a constraint fixed earlier.

Requirement 48.3. (The diagnostic restriction). *The threshold, folding, and fading criteria classify relations. They confer no worth on a participant and withdraw none, and*

every claim about what is owed to a participant rests on grounds stated independently of them.

The inference blocked runs from the observation that a relation fails the criterion to the conclusion that the relation, or a participant in it, merits no support. The criterion supports no such conclusion. A relation below the threshold is a relation requiring continued supply, and whether the supply is owed is settled by the grounds stated in Chapter 42, which are independent of the criterion and are not revised by it.

The scope of the criterion is correspondingly narrow. It identifies which relations sustain themselves, which informs the description of systems in Part XII and the design of support in Chapter 56. It identifies nothing else.

48.4 THE PRECEDENTS IN THREE LITERATURES AND THEIR BOUNDARIES

The criterion has precedents in three literatures surveyed earlier, and each supplies part of its structure while withholding the remainder. This section treats the three in turn, stating for each what transfers and what stays behind. It proceeds by three comparisons. The method is the transfer procedure fixed in Chapter 2.

The first precedent is the asset-based account of persistent poverty, in which a critical level of assets separates a region of accumulation from a region in which accumulation is neither feasible nor rational, so that a household below the level converges to a low equilibrium and one above it to a high one (formally modelled, with contested empirical support). The transfer supplies the shape: multiple equilibria separated by a threshold, with trajectories on either side diverging in place of differing in rate. It withholds the measurable stock, since the assets of that account are counted and the quantities of the present criterion are estimated from the observation of withdrawal. It withholds also the empirical claim, since the existence of stagnant equilibria of the kind the account predicts has been questioned in its own literature.

The second precedent is the theory of critical mass in collective action, in which an accelerating production function makes the early contributions costly and the later ones cheap, so that a small and heterogeneous group bearing the start-up cost may induce wider contribution (formally modelled). The transfer supplies the asymmetry between the cost of the first crossing and the cost of subsequent ones, and it supplies the result that heterogeneity in a small group substitutes for numbers. It withholds the collective good, which that theory takes as defined in advance and which is absent in the case at issue here.

The third precedent is the distinction in the psychology of helping between support that supplies solutions and support that supplies the means by which a recipient reaches solutions, the first of which maintains the recipient in the position of recipient (doctrine, with experimental support at the intergroup level). The transfer supplies the finding that the two kinds are distinguishable in practice and that the distinction has observable consequences.

It withholds the status-relational mechanism of that account, which explains the giver's preference for one kind and has no counterpart in the present argument.

48.5 THE BOUNDARY AS A SADDLE

The criterion identifies a boundary, and the nature of the boundary determines whether its crossing is an event or a condition. This section establishes that the boundary is a saddle, states the consequence for the account, and connects the result to the model of Chapter 47. It proceeds by characterising the boundary and drawing the consequence. The method is analytical.

In the model of Chapter 47, the states dividing disturbances that decay from disturbances that transition compose an invariant set, and that set is itself unstable: a state lying on it departs from it in one direction or the other, while a state lying near it may remain in the neighbourhood for an extended interval before departing.

The consequence for the account is that crossing the threshold is a condition maintained in place of an event completed. A relation that has crossed may return below the boundary where its returns fall or its maintenance costs rise, and a relation in the neighbourhood of the boundary may remain there, alternating between periods in which returns exceed costs and periods in which they fall short.

Two things follow for the description of a producer's situation. Sustained standing is a state requiring continued maintenance rather than a position secured once. And a producer in the neighbourhood of the boundary occupies the ordinary case in place of a transitional one, so that an account describing the pre-organisational phase as a stage to be passed through misdescribes what is observed.

48.6 THE INTERMITTENCY OF CROSSING

The saddle structure yields a temporal pattern that the account must state, since the pattern is what an observer of a producer's situation actually sees. This section describes the pattern, states its interpretation, and marks the connection to the criticality material treated elsewhere in this series. It proceeds by description followed by interpretation. The method is analytical.

The pattern is intermittent. Periods in which a relational field returns more than it consumes alternate with periods in which it consumes more than it returns, and the alternation continues without converging to either state. The pattern is characteristic of trajectories in the neighbourhood of an unstable invariant set, where a trajectory is repeatedly drawn toward the set along some directions and expelled along others.

The interpretation in the domain is that the pre-organisational phase, understood as the condition in which a relational field has yet to become self-sustaining, admits no terminus for a producer in the neighbourhood of the boundary. The producer re-crosses repeatedly, and the

experience of having crossed is followed by the experience of falling back without any change in the producer's conduct.

48.7 SELF-MAINTENANCE ACHIEVED COLLECTIVELY

The criterion applies to relations, and a question arises about sets of relations none of whose members satisfies it. This section states the result that answers the question, supplies its interpretation, and marks the boundary of the transfer. It proceeds by stating a result from the theory of self-sustaining chemical systems and interpreting it. The method is the transfer procedure fixed in Chapter 2.

In the theory of reflexively autocatalytic sets, a collection of reactions may be collectively self-sustaining, in that every reaction in the collection is catalysed by some product of the collection and every product is reachable from a supplied food set, while no single reaction in the collection is self-sustaining. The level of catalysis required for such collections to appear grows slowly with the size of the system (formally modelled, with numerical support).

The interpretation is that a small group of producers may compose a collectively self-sustaining field though no member of the group sustains a field individually. Each member supplies to others the reception, criticism, and standing that member's own field lacks the means to generate, and the group as a whole returns what its maintenance consumes. The result bears directly on the case identified in Chapter 1, in which a small number of participants must be retained from one occasion to the next.

The transfer withholds two things. It withholds the food set, which in the chemical case is supplied from outside and stated in advance, and whose counterpart here is the external supply whose withdrawal the fading test examines. And it withholds the numerical results, which concern reaction networks and carry no implication for the number of participants required in a relational field.

48.8 THE PURCHASED APPEARANCE OF STABILITY

The criterion yields an account of resource-rich systems that differs from the account those systems give of themselves, and the difference is stated here because the remainder of the book depends on it. This section states the account, gives its ground, and draws the consequence for the comparison between the constrained and the unconstrained case. It proceeds by statement and consequence. The method is the application of the criterion to a case.

An institutionally supported producer occupies a relational field maintained by continuous external supply: a salary, a position, an assigned readership, and a standing that renews without being regenerated. The fading test applied to such a field returns the answer that its withdrawal collapses the relations it sustains, which places the field below the threshold on the criterion of this chapter.

The ground for this reading is that the criterion concerns the source of what maintains a relation in place of the relation's durability. A field maintained by continuous supply is durable for as long as the supply continues, and it is durable in the manner of a structure held up by a force applied from outside.

The reading concerns the source of maintenance and carries no assessment of the parties holding institutional positions, of the contributions they compose, or of the merit by which positions were obtained. A producer whose field is maintained from outside may hold generativity in either of the senses distinguished in Chapter 45, and the criterion classifies the arrangement in place of the party.

The consequence for the comparison is that the difference between the constrained and the unconstrained case is stated more precisely than in the language of advantage. The unconstrained producer has purchased the appearance of having crossed the threshold, and the purchase is renewed each period. The constrained producer is denied the purchase and faces the crossing itself. The pre-organisational phase does not end for either of them; it is concealed for one and exposed for the other.

48.9 SUMMARY OF RESULTS

The chapter has established six results carried forward.

A relation crosses the generative threshold at the point where the energy it returns for its own continuation equals the energy its maintenance consumes. The criterion is applied by two tests, of which the fading test, examining the consequences of withdrawal, is the observable one.

The criterion classifies relations and confers no worth. Whether support is owed to a relation below the threshold is settled on grounds stated in Chapter 42, independent of the criterion.

Three precedents supply parts of the structure: the asset-based account of persistent poverty supplies the shape of divergent trajectories separated by a threshold; the theory of critical mass supplies the asymmetry between first and subsequent crossings and the substitution of heterogeneity for numbers; and the psychology of helping supplies the practical distinguishability of two kinds of support.

The boundary is a saddle. Crossing is a condition maintained in place of an event completed, and a producer in the neighbourhood of the boundary occupies the ordinary case.

A set of relations may be collectively self-sustaining though no member of the set is, which bears on the case of a small number of participants who must be retained from one occasion to the next.

A field maintained by continuous external supply lies below the threshold on this criterion. The unconstrained producer purchases the appearance of having crossed, and renews the

purchase each period; the pre-organisational phase is concealed in that case and exposed in the constrained one.

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CHAPTER 49

THE DIRECTION OF GENERATED VALUE

49.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 48 established a criterion distinguishing relations that sustain themselves from relations persisting on external supply, and the criterion was stated in terms of a quantity returned against a quantity consumed. A quantity returned has a destination, and the criterion of that chapter leaves the destination unexamined. A relation may generate a great deal while what it generates arrives somewhere other than the relation that produced it.

This chapter examines the destination. It undertakes six tasks. It establishes that generation has a direction and states the two directions available. It states the criterion by which the direction is identified, and establishes that this criterion and the criterion of Chapter 48 are one criterion read from two sides. It defines the condition in which a relation retains the form of a generative relation while its returns arrive elsewhere, and states the rule governing the severity of that condition. It applies the resulting description to the system of academic knowledge production. It distinguishes two senses of scarcity that the account requires to be kept apart. And it states what the present chapter adds to the model of Part XI.

The chapter proceeds by establishing a distinction, stating a criterion, defining a condition, applying it to a case, and separating two senses of a term. The method is conceptual, with the case of Section 49.5 supported by evidence carried from Parts II and IV and labelled at the point of use.

49.2 THE DIRECTION TAKEN BY GENERATED VALUE

A criterion stated in terms of quantities returned and consumed presupposes that the return arrives at the relation, and the presupposition is unwarranted. This section establishes that generation has a direction, states the two directions available, and gives the reason the distinction bears on the account. It proceeds by argument followed by the statement of the two cases. The method is conceptual.

Consider a relation that generates. Attention is given and reciprocated, formulations pass between parties and are altered by the passage, and standing accrues to what the relation

produces. The criterion of Chapter 48 asks whether the quantities so generated meet the maintenance costs of the relation. The question presupposes an answer to a prior one: whether the quantities generated arrive at the relation at all.

Two directions are available. Generated value may return to the relation that produced it, augmenting the couplings, the standing, and the capacity of the parties to continue. Or it may converge on a point outside the relation, where it accrues to a party, an institution, or a measure that stands apart from the parties who generated it and from the relation through which they did so.

The distinction bears on the account for a specific reason. Under the second direction, every observation on which the criterion of Chapter 48 relies may be satisfied while the relation remains as dependent on external supply as before. Generation is observed; returns are observed; and the relation continues to require supply, since the returns it generates arrive somewhere else.

49.3 THE FOLDING CRITERION

The direction of generated value is identified by a criterion, stated here in the form employed throughout the remainder of the book. This section states the criterion, supplies the domain interpretation of its terms, and establishes its relation to the criterion of Chapter 48. It proceeds by statement, interpretation, and demonstration of identity. The method is stipulative followed by analytical.

Criterion 49.1. (Folding). *Generated value folds where it returns to the relation that produced it, and converges where it accrues to an attractor lying outside that relation.*

The word attractor carries a domain interpretation fixed here. An attractor is a position toward which generated value moves under the operative arrangements of a system, and it is occupied in the cases of interest by a measure, a ranking, a budget line, or a reputational account held by a party distinct from those who generated the value.

The two criteria stand in the following relation. The criterion of Chapter 48 measures a magnitude, asking whether the return meets the cost. The present criterion identifies a direction, asking where the return arrives. A relation satisfies the threshold criterion only where the folding criterion is satisfied first, since a return arriving elsewhere contributes nothing to the maintenance of the relation that produced it. The threshold criterion therefore presupposes the folding criterion, and the two are one criterion read from two sides: the magnitude side and the destination side.

The fading test of Chapter 48 applies the same criterion from the side of a supporting party. Withdrawal of support leaves a relation intact where the value that relation generates has been folding into it, and collapses the relation where that value has been converging elsewhere and

the support was meeting the difference. The three formulations are one criterion applied at three positions, and the book employs no fourth.

49.4 CAPTURE

One condition requires a definition of its own, since it satisfies the surface marks of generative relation while failing the folding criterion. This section defines the condition, distinguishes it from a condition with which it is confused, and states the rule governing its severity. It proceeds by definition, distinction, and rule. The method is stipulative.

Definition 49.2. (Capture). *A relation stands captured where the mechanisms of generative relation operate within it in their authentic form, and the value they generate converges on an attractor lying outside the relation.*

The condition is distinguished from pretence. Under pretence, the mechanisms of generative relation are simulated: parties perform an interest they lack, and the performance is sustained for the sake of what the performance yields. Under capture, the mechanisms operate genuinely. The curiosity is real, the attention given to a colleague's argument is real, and the satisfaction taken in a difficulty resolved is real. What has been altered is the destination of what these mechanisms generate.

The distinction yields the rule governing severity.

Requirement 49.3. (The severity rule). *The severity of capture rises with the authenticity of the captured mechanisms, since the participation on which capture depends is recruited by the mechanisms in their authentic form.*

The rule inverts an intuition. A system whose generative forms were plainly simulated would recruit little participation, since the parties recruited would recognise the simulation and withhold what it asks of them. A system whose generative forms operate authentically recruits fully, and it is exactly the authenticity of what is experienced that carries the participation on which the convergence of value depends.

49.5 THE ACADEMIC SYSTEM UNDER THE DESCRIPTION OF CAPTURE

The condition defined in Section 49.4 admits an application to the system this book examines, and the application supplies a diagnosis that Chapter 45 could not reach. This section states the application, gives the evidence bearing on it, states what the description explains, and marks its relation to a companion treatment elsewhere in this series. It proceeds by application, evidence, and consequence. The method is the application of a definition to a case.

The retained forms are the ones academic institutions name in describing themselves: openness to argument, curiosity about difficulty, community among those pursuing a question, and inquiry conducted without regard to its yield. The forms operate. Colleagues read one another's drafts, arguments are altered by objection, and questions are pursued past the point at which pursuit is rewarded.

The attractors lie outside the relations in which those forms operate. Rankings hold positions to which institutional value accrues; metrics hold positions to which individual value accrues; and the renewal of position and funding holds a position toward which both are directed. The evidence that value moves toward these positions is assembled in earlier Parts. Measures alter the conduct they measure once they are used for allocation (doctrine, with case studies in the sociology of organisations). Early success in allocation produces further allocation through a mechanism independent of what the early allocation enabled (empirically tested; regression discontinuity at a funding threshold). Evaluators score contributions of unfamiliar form lower than contributions of familiar form (empirically tested; randomised evaluation experiment).

The description explains something that suppression alone leaves unexplained. A system under suppression admits too little: contributions fail to pass, and the remedy is an opening. The system described here admits a great deal, and what passes through it generates returns that arrive at rankings, at metrics, and at the renewal of position. A remedy supplying further openings addresses a condition the system does not have, and Chapter 56 draws the consequence for the design of intervention.

The description has a structural parallel in the treatment of luxury developed elsewhere in this series, where the mechanism of value generation is shown to consist in a captured generativity whose forms operate authentically while their returns converge on a position held by another party. The parallel is recorded here and is used in this book only for the sense it supplies to the term.

49.6 SCARCITY THAT OPENS AND SCARCITY THAT LIMITS

The account requires two senses of scarcity to be kept apart, since the allocative framing of Part IV employs one of them and the present chapter requires the other. This section distinguishes the senses, states the condition under which the second obtains, and gives the test separating them. It proceeds by distinction, condition, and test. The method is conceptual.

Under the first sense, a scarcity is a limitation. A quantity is insufficient for the uses proposed for it, and the response is an allocation that ranks the uses and satisfies them in order. The economics surveyed in Part IV employs this sense throughout, and the difficulties identified there arise within it.

Under the second sense, a scarcity is an opening. A quantity is withheld from present

use, and the withholding preserves a condition on which continued generation depends: that the object generated remains unfinished, so that further contribution has somewhere to go. A question stated with everything settled admits no further work, and a field whose positions are all occupied admits no entrant. The scarcity in these cases is a property of what has been left undone.

The condition under which the second sense obtains is the folding criterion. A withheld quantity preserves a condition of generation where what is subsequently generated returns to the relation; the same withholding operates as a limitation where the returns converge elsewhere, since the parties are then held short of a quantity whose product accrues to another. The test is therefore the one already established: scarcity opens where value folds, and scarcity limits where value converges.

49.7 THE ADDITION MADE BY THE PRESENT CHAPTER

The chapter has introduced a criterion, a condition, and a distinction, and the addition they make to the model of Part XI is stated here rather than left to be inferred. This section states three additions. It proceeds by drawing each from the material above. The method is the derivation of consequences for the model.

The first addition is a precondition on the threshold criterion. The account of Chapter 48 is complete only where the destination of generated value has been established, and a relation may be described as failing the threshold when what it in fact does is generate at a rate exceeding its costs while the product arrives elsewhere.

The second addition is a second diagnosis alongside suppression. A system may admit too little, and a system may admit a great deal whose returns converge outside the relations that produced them. The two conditions may hold together in one system, and they call for different interventions.

The third addition is a criterion of value for the account of economy this series develops. Value on that account consists in the maintenance and the extension of generative relations, and the folding criterion states what maintenance and extension require: that what a relation generates returns to it. Chapter 51 applies the criterion to transfers between parties, and Chapter 55 states its consequences for the arrangement of a knowledge-producing system.

49.8 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Generation has a direction. Generated value returns to the relation that produced it, or converges on a point outside that relation, and the criterion of Chapter 48 presupposes an answer to this prior question.

Generated value folds where it returns to the relation that produced it, and converges where it accrues to an attractor lying outside that relation. The folding criterion, the threshold criterion, and the fading test are one criterion applied at three positions.

A relation stands captured where the mechanisms of generative relation operate in their authentic form and the value they generate converges outside the relation. Capture is distinguished from pretence by the authenticity of the operating mechanisms, and the severity of capture rises with that authenticity, since participation is recruited by the mechanisms in their authentic form.

The academic system admits the description. Its retained forms are openness, curiosity, community, and inquiry pursued past the point of reward; its attractors are rankings, metrics, and the renewal of position. The description explains a system that admits a great deal while returning little to the relations that produced it, which suppression alone leaves unexplained.

Scarcity limits where value converges, and opens where value folds. A quantity withheld preserves the unfinishedness on which further contribution depends only where what is subsequently generated returns to the relation.

The chapter adds a precondition on the threshold criterion, a second diagnosis alongside suppression, and the criterion of value on which the account of economy in this series rests.

CHAPTER 50

THE SELECTION OF PERTURBATIONS BY STRUCTURE

50.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The model stated in Chapter 47 established that a perturbation must reach a finite amplitude before the nonlinear term engages, and it recorded that amplitude alone settles nothing, since the transient growth achieved by a disturbance depends on the structure of that disturbance as well as on its size. The present chapter takes up the structural condition.

The chapter undertakes five tasks. It establishes that the perturbations of a given amplitude are amplified unequally, and states the consequence for any account that counts placements. It reports the evidence bearing on composition against repetition, drawn from two literatures in which the comparison has been tested. It states the relation between a perturbation and the structure its amplification produces. It describes the response of the receiving medium, in the three regions that response exhibits. And it states the properties by which perturbations are selected, closing with the form that satisfies them jointly.

The chapter proceeds by argument, evidence, analysis of a relation, description of a response, and the statement of a rule. The method is analytical, with the empirical claims of Section 50.3 carried from Part III and labelled at the point of use.

50.2 STRUCTURE AND COUNT

Accounts of production under constraint ordinarily treat output as a quantity, and the model of Part XI requires the quantity to be decomposed. This section establishes that perturbations of equal amplitude differ in the growth they achieve, states the property responsible, and draws the consequence for strategies stated in terms of volume. It proceeds by argument followed by consequence. The method is analytical.

Where the operator governing a receiving system is non-normal, the growth achieved by a disturbance over an interval depends on the direction of that disturbance in the space of states. Disturbances of equal magnitude, differing in direction, achieve growth factors differing by orders. The property responsible is the one identified in Chapter 47: the system responds in components distinct from those in which a contribution is composed, and the components in

which a contribution is composed therefore determine how much of it enters the components that grow.

The interpretation in the domain is that two contributions costing a producer the same effort, and reaching the same number of readers, may differ entirely in what follows from them. One creates a coupling through which subsequent contributions are received, and one is read and set aside. The difference lies in the composition of the contribution and in the position at which it is placed.

The consequence for strategies stated in terms of volume is direct. A strategy of maximising the number of placements distributes effort across directions without regard to the growth each achieves, and its expected yield is governed by the average growth factor over directions. Where growth factors differ by orders across directions, the average is dominated by a small subset, and a strategy indifferent to direction captures that subset only by accident.

50.3 COMPOSITION AND REPETITION IN THE EVIDENCE

The claim that composition dominates repetition is testable, and it has been tested in a domain where the outcome is measured with unusual care. This section reports two bodies of evidence, states what their comparison establishes, and marks the boundary of the transfer. It proceeds by reporting each body of evidence and drawing the comparison. The method is the transfer procedure fixed in Chapter 2.

The first body concerns a bundled intervention delivered once to households at the lowest levels of consumption, combining a productive asset, consumption support during the transition, training, coaching, savings access, and health provision. Randomised trials across six countries found improvements in consumption, assets, income, and psychosocial measures that persisted after the intervention ended, with benefits exceeding costs in most sites (empirically tested; multi-country randomised design, strong internal validity).

The second body concerns the extension of small loans repeated over time to similar populations. Six randomised evaluations, and a subsequent reanalysis pooling them, found effects that were modestly positive and short of transformative, with no significant effect on average household income (empirically tested; multi-country randomised design, strong internal validity).

The comparison establishes the claim in the form the present chapter requires. A single intervention composed of several complementary components carried households across a boundary that a repeated thin transfer failed to cross, and the difference lay in composition in place of magnitude summed over time. The evidence on the timing of transfers points the same way: recipients of a single large transfer acquired assets, while recipients of the same total value distributed over time did not (empirically tested; randomised design, single country).

The transfer to the present setting withholds two things. It withholds the population

and the stakes, in accordance with the distinction between mechanism and situation fixed in Chapter 2. And it withholds the identification of components: the components composing an effective bundle in the setting of household consumption carry no implication for the components composing an effective contribution in the setting of knowledge production, and Section 50.6 identifies the latter on independent grounds.

50.4 THE PERTURBATION AND THE STRUCTURE IT PRODUCES

A producer selecting contributions requires a relation between what is placed and what results, and the relation is less direct than it appears. This section states the relation, gives its domain interpretation, and draws the consequence for selection. It proceeds by stating a property of the physical setting and interpreting it. The method is analytical.

In the physical setting, the disturbance achieving the largest transient growth differs in structure from the state that growth produces. The disturbance is composed in one set of components, and the growth transfers energy into a second set, so that the state observed at maximum amplification bears little resemblance to the disturbance that generated it.

The interpretation in the domain concerns the relation between a contribution and the structure it eventually produces. A producer intending a durable body of work, a research programme, or a community around a question may place contributions resembling those outcomes in miniature: a small paper standing to a large one as a part to a whole. The property just stated indicates that the contributions achieving the largest amplification lie elsewhere, in acts that create couplings in place of resembling outcomes.

The consequence for selection is that resemblance to the intended outcome is a poor selection criterion, and the criterion that replaces it concerns the couplings a contribution creates. A tool that others use, a question put to a party positioned to pursue it, a formulation supplied to a correspondent whose own work it alters: none resembles a body of work, and each establishes a relation through which subsequent contributions are received.

50.5 THE MEDIUM AND ITS RESPONSE

The medium receiving perturbations responds unevenly across the range of amplitudes, and the account requires the response to be described. This section describes the response in its three regions, states the evidence bearing on each, and draws the consequence for placement. It proceeds region by region. The method is descriptive, with claims labelled at the point of use.

The first region is that of amplitudes below the level at which the receiving system registers a contribution at all. Attention is the scarce quantity in a system of communication, and the volume of contributions seeking it exceeds the assessing capacity available (doctrine, with a formal treatment in the economics of scientific communication). A contribution placed below

the registering level consumes the producer's effort and enters no coupling, and contributions so placed decay independently, so that their number is immaterial.

The second region is that in which the response rises with amplitude. Contributions placed here are registered, enter couplings, and admit of amplification, and this is the region in which the selection rule of Section 50.6 operates.

The third region is that in which the response saturates. Assessing capacity is finite, and a producer commanding a large share of it gains little from further placement. The region carries a further property specific to reputation: a producer placing a high volume of contributions is assessed on the aggregate, and a volume of low-amplitude placements lowers the assessment applied to subsequent ones. Metrics used for allocation alter the conduct they measure, and a producer visibly optimising against them is read accordingly (doctrine, within the sociology of organisations).

The consequence for placement is that the medium admits an interval in place of a direction. Effort placed below the interval yields nothing; effort placed above it yields little and carries a penalty; and the account therefore states its practical content as a condition on placement in place of an injunction to produce more or less.

50.6 THE PROPERTIES BY WHICH PERTURBATIONS ARE SELECTED

The preceding sections identify the considerations governing selection, and this section states them jointly. It names three properties, states the form of contribution satisfying them together, and fixes the rule in the form the remainder of the book employs. It proceeds by naming each property and closing with a requirement. The method is constructive.

The first property is topology: the position of the parties a contribution reaches within the wider structure of couplings. A contribution reaching parties already coupled to one another adds little to the structure, since the couplings it might create exist already. A contribution reaching parties coupled to regions the producer does not reach extends the structure, and it is the extension that subsequent contributions travel along.

The second property is timing: the state of the receiving system at the moment of placement. A contribution arrives into a system whose operative criteria admit a certain range, and the range moves, as Chapter 45 established in the case of altered assessment criteria. A contribution whose form falls outside the range at one moment falls inside it at another.

The third property is resonance: the relation between the form of a contribution and the categories the receiving system maintains. Resonance admits of an optimum in place of a maximum. A contribution formulated entirely outside those categories is discarded in the assignment described in Chapter 47. A contribution formulated entirely within them is assigned without residue and produces no growth, since the components in which it is composed are the components in which it is received. Amplification requires a contribution

that the system can assign and that carries components its categories fail to exhaust.

Requirement 50.1. (The selection rule). *A perturbation is selected by the couplings it creates, by the range of the receiving system at the moment of placement, and by a form that the system assigns while failing to exhaust it, at an amplitude lying within the interval in which the medium responds.*

The form satisfying the three properties jointly has a name in the companion treatment of serendipity developed elsewhere in this series: the prepared encounter, in which a producer positions a contribution where an encounter may occur and holds the preparation that allows an encounter to be exploited. The account of that treatment supplies the description; the present chapter supplies the reason the description identifies the perturbations that amplify.

50.7 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Perturbations of equal amplitude are amplified unequally, since growth under a non-normal operator depends on the direction of a disturbance as well as its size. A strategy maximising the number of placements is indifferent to direction and captures the growing subset only by accident.

The evidence comparing a bundled single intervention with a repeated thin transfer establishes that composition dominates repetition, and the transfer of that evidence withholds the population, the stakes, and the identification of components.

The disturbance achieving the largest growth differs in structure from the state that growth produces. Resemblance to an intended outcome is a poor selection criterion, and the contributions that amplify are acts creating couplings.

The medium responds in three regions: a region below registration in which contributions decay independently and their number is immaterial, a region in which response rises with amplitude, and a region of saturation carrying a penalty on volume.

Perturbations are selected by the couplings they create, by the range of the receiving system at the moment of placement, and by a form the system assigns while failing to exhaust it, at an amplitude within the responding interval.

Draft

CHAPTER 51

GENERATIVE SUPPORT AND THE CROSSING PAID BY ANOTHER

51.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The model of Part XI has been stated so far from the position of a producer placing contributions into a field. A second party may bear part of the cost of the same crossing, and the transfers by which that party does so compose the subject matter of an extensive literature surveyed in Part VI. This chapter states what the model of Part XI implies for those transfers.

The chapter undertakes six tasks. It locates support within the model as the supply side of a crossing already described from the other side. It redefines the two kinds of support distinguished in Part VI under the criterion fixed in Chapter 48. It states why two transfers identical in content may differ in kind, and identifies the properties responsible. It examines the pattern of return that support of the generative kind produces, and states the one respect in which that pattern exceeds an established account. It states the cycle in which self-crossing and support stand to one another, together with the inference that cycle fails to license. And it treats the case of a relation from which no return is expected.

The chapter proceeds by location, redefinition, analysis, and the treatment of a limit case. The method is the application of the criterion of Part XI to the material surveyed in Part VI, with claims labelled at the point of use.

51.2 SUPPORT AS THE SUPPLY SIDE OF A CROSSING

Support occupies a definite position within the model, and stating that position fixes what the remainder of the chapter may claim. This section states the position, gives the two quantities support may supply, and marks what follows for the description of a supporting party. It proceeds by locating support within the terms of the model. The method is analytical.

A relation below the generative threshold consumes more in maintenance than it returns for its own continuation, and the difference is met from outside or the relation lapses. Support is any transfer that meets the difference. The supporting party occupies the position of the external supply whose withdrawal the fading test examines, and the model therefore describes support without requiring any addition to its terms.

Support supplies one of two quantities. It supplies maintenance, meeting the difference between returns and costs for as long as the transfer continues. Or it supplies amplitude and structure, placing a perturbation into the interval described in Chapter 50 that the supported party lacks the means to reach: a reception where the party commands none, a coupling to a region the party cannot reach, a form the receiving system will assign.

What follows for the description of a supporting party is that the party's transfers are classified by their effect on the supported relation in place of their content, their cost, or the intention with which they are made. Two parties transferring the same quantity may stand on opposite sides of the classification that follows.

51.3 THE KINDS OF SUPPORT UNDER THE CRITERION

Part VI recorded a distinction between two kinds of support that is drawn in several literatures and grounded in none of them by a stated test. This section redefines the pair under the criterion of Part XI, states what the redefinition supplies, and records the prior art the redefinition inherits. It proceeds by definition followed by comparison. The method is the application of a criterion to an existing distinction.

Definition 51.1. (Extractive and generative support). *Support is extractive where its continuation is required for the supported relation to persist, and generative where the relation it supports comes to return what its maintenance consumes, so that the support admits of withdrawal.*

The definition is applied by the fading test of Chapter 48, which examines the consequences of withdrawal. The redefinition supplies what the surveyed literatures lack: a test in place of an aspiration. Capacity development, ownership, sustainability, and exit are stated as objectives throughout the practice literature of Part VI, and the practice literature supplies no operation by which an arrangement is assigned to one side or the other (doctrine, throughout the development and assistance literatures).

Three bodies of prior art are inherited and are recorded here. An established distinction in the psychology of helping separates support supplying solutions from support supplying the means by which a recipient reaches solutions, and the first maintains the recipient in the position of recipient (doctrine, with experimental support at the intergroup level). A doctrine of development assistance directs support toward the self-help effort of the recipient, and has done so for several decades. And a distinction between extractive and generative arrangements has been drawn in the literature on ownership and the design of enterprises (doctrine, within applied economics). Each names the pair. None supplies the test, and the test is what this chapter adds.

51.4 THE PROPERTIES DETERMINING THE KIND

Two transfers identical in content may fall on opposite sides of the definition, and the properties responsible require statement, since they are the properties a supporting party can act upon. This section identifies three, states the evidence bearing on each, and draws the consequence for the design of a transfer. It proceeds property by property. The method is analytical, with evidence carried from Part VI.

The first property is the disposition of the coupling the transfer creates. A transfer routed so that the recipient's subsequent contributions travel through the supporting party creates a coupling whose removal severs the recipient's access. A transfer routed so that the recipient acquires couplings to parties other than the supporting party leaves a structure that survives the supporter's departure. The property is the topology of Chapter 50, applied to a transfer.

The second property is the visibility of the transfer. Support the recipient registers as support carries a cost to the recipient's standing, and evidence from the study of support under stress indicates that support which the recipient does not register as such is associated with better adjustment, while visible received support is at times associated with worse (empirically tested; diary and experimental designs, single-population samples). The finding is unexpected and its mechanism is contested, and the property is recorded here with that qualification.

The third property is the position in which the transfer places the recipient. A transfer that assigns the recipient a completed solution places that recipient in the position of one who receives solutions; a transfer that supplies means places the recipient in the position of one who reaches them. The two are distinguishable in practice and have observable consequences, and the giver's preference between them varies with the stability of the standing the two parties occupy (empirically tested at the intergroup level; the mechanism is specific to status relations and does not transfer entire).

The consequence for design is that the kind of a transfer is settled by its routing, its visibility, and the position it assigns, and settled by none of its magnitude, its content, or the intention behind it. Chapter 56 develops the consequence for institutions.

51.5 THE PATTERN OF RETURN

Support of the generative kind produces returns, and the pattern those returns follow differs from the pattern of an exchange. This section states the pattern, compares it with an established account, and identifies the one respect in which the present account exceeds that one. It proceeds by statement and comparison. The method is comparison against prior art.

The pattern is this. A party supported past a threshold returns nothing to the supporting party in the ordinary case, and comes in time to supply to third parties what the supporting party supplied. The return travels forward and outward in place of back.

The pattern is described in the theory of indirect reciprocity, where cooperation is sustained without the same two parties meeting again, since assistance confers a standing that attracts assistance from third parties, and in the variant treating assistance passed onward to parties other than the source (formally modelled, with experimental support). The description covers two of the three respects in which returns from generative support depart from exchange: they arrive later than the transfer, and they arrive at parties other than the supporter.

The third respect exceeds that account and is recorded here as the one novel element in this chapter's treatment of return. A return may arrive at a different level of organisation from the one at which the transfer was made. Support supplied to a producer may return as a practice adopted by a group, as an arrangement adopted by an institution, or as a distinction available to a field, none of which is an act by a party of the kind that received the transfer. The theory of indirect reciprocity models parties exchanging assistance across time and identity, and it models no passage between levels. The claim here is confined to the observation that such passages occur and that the criterion of Chapter 49 applies to them, and a formal treatment lies outside this book.

51.6 SELF-CROSSING AND SUPPORT IN A SINGLE CYCLE

The relation between what a producer does and what a supporter supplies admits of a statement in which each conditions the other, and the statement carries an inference that must be blocked at the point where it arises. This section states the cycle, states the inference, and blocks it. It proceeds by statement followed by two constraints. The method is analytical.

The cycle runs as follows. A producer placing perturbations creates couplings, and the couplings compose the structure through which a transfer can be routed to parties other than the supporter. A transfer so routed supplies amplitude and structure the producer could not reach, and the resulting couplings extend the structure further. Each side supplies a condition the other requires, and the field grows through the alternation.

Proposition 51.2. (The condition of assisted crossing). *Self-crossing supplies the condition on which support enters a generative cycle, and compassion supplies the ground on which support proceeds in advance of any demonstration of generativity.*

The proposition has two clauses, and the second exists to block an inference the first invites. The inference runs from the observation that support couples more effectively to a field already in motion, to the conclusion that support is owed to those who have already begun and withheld from those who have not. The inference converts a statement about mechanism into a criterion of eligibility, and criteria of that shape are documented in the study of welfare attitudes, where the attribution of control over one's situation operates as a

principal ground on which populations sort claimants into the deserving and the undeserving (empirically tested; comparative survey research).

Two constraints block the inference and hold for the remainder of the book.

Requirement 51.3. (The description and the gate). *The first clause of the preceding proposition describes a mechanism of coupling. It supplies no criterion of eligibility, and no allocation of support in this book is conditioned on a prior demonstration of self-crossing.*

The second constraint is the requirement already fixed in Chapter 42, that protection of dignity holds prior to every generative accounting and remains in force at any value of the return that accounting yields. The account of coupling efficiency developed in this chapter is a generative accounting in the sense of that requirement, and it is subordinate to the protection accordingly.

51.7 THE LIMIT CASE OF ENDURING SUPPORT

One case falls at the boundary of the account and is treated here, since an account that passed over it would leave its criteria to be applied by others in the cases where misapplication does most damage. This section states the case, states the two errors available in treating it, states the description the account supplies, and marks what the account declines to say. It proceeds by statement, two refusals, and a residue. The method is the application of results established in Part IX.

The case is a relation in which a party requires support that admits of no withdrawal: profound and permanent dependency, an illness in its final phase, a capacity that will not return. The fading test applied to such a relation returns the answer that withdrawal collapses it, and the support therefore falls on the extractive side of the definition given in Section 51.3.

The first error available is to read that classification as a judgement. The classification records that the relation persists on continued supply and records nothing else. The diagnostic restriction fixed in Chapter 42 governs the reading, and the ground on which such support is owed is stated in that chapter, independent of every criterion in Part XI and unrevised by any of them.

The second error available is to rescue the case by an appeal to returns arriving elsewhere: that relations of care generate practices, transform those who sustain them, and supply a community with distinctions it would otherwise lack. Each of these observations is correct, and Chapter 41 established why the appeal fails as a ground. An argument of that form is registered at the level of the system, carries a warrant conditional on the sign of an aggregate effect, and leaves the case undefended wherever the effect is small. The observations are retained in this book as observations, and the ground lies elsewhere.

The description the account supplies is the one established in Chapter 42. A participant holds final value, and the source of that value lies in the relations in which the participant stands. Generativity predicated at the ontological layer requires nothing of a participant, and the functional layer, to which every criterion of Part XI belongs, marks a different subject matter in place of a higher grade. A relation of care is a relation in which a participant stands, and the account requires nothing further of it.

What the account declines to say concerns a participant standing in no relation whatever. The resources developed in this book locate value in relations, and a case in which none obtains lies outside their reach. The account records the limit and declines to speak past it, and Chapter 54 states the corresponding limit on the side of support.

51.8 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Support occupies the position of the external supply whose withdrawal the fading test examines, and it supplies either maintenance or the amplitude and structure a supported party cannot reach.

Support is extractive where its continuation is required for the supported relation to persist, and generative where the relation comes to return what its maintenance consumes. The pair is named in three prior literatures, and the test by which an arrangement is assigned to one side is what this chapter adds.

The kind of a transfer is settled by the disposition of the coupling it creates, by its visibility to the recipient, and by the position it assigns to the recipient, and settled by none of its magnitude, its content, or the intention behind it.

Returns from generative support arrive later than the transfer, at parties other than the supporter, and at times at a different level of organisation from the one at which the transfer was made. The first two respects are described by the theory of indirect reciprocity; the third exceeds it, and receives no formal treatment in this book.

Self-crossing supplies the condition on which support enters a generative cycle, and compassion supplies the ground on which support proceeds in advance of any demonstration of generativity. The first clause describes a mechanism of coupling and supplies no criterion of eligibility.

Support admitting of no withdrawal falls on the extractive side of the definition, and the classification carries no judgement. The ground on which such support is owed is stated in Chapter 42, and the appeal to returns arriving elsewhere is declined as a ground and retained as an observation.

PART XII

THE TESTING OF THE MODEL

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CHAPTER 52

THE PREDICTIONS OF THE MODEL

52.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The model of Part XI states a mechanism, and a mechanism admits of statement in a form that observation can bear upon. Chapter 2 fixed the order in which that statement and the presentation of cases are to be made: the predictions are settled before any case is assembled, so that agreement between the two carries evidential weight in place of recording a corpus selected to agree.

This chapter supplies the statement. It undertakes three tasks. It derives from the model a set of predictions, each stated with the element of the model from which it follows. It identifies the quantities by which each prediction would be assessed. And it states the difficulties attaching to the measurement of those quantities, together with the consequence of each difficulty for the strength of any assessment.

The chapter proceeds by derivation, by the identification of quantities, and by the statement of difficulties. The method is deductive in the first task and descriptive in the remaining two, and no case material is admitted at any point in the chapter.

52.2 THE PREDICTIONS DERIVED FROM THE MODEL

The model supports a set of predictions that admit of assessment against observation, and each is derived here from a stated element of the model. This section states nine predictions, giving for each the element from which it follows. It proceeds prediction by prediction. The method is deduction from the results of Part XI.

Prediction 52.1. (Immateriality of sub-threshold volume). *Among producers facing receiving systems of comparable pathway concentration, the number of contributions placed below the level at which a receiving system registers a contribution carries no association with the couplings subsequently formed.*

The prediction follows from the subcritical character of the transition established in

Chapter 47, under which contributions below the registering amplitude are carried by the linear term and decay independently of one another.

Prediction 52.2. (Advantage of extending couplings). *Among contributions placed above the registering amplitude, those reaching parties coupled to regions the producer does not otherwise reach are followed by larger growth in the producer's relational field than contributions reaching parties already coupled to the producer, at equal amplitude.*

The prediction follows from the topological property stated in Chapter 50.

Prediction 52.3. (Dissimilarity of the seed). *Contributions preceding the formation of a durable structure differ in kind from that structure more often than they resemble it at smaller scale.*

The prediction follows from the property of non-normal amplification established in Chapter 47, under which the disturbance achieving the largest growth differs in composition from the state that growth produces.

Prediction 52.4. (Intermediate admissibility). *Amplification reaches its greatest values at intermediate admissibility. Contributions assigned by a receiving system without residue, and contributions the system assigns to no category, are both followed by smaller growth than contributions the system assigns while failing to exhaust.*

The prediction follows from the account of resonance in Chapter 50.

Prediction 52.5. (Alternation near the boundary). *Producers whose relational fields lie near the generative threshold exhibit alternation between periods in which returns meet maintenance costs and periods in which they fall short, with the alternation occurring in the absence of any change in the producer's conduct.*

The prediction follows from the saddle structure of the boundary established in Chapter 48.

Prediction 52.6. (Collective crossing). *Small groups cross the generative threshold collectively under conditions in which no member of the group crosses it individually. In such groups the withdrawal of a single member leaves the field standing, while the removal of the mutual couplings collapses it.*

The prediction follows from the result on collective self-maintenance stated in Chapter 48.

Prediction 52.7. (Collapse of purchased fields). *Relational fields maintained by continuous institutional supply collapse on the withdrawal of that supply at a rate distinguishable from the rate observed where a field has come to return what its maintenance consumes.*

The prediction follows from the application of the fading test to institutionally supported producers in Chapter 48.

Prediction 52.8. (Openings without folding). *In systems whose generated value converges on attractors outside the relations producing it, increases in the number of available channels are followed by no corresponding increase in the proportion of relations meeting their own maintenance costs.*

The prediction follows from the account of capture in Chapter 49 and supplies the observable difference between a system that admits too little and a system whose returns converge elsewhere.

Prediction 52.9. (Determinants of the kind of support). *Transfers routed so that a recipient's subsequent contributions pass through the supporting party, registered by the recipient as support, and assigning completed solutions, are followed by continued dependence; transfers routed to third parties, unregistered as support, and supplying means are followed by relations that survive withdrawal. The association holds at equal magnitude of transfer.*

The prediction follows from the properties determining the kind of a transfer stated in Chapter 51.

52.3 THE QUANTITIES BY WHICH THE PREDICTIONS ARE ASSESSED

Each prediction states a relation among quantities, and the quantities require identification in terms an observer could apply. This section identifies five, states for each the prediction it serves, and marks the level of observation at which each is taken. It proceeds quantity by quantity. The method is operational specification.

The first quantity is the coupling count: the number of parties standing in a relation with a producer through which a contribution has passed and a response has returned. It serves the second, third, and sixth predictions, and it is taken at the level of a producer over an interval.

The second quantity is the registration rate: the proportion of a producer's placements that a receiving system assigns to any category at all. It serves the first and fourth predictions and is taken at the level of a placement.

The third quantity is the interval to first return: the time between a placement and the first response it draws from a party positioned to respond. It serves the fifth prediction and is taken at the level of a placement.

The fourth quantity is the collapse rate on withdrawal: the proportion of a producer's couplings that lapse within a stated interval following the withdrawal of institutional supply or of a supporting transfer. It serves the seventh and ninth predictions and is taken at the level of a producer.

The fifth quantity is the folding ratio: the proportion of value generated through a set of relations that returns to those relations, against the proportion accruing to positions outside them. It serves the eighth prediction and is taken at the level of a system.

52.4 THE DIFFICULTIES ATTACHING TO MEASUREMENT

The quantities identified above are estimable in principle and difficult in practice, and the difficulties bear on the strength of any assessment the predictions may receive. This section states five difficulties, giving for each the quantity affected and the consequence for assessment. It proceeds difficulty by difficulty. The method is the statement of limits on the evidence the account can receive.

The first difficulty concerns the visibility of couplings. Couplings leave traces in the archival record only where they issue in a citation, a co-authorship, or an acknowledgement, and the couplings the model treats as decisive include correspondences, readings, and alterations of another party's subsequent work that leave no such trace. Coupling counts taken from archival sources are therefore lower bounds, and the bias falls on producers whose couplings lie outside institutional forms, which is the population the model concerns.

The second difficulty concerns the assessment of amplitude. The registering level of a system is defined by the response of that system, and no independent scale is available against which a placement's amplitude may be located in advance. Assessments of the first and fourth predictions are therefore made after the fact, with the attendant risk that the level is inferred from the outcome it was to explain.

The third difficulty concerns the counterfactual for withdrawal. The fourth quantity requires an observation of what follows a withdrawal, and withdrawals occur under circumstances that are themselves informative: institutional supply is withdrawn from producers whose situations differ in other respects from those whose supply continues. Assessments of the seventh prediction therefore require designs that address the selection, and the natural experiments available are few.

The fourth difficulty concerns survivorship in any case corpus. Fields that formed are documented, and fields that failed to form leave little record. Assessment against cases therefore over-represents the successful, and Chapter 53 states the consequence for the reading

of the corpus assembled there.

The fifth difficulty concerns the exclusion of self-report. Chapter 46 established that the distinction between suppressed and absent generativity cannot be settled from within the condition, and assessments of the model accordingly exclude a producer's own account of the capacity that producer holds. The exclusion removes the most readily available source of data on the population the model concerns, and the account accepts the resulting loss of power as the cost of the requirement.

52.5 SUMMARY OF RESULTS

The chapter has established three results carried forward.

The model yields nine predictions, each derived from a stated element of Part XI: the immateriality of sub-threshold volume, the advantage of contributions extending couplings, the dissimilarity of the seed from the structure it precedes, the intermediate position of maximal admissibility, alternation near the boundary, collective crossing by groups whose members do not cross individually, the collapse of purchased fields on withdrawal, the absence of folding in systems whose value converges, and the determinants of the kind of a transfer.

Five quantities assess them: the coupling count, the registration rate, the interval to first return, the collapse rate on withdrawal, and the folding ratio.

Five difficulties attach to their measurement: couplings outside institutional forms leave no archival trace, amplitude admits of no independent scale, withdrawals occur under informative circumstances, case corpora over-represent fields that formed, and the account's own requirement excludes self-report.

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CHAPTER 53

THE CASES

53.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Chapter 2 assigned cases an illustrative function and withheld a confirmatory one, and Chapter 52 fixed the predictions before the present chapter was composed. The cases assembled here display the mechanism of Part XI in operation and supply the concrete referents an abstract model requires.

The chapter undertakes three tasks. It presents six cases, stating for each what occurred, which predictions the case bears upon, and what the case leaves unestablished. It compares the six along the dimensions the model treats as decisive. And it states the properties of the corpus as a whole that constrain what may be read from it.

The chapter proceeds case by case, followed by comparison and by the statement of the corpus properties. The method is illustrative throughout, and each case is reported with the status of its sources labelled at the point of use.

53.2 EDITORIAL SECESSION FROM A COMMERCIAL PUBLISHER

Editorial boards of academic journals have on several occasions resigned in a body and founded a replacement title. This section reports the pattern, identifies the predictions it bears upon, and states what it leaves unestablished. It proceeds by report, identification, and limitation. The method is the description of a documented sequence.

The pattern runs as follows. A board in dispute with a commercial publisher, ordinarily over charges levied on authors or readers, resigns in a body and establishes a new title carrying the same editorial practice. Cases include the departure of a linguistics board in 2015, the departure of a neuroimaging board in 2023 over a publication charge the departing editors assessed as several times the cost of publication, and a continuing series of such departures recorded in a public register maintained for the purpose (journalism and professional reporting; the register is compiled from public announcements).

The case bears on the seventh prediction and on the sixth. A board is a set of relations maintained partly by the publisher's infrastructure and partly by the mutual couplings of its

members, and the secession separates the two: the infrastructure is withdrawn by the act of departure, and the field of couplings survives it. The rapidity with which replacement titles acquire submissions and readers indicates that what the publisher supplied was the infrastructure and what the board supplied was the field.

The case leaves unestablished the central claim of the book. A seceding board carries standing acquired within the system it departs, and its members occupy institutional positions that continue after the departure. The case therefore illustrates the separability of infrastructure from field, and it establishes nothing about the formation of a field where no prior standing exists.

53.3 SATIRICAL JOURNALS AS AN UNSANCTIONED CHANNEL

A body of satirical journals founded outside established publishing arrangements has been reported in recent professional and press coverage. This section reports the phenomenon, identifies the predictions it bears upon, and states its evidentiary status. It proceeds by report, identification, and limitation. The method is the description of a recent and lightly documented phenomenon.

The phenomenon consists of journals established in parody of highly ranked titles, carrying contributions whose content defeats ordinary assessment and describing their own output in self-deprecating terms. Reports describe the participants as researchers at early career stages and describe the arrangement as a response to pressure within systems of assessment (journalism, in one international science publication and in several platforms published in Chinese; no scholarly treatment exists at the time of writing, and the reports are not a systematic survey of participants or of their views).

The case bears on the fourth prediction and on the eighth. The contributions are assignable by the receiving system, in that they take the form of articles in journals, while carrying components the system's categories fail to exhaust, in that their content defeats assessment by the criteria the system applies. The channel established is unsanctioned, and its appearance in a system already possessing an abundance of sanctioned channels indicates a condition other than a shortage of channels.

The case is reported here with its status marked. Its documentation is journalistic, its duration at the time of writing is short, and the aggregate quantities the model treats have not been measured for it. It is presented as an illustration of a form, and it supports no inference about the frequency or the durability of such formations.

53.4 STUDY CIRCLES AND SCHOLARSHIP BEYOND INSTITUTIONAL POSITION

Self-organised study groups operating outside institutional sponsorship have a long history in several traditions. This section reports two, identifies the predictions they bear upon, and

states what they leave unestablished. It proceeds by report and identification. The method is comparative description.

The Japanese 研究会 is a self-organised reading and research circle, convened by its participants, meeting on a regular schedule, and operating without institutional sponsorship or budget. The Chinese discussion of 沙龙 concerns scholarship pursued outside university position, and it carries a substantial vernacular literature on the conditions of such work (doctrine and vernacular discussion; scholarly treatment is thin in both cases).

The cases bear on the sixth prediction. Each displays a small group whose members lack individually the reception, criticism, and standing that sustained inquiry requires, and whose mutual couplings supply to each what each lacks the means to generate. The infrastructure consumed is small and the field is maintained by the couplings themselves.

The cases leave unestablished the durability of such formations and the conditions under which they cross the threshold in the sense of Chapter 48. The documentation available describes the form and reports little about the rate at which particular circles lapse.

53.5 OPEN-SOURCE COMMUNITIES BEFORE THE FORMATION OF GOVERNANCE

The governance arrangements of open-source software communities have been studied closely, and their formation has been studied less. This section reports what the literature establishes, identifies the predictions it bears upon, and states the boundary at which the literature stops. It proceeds by report and identification. The method is the description of a scholarly finding.

A study of one large community established that its governance evolved with the community's own conceptions of authority, that members developed a shared basis of formal authority, and that they limited it through democratic mechanisms (empirically tested; multi-method study of a single community over an extended period).

The case bears on the sixth and eighth predictions. A community of contributors, holding no institutional positions in common and receiving no external allocation, maintained a productive field through couplings established by the contributions themselves, and the governance arrangements followed the production in place of preceding it.

The boundary at which the literature stops is precisely the boundary this book treats. The study takes as given a community of contributors, an accumulated body of work, and a platform on which both are held, and it examines how governance crystallised upon them. The formation of the contributor community is outside its scope, and the case therefore illustrates the order of formation and governance while leaving the earlier phase undocumented.

53.6 DIASPORA AND TRANSNATIONAL KNOWLEDGE NETWORKS

Populations dispersed from a region of origin have on many occasions constructed durable structures for the circulation of knowledge and resources. This section reports the pattern,

identifies the predictions it bears upon, and states the qualification the record imposes. It proceeds by report, identification, and qualification. The method is the description of a documented pattern.

The pattern comprises transnational technical communities linking regions of origin with regions of settlement, formalised diaspora knowledge networks established for the purpose, and the circulation of practices in place of remittances alone (doctrine, with case literature attached; the evidence on outcomes is mixed and several formalised networks have lapsed).

The case bears on the second and sixth predictions with particular directness. The parties composing such a network lack access to the institutional infrastructure of the region of origin, and the couplings they establish reach regions neither side could otherwise reach. The resulting structure performs the three functions of a generative field as fixed in Chapter 23: contributions placed within it persist, contributions placed within it meet one another, and contributions placed within it issue in structures exceeding their own scale.

The qualification the record imposes concerns durability. Several formalised diaspora networks established with external sponsorship have lapsed, while informal transnational communities have persisted, and the pattern of that difference bears on the ninth prediction without having been assembled in a form that assesses it.

53.7 ENGINEERED CHANNELS IN STATE ASSISTANCE PROGRAMMES

Programmes of state assistance have on occasion constructed relational channels deliberately, in place of transferring resources alone. This section reports one such mechanism, identifies the predictions it bears upon, and states the reservations attaching to it. It proceeds by report, identification, and reservation. The method is the description of a policy instrument.

The mechanism pairs each assisted household with a responsible official, and pairs wealthier administrative units with poorer ones. Research on the mechanism reports that the rank of the paired official is associated with the resources mobilised for the household (empirically tested; observational study within a single national programme).

The case bears on the second and ninth predictions. The instrument constructs couplings directly, in place of supplying resources and leaving the couplings to form, and the reported association between the rank of the paired party and the resources mobilised is an association between the topology of a coupling and what travels along it.

Two reservations attach. The programme operates under state direction with assigned targets, and the couplings it constructs are routed through the assisting party in the manner that Chapter 51 associates with continued dependence. The evidence available concerns resources mobilised during the programme and reports little about what survives its conclusion, which is the observation the ninth prediction requires.

53.8 THE COMPARISON ACROSS THE CASES

The six cases differ along the dimensions the model treats as decisive, and the comparison states those differences. This section compares them on four dimensions and records the pattern the comparison yields. It proceeds by dimension. The method is comparison.

The first dimension is the prior standing of the parties. Seceding boards and the transnational communities carry standing acquired elsewhere; the satirical journals and the study circles are composed of parties holding little. The pattern is that formations composed of parties with prior standing are documented in far greater proportion, which bears on the corpus properties stated below in place of on the model.

The second dimension is the routing of couplings. The study circles, the open-source community, and the informal transnational communities establish couplings among their participants; the state programme routes couplings through the assisting party. The formations of the first kind are those in which the field survives the departure of any single participant.

The third dimension is admissibility. The seceding boards produce contributions the receiving system assigns without residue; the satirical journals produce contributions the system assigns while failing to exhaust. The two occupy opposite positions on the dimension the fourth prediction concerns, and the corpus contains no case at the third position, in which contributions are assigned to no category at all, for the reason stated below.

The fourth dimension is the destination of generated value. In the open-source community and the study circles, what is generated returns to the participants as reception, criticism, and standing among one another. In the state programme, the generated value is recorded against programme targets held by the assisting party, which places the case on the converging side of the criterion of Chapter 49.

53.9 THE PROPERTIES OF THE CORPUS

The corpus assembled here has properties that constrain what may be read from it, and the constraints are stated rather than left to be discovered. This section states three. It proceeds property by property. The method is the statement of limits on the evidence presented.

The first property is survivorship. Every case in the corpus is a formation that occurred and was documented. Formations that failed to occur leave no record, and the corpus therefore carries no information about the rate at which attempts succeed. The fourth difficulty of Chapter 52 applies to the corpus in full.

The second property is documentary asymmetry. The cases composed of parties holding prior standing are documented in scholarly literature; the cases composed of parties holding little are documented in journalism and vernacular discussion or in nothing at all. The asymmetry follows the population the book concerns, and it operates against the availability of evidence precisely where the model's claims are strongest.

The third property is the absence of the negative regime. No case in the corpus displays a system at the values of pathway concentration at which no contribution passes, since a formation in that regime produces nothing to document. The corpus therefore illustrates the model where the model predicts formation, and it supplies no illustration of the regime Chapter 54 states.

53.10 SUMMARY OF RESULTS

The chapter has established three results carried forward.

Six cases illustrate the mechanism: editorial secession, which separates infrastructure from field while carrying prior standing; satirical journals, which display an assignable form carrying components the receiving system fails to exhaust; study circles outside institutional position, which display collective maintenance among parties lacking individual means; open-source formation, in which governance followed production; transnational knowledge networks, which display couplings reaching regions neither side could otherwise reach; and engineered channels in state assistance, which construct couplings routed through the assisting party.

The comparison across the cases distinguishes them by prior standing, by the routing of couplings, by admissibility, and by the destination of generated value, and the formations in which couplings run among participants are those whose fields survive an individual departure.

The corpus is constrained by survivorship, by an asymmetry of documentation that falls against the population the book concerns, and by the absence of any case drawn from the regime in which no contribution passes.

CHAPTER 54

THE NEGATIVE REGIME AND THE CONDITIONS OF FALSIFICATION

54.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

An account stating the conditions under which a capacity may become self-sustaining owes a statement of the conditions under which it may not, and an account offering predictions owes a statement of the observations that would tell against them. Chapter 45 made the first obligation explicit by fixing a requirement of separability, and Chapter 52 made the second explicit by deriving predictions in a form observation can bear upon.

This chapter discharges both obligations. It undertakes four tasks. It states the region of the control parameter within which no contribution passes, and draws the consequence for what the account may say to a producer situated there. It states the corresponding region on the side of support, in which no transfer admits of withdrawal, and fixes what follows for the treatment of relations falling within it. It states the observations that would tell against each of the predictions of Chapter 52. And it sets out the explanations that compete with the present account for the same observations, giving for each the observation that would discriminate between them.

The chapter proceeds by stating two regions, enumerating refuting observations, and comparing rival explanations. The method is the specification of conditions under which the account fails, and no case material is admitted, in accordance with the corpus properties recorded in Chapter 53.

54.2 THE REGION FORECLOSING AMPLIFICATION

The model states the conditions under which a perturbation may be amplified, and the same statement fixes conditions under which none is. This section identifies the region, states its marks, and draws the consequence for the account's address to a producer within it. It proceeds by identification, marks, and consequence. The method is the specification of a limiting case of the model.

The region is that in which pathway concentration takes extreme values in all four components at once. The routes to valuation are held by few parties who consult one another,

so that assessments across nominally independent routes are correlated; the range of forms the operative criteria will assign is narrower than the range of forms a producer is able to compose; and the assessing capacity available for contributions of the relevant kind is exhausted before such contributions are reached.

Within that region the model predicts no formation. A contribution placed at any amplitude is either assigned without residue, in which case no growth follows by the account of Chapter 50, or assigned to no category, in which case it is discarded in the assignment described in Chapter 47. The intermediate position on which amplification depends is unavailable, since the range admitting of assignment and the range carrying unexhausted components fail to overlap.

The consequence for the account's address to a producer is stated plainly. Within this region the account offers no strategy, and the difficulty it identifies lies in the receiving system in place of the producer's conduct. Chapters 52 and 50 state conditions on placement, and those conditions have no application where the region admits nothing. An account continuing to prescribe placement under these conditions would convert a description of a system into an exhortation to a producer, and the present account declines the conversion.

54.3 THE REGION OF ENDURING SUPPORT

The criterion applied to support yields a corresponding region, and its treatment completes the constraint fixed in Chapter 51. This section identifies the region, states what the account records of relations falling within it, and fixes what follows. It proceeds by identification and by two consequences. The method is the application of a criterion to a limiting case.

The region comprises relations in which the returns generated remain below maintenance costs under every available transfer, so that the fading test returns the same answer at every magnitude and every routing of support. Profound and permanent dependency falls within it, as do relations sustaining a party through a terminal course and relations with parties whose capacity will not return.

The account records of such relations that they persist on continued supply. It records nothing further, and the diagnostic restriction fixed in Chapter 42 governs the reading of the record. A classification placing a relation within this region carries no implication about what the parties to it are owed, and the grounds on which continued support is owed are stated in that chapter, independent of every criterion in Part XI.

Two consequences follow for the drafting of the remainder of the book. Prescriptions addressed to supporting parties, developed in Chapter 56, apply to relations outside this region and are stated with that restriction attached. And the proposition on assisted crossing in Chapter 51 is read under the requirement accompanying it, so that the observation that support couples more effectively to a field already in motion supplies no ground for

withholding support from relations within this region.

54.4 THE OBSERVATIONS THAT WOULD REFUTE THE PREDICTIONS

Each prediction of Chapter 52 admits of observations that would tell against it, and this section states them. It proceeds prediction by prediction and closes with an observation bearing on the account as a whole. The method is the specification of refuting conditions.

An association between the number of contributions placed below the registering level and the couplings subsequently formed would tell against the first prediction and against the subcritical character of the transition on which it rests.

An absence of any advantage to contributions reaching parties coupled to unreached regions, at equal amplitude, would tell against the second prediction and against the topological property of Chapter 50.

A finding that contributions preceding durable structures resemble those structures at smaller scale more often than they differ in kind would tell against the third prediction and against the account of non-normal amplification.

A monotone relation between admissibility and growth, in either direction, would tell against the fourth prediction and against the account of resonance.

A monotone approach to the threshold, in which producers near the boundary converge upon it in place of alternating across it, would tell against the fifth prediction and against the saddle structure of Chapter 48.

A finding that groups whose members lack individual means cross no more frequently than isolated producers facing comparable concentration would tell against the sixth prediction.

A finding that relational fields maintained by institutional supply survive its withdrawal at rates comparable to fields returning what their maintenance consumes would tell against the seventh prediction and against the reading of resource-rich systems in Chapter 48.

A finding that increases in the number of channels available within a system are followed by proportionate increases in the share of relations meeting their own maintenance costs, in systems whose value converges outside those relations, would tell against the eighth prediction and against the account of capture.

An absence of association between the kind of a transfer and its routing, its visibility, and the position it assigns, at equal magnitude, would tell against the ninth prediction.

One further observation bears on the account as a whole. The control parameter of Chapter 46 is presented as a single quantity composed of four components, and the presentation carries the commitment that the marks of the subcritical region co-occur. A finding that the components vary independently, so that systems extreme in one component behave as systems extreme in another do not, would establish that the account has been treating several quantities

as one.

54.5 THE RIVAL EXPLANATIONS OF THE SAME OBSERVATIONS

Several accounts explain part of what this book explains, and an account that failed to identify the observations discriminating between them would leave its own contribution unsupported. This section treats four, stating for each what it explains and the observation that would discriminate. It proceeds account by account. The method is comparison against alternatives.

The first is cumulative advantage without expression constraint. On that account, recognition accrues to the already-recognised through a process requiring no reference to the operative criteria of a receiving system, and the observations of concentration and persistence follow from the process alone (formally modelled, with causal support at a funding threshold). The discriminating observations are the fourth and eighth predictions. Cumulative advantage predicts a monotone relation between prior standing and subsequent growth and predicts nothing about the position of maximal admissibility, and it predicts that additional channels raise the share of relations meeting their own costs, since it locates the difficulty in access in place of destination.

The second is path dependence without non-normality. On that account, small early events select a trajectory that increasing returns then entrench, and no appeal to transient amplification is required (formally modelled). The discriminating observation concerns the parameter values at which large growth occurs. Path dependence requires an accumulating path already established and returns rising along it; the present account predicts large intermediate growth at values far from any point of instability, in systems where no such path has formed.

The third is difference in quality misread as structural blockage. On that account, producers whose contributions attract no attention have produced contributions of low quality, and the apparatus of this book redescribes an ordinary outcome (doctrine, held implicitly across the evaluation literature). Two observations discriminate. The first is the case in which assessment criteria are altered while a producer's capacity and completed work are held constant, treated in Chapter 45, where the change of status occurs entirely on the side of the interpretation. The second is the negative region of Section 54.2: the present account predicts that within that region the observation carries no information about quality, and predicts that outside it the same observation does carry information. An account attributing the outcome to quality throughout draws no such distinction.

The fourth is selection in the assembly of evidence. On that account, the cases and associations supporting the model were selected because they display it, and the model would find support in any corpus assembled after it was stated. The account is conceded in part. Chapter 53 records that its corpus over-represents formations that occurred and that no case

is available from the negative region. The concession is answered only by assessment against the quantities of Chapter 52 in populations defined independently of the model, and this book supplies no such assessment.

54.6 SUMMARY OF RESULTS

The chapter has established four results carried forward.

Within the region in which pathway concentration takes extreme values in all four components at once, the range of forms admitting of assignment and the range carrying unexhausted components fail to overlap, and the model predicts no formation. The account offers no strategy to a producer situated there, and it locates the difficulty in the receiving system.

Within the region in which returns remain below maintenance costs under every available transfer, the fading test returns the same answer at every magnitude and routing. The account records that such relations persist on continued supply and records nothing further, and the grounds on which support is owed are stated in Chapter 42.

Each of the nine predictions admits of a stated refuting observation, and one further observation bears on the account as a whole: independent variation among the four components would establish that several quantities have been treated as one.

Four accounts compete for the same observations. Cumulative advantage is discriminated by the predictions concerning admissibility and folding; path dependence by the parameter values at which large growth occurs; the attribution to quality by the case of altered criteria and by the negative region; and the charge of selection in the assembly of evidence is conceded in part and answered only by assessment in populations defined independently of the model.

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PART XIII

THE CONSEQUENCES OF THE ACCOUNT

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CHAPTER 55

GENERATIVE RELATIONAL ACADEMIA

55.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

Part XIII states what follows from the account. The present chapter states the consequence for the arrangement of a knowledge-producing system, and it introduces the name the book carries at the point where that name has been earned in place of assumed.

The chapter undertakes five tasks. It states the reversal the account effects in the order between infrastructure and production. It defines the account so named. It states its relation to the ontology on which it rests, which it supplies with an element that ontology has lacked. It states its bearing on the companion account of governance. And it places the present account among the companion volumes of this series.

The chapter proceeds by stating a reversal, a definition, and three relations. The method is the drawing of consequences from results established in Parts X to XII.

55.2 THE ORDER REVERSED BETWEEN INFRASTRUCTURE AND PRODUCTION

The account effects a reversal in an order ordinarily taken as settled, and the reversal is the substance of what this chapter names. This section states the ordinary order, states the reversal, and marks the evidence supporting it. It proceeds by statement, reversal, and evidence. The method is the drawing of a consequence.

The ordinary order holds that infrastructure precedes production. A producer holds a position, and the position supplies time, access, criticism, passage, and a reception; production follows from what the position supplies; and recognition follows from production. Part X reports the order in the chain of transformations, and Part IV reports the arrangements constructed upon it.

The reversal holds that infrastructure may follow production. Contributions placed into a field form couplings, couplings compose a structure through which subsequent contributions are received, and the structure acquires the properties of an arrangement where its maintenance is supplied by the parties whose contributions it retains.

The evidence supporting the reversal is reported in Part XII. Governance in a community producing open software followed production and was constructed from conduct already established; boards departing from a commercial publisher carried a field of relations and left infrastructure behind; and study circles maintain reception and criticism among participants holding no institutional position. Each displays the order this section asserts, and Chapter 53 records what each leaves unestablished.

55.3 THE ACCOUNT DEFINED

The name this book carries denotes a definite account, and the account is defined here. This section states the definition, states its three components, and marks its scope. It proceeds by definition, components, and scope. The method is stipulative.

Definition 55.1. (Generative relational academia). *Generative relational academia is the account on which the infrastructure of a knowledge-producing system is treated as a consequence of generative relations among its participants, on which arrangements are assessed by whether the relations composing them return what their maintenance consumes, and on which the passage from dispersed contribution to sustained arrangement is explained by the amplification of contributions placed into a field.*

The three components correspond to the three elements of the position stated in Chapter 40. The first fixes the unit at which arrangements are assessed, the second supplies the operation, and the third supplies the dynamics.

The scope of the account is the formation and maintenance of arrangements for producing and receiving knowledge. It supplies no theory of what makes a contribution good, no criterion of assessment for the content of contributions, and no account of the growth of knowledge itself.

55.4 THE ELEMENT SUPPLIED TO THE UNDERLYING ONTOLOGY

The account rests on an ontology developed in the companion volumes of this series, and it supplies that ontology with an element it has lacked. This section states the lack, states the element, and marks the consequence. It proceeds by statement, element, and consequence. The method is the drawing of a consequence.

The lack concerns origin. An ontology holding that beings are constituted in relations, and that relations sustain themselves where what they generate returns to them, states the condition of a cycle in operation and leaves the first cycle unexplained. The difficulty is the one Chapter 6 reports for accounts of self-production in living systems, arising here for an account of relational being.

The element supplied is generative perturbation. A contribution placed into a field where no cycle operates may be amplified by a receiving arrangement whose response to it declines, and the amplification forms couplings from which a cycle may compose. The element supplies an account of origin that requires no cycle to be presupposed, and it thereby answers within the ontology the difficulty that ontology inherited.

The consequence is that the present account stands to the underlying ontology as an instance supplying a general result. The case examined is knowledge production, and the element supplied is available wherever the ontology is applied.

55.5 THE BEARING ON THE COMPANION ACCOUNT OF GOVERNANCE

The companion account treating the emergence of normative order stands in a definite relation to the present one, and the relation is stated here. This section states the relation, states what the present account supplies, and marks the constraint it imposes. It proceeds by relation, supply, and constraint. The method is the drawing of a consequence.

The relation is one of sequence. The companion account treats the emergence of rules and their maintenance among parties standing in relations, and the present account treats the formation of the relations themselves. What the companion account takes as its starting condition is what this account explains.

What the present account supplies to it is the order reported in Section 55.2 together with its evidence. Governance constructed from conduct already established is governance following production, and an account of normative emergence proceeding on that order is supported by the material reported in Part XII.

The constraint imposed concerns the design of rules. An arrangement adopting rules before the relations they govern have formed adopts rules for a population that does not yet exist, and Chapter 56 states the consequence for parties supplying support.

55.6 THE PLACE OF THE PRESENT ACCOUNT AMONG THE COMPANION VOLUMES

The series to which this book belongs treats the same structure across several domains, and the place of the present volume is stated here. This section states the domains, states the common element, and marks what the present volume adds. It proceeds by statement, element, and addition. The method is placement.

The domains treated are the constitution of beings in relations, the emergence of normative order, the direction taken by generated value, and the formation of arrangements for producing knowledge. The last is the subject of this book.

The common element is the assessment of an arrangement by what its relations return in place of by what it accumulates. Chapter 49 states the criterion for the direction of value,

Chapter 48 states it for the magnitude, and Chapter 51 states it for a transfer between parties. The three are one criterion applied at three positions, as Chapter 49 establishes.

What the present volume adds to the series is the account of origin reported in Section 55.4, together with the case in which it is worked out. The account of origin is general and the case is particular, and Chapter 57 states which of the results reported here are expected to hold beyond it.

55.7 SUMMARY OF RESULTS

The chapter has established five results carried forward.

Infrastructure may follow production. Contributions placed into a field form couplings, couplings compose a structure receiving subsequent contributions, and the structure acquires the properties of an arrangement where its maintenance is supplied by the parties whose contributions it retains.

Generative relational academia is the account treating infrastructure as a consequence of generative relations, assessing arrangements by whether their relations return what their maintenance consumes, and explaining the passage from dispersed contribution to sustained arrangement by amplification.

The account supplies the underlying ontology with an element it has lacked, namely an account of origin requiring no cycle to be presupposed.

The companion account of governance takes as its starting condition what this account explains, and an arrangement adopting rules before the relations they govern have formed adopts rules for a population that does not yet exist.

The series assesses arrangements by what their relations return, and the present volume adds an account of origin together with the case in which it is worked out.

CHAPTER 56

THE SUPPORT OF GENERATIVITY BEFORE RECOGNITION

56.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The account developed in this book bears on the conduct of parties supplying support, and the present chapter states that bearing. The statement is made under constraints accumulated throughout the survey Parts, and each constraint is stated alongside the recommendation it governs.

The chapter undertakes six tasks. It states the direction in which intervention is turned by the account. It states what a support admitting of withdrawal requires in its design. It states the lever on which such design depends, which lies in an arrangement's own accountability in place of in the intentions of parties within it. It states the individual-level material as a derived prediction, in accordance with the constraint fixed in Part V. It discharges the debt incurred in Chapter 13, which requires an account recommending a design to state what its own categories would do if adopted administratively. And it states what the account declines to license.

The chapter proceeds by stating a direction, a design, a lever, a prediction, a reflexive assessment, and a set of refusals. The method is the drawing of consequences from results established in Parts X to XII, with the constraints of Parts III, VI, and VII applied at the point of use.

56.2 INTERVENTION TURNED TOWARD CONVERSION

The account turns intervention in a definite direction, and the turn is the first of its consequences for practice. This section states the ordinary direction, states the turn, and marks its ground. It proceeds by statement, turn, and ground. The method is the drawing of a consequence.

The ordinary direction supplies an input. A producer holding no position is supplied with funds, with access, or with training, and the supply is expected to issue in production.

The turn directs intervention at conversion. Part X holds that a capacity may be present while the arrangement receiving contributions admits no occasion for its application, and an

intervention supplying inputs to a producer in that condition supplies what the producer already holds. Chapter 46 fixes four components determining whether a contribution reaches valuation, and an intervention is identified by the component it addresses.

The ground of the turn is reported in Chapter 15. An established practice raises a participant's capacity to compose contributions that a receiving arrangement will assign, and leaves the operative criteria of that arrangement unaltered. The practice addresses personal conversion factors and leaves social ones as they were, and the turn stated here directs attention to the second.

56.3 THE DESIGN OF SUPPORT ADMITTING OF WITHDRAWAL

A support admitting of withdrawal has properties its design may secure, and they are stated here. This section states three properties, states the operation assessing them, and marks the qualification attaching to each. It proceeds property by property. The method is the drawing of consequences from Chapter 51.

The first property concerns routing. A transfer routed so that a recipient's subsequent contributions pass through the supplying party creates a coupling whose removal severs the recipient's access, and a transfer routed so that the recipient acquires couplings to parties other than the supplying party leaves a structure surviving that party's departure. The qualification is reported in Chapter 14: a recommendation to construct couplings carries no presumption that the couplings so constructed will be distributed equitably within a community.

The second property concerns the position assigned. A transfer supplying a completed solution assigns the recipient the position of one who receives solutions, and a transfer supplying means assigns the position of one who reaches them. The qualification is that the distinction is observable in conduct and admits of misdescription by parties supplying support, since the account reported in Chapter 25 establishes that the first kind is preferred where standing between parties is insecure.

The third property concerns visibility. Support a recipient registers as support carries a cost to that recipient's standing. The qualification is that the finding rests on narrow populations and a contested mechanism, and a design proceeding upon it proceeds on evidence weaker than the evidence supporting the other two.

The operation assessing all three is the fading test, applied by examining the consequences of a withdrawal that may be partial, staged, or considered. Its application before an arrangement concludes is what Chapter 27 reports the design literature to lack.

56.4 THE ACCOUNTABILITY OF AN ARRANGEMENT AS THE LEVER

The design stated above is unavailable to an arrangement whose accountability runs in one direction, and the lever is accordingly structural in place of dispositional. This section states

the mechanism, states the lever, and marks what follows. It proceeds by mechanism, lever, and consequence. The method is the drawing of a consequence from Chapter 26.

The mechanism is the separation of the party bearing the cost from the party whose capacity is at issue. An arrangement is assessed by the party supplying resources, that party receives reports on what it funds, and no comparable instrument records whether a supported relation has come to sustain itself.

The lever is the instrument recording the second. An arrangement adopting the fading test as a reported quantity acquires a measure of what its own doctrine holds to be its object, and the adoption is available to a supplying party without alteration of any other arrangement.

What follows is that recommendations addressed to the dispositions of parties supplying support are the weakest form the account may take. Chapter 26 establishes that the drift toward arrangements requiring continuation proceeds without bad faith, and Chapter 30 establishes a second mechanism operating between individuals. Both operate upon parties intending otherwise, and a recommendation altering what is recorded reaches them where a recommendation altering what they intend does not.

56.5 THE INDIVIDUAL MATERIAL STATED AS A DERIVED PREDICTION

The account bears on a producer as well as on a supplying party, and the form in which that bearing is stated was fixed in Part V. This section states the form, states the content, and marks the constraint. It proceeds by form, content, and constraint. The method is the application of a constraint fixed earlier.

The form is prediction in place of recommendation. Chapter 52 states what the model predicts is amplified and what decays, and the individual material of this book is the content of those predictions applied to a producer's placements.

The content is threefold. Contributions placed below the amplitude at which a receiving arrangement registers them decay independently of their number. Contributions creating couplings to regions a producer does not otherwise reach are followed by larger growth than contributions addressed to parties already coupled. And coupling into arrangements already in operation is the default, with construction warranted under the three conditions fixed in Chapter 22.

The constraint is that these are stated as what the account predicts in place of as what a producer ought to do. Chapter 36 reports that recommendations directed at conduct under assessment pressure have documented failure modes, and Chapter 54 states the region in which the account offers a producer no strategy at all.

56.6 THE ASSESSMENT OF THIS ACCOUNT'S OWN CATEGORIES

Chapter 13 established that interventions operate through the categories they impose and that their effects are substantially independent of their stated purposes, and it recorded a debt: an account recommending a design owes a statement of what its own categories would do if adopted administratively. This section discharges the debt. It states three effects such adoption would produce, and marks the safeguard available against each. It proceeds effect by effect. The method is the reflexive application of a result to this account.

The first effect is the conversion of a diagnostic operation into an eligibility test. An arrangement adopting the fading test as a reported quantity may come to allocate support toward relations expected to pass it, which converts a classification into a criterion of desert. The safeguard is the requirement fixed in Chapter 42 together with the apportionment reported in Chapter 35, under which apportionment proceeds by need and the criterion governs design alone.

The second effect is the substitution of a measure for its object. An arrangement assessed by a reported quantity alters conduct toward that quantity, as Chapter 18 establishes, and an arrangement reporting withdrawals that leave relations standing may come to conduct withdrawals of a kind that leave relations standing while supplying little. The safeguard is that the criterion is stated for what a relation returns in place of for the act of withdrawal, and Chapter 28 reports what follows where an objective is assessed by exits.

The third effect is the narrowing of what counts as support. An arrangement adopting the account's categories may withdraw from relations admitting no withdrawal, since such relations are classified as requiring continuation. The safeguard is the region stated in Chapter 54, within which the account records that a relation persists on continued supply and records nothing further, and the ground on which such support is owed is stated independently in Chapter 42.

The three safeguards are stated within this book. Their adoption by any arrangement is a matter this book cannot secure, and the effects above are accordingly reported as the risks attending the account's own adoption in place of as difficulties this chapter resolves.

56.7 THE BOUNDARY OF WHAT THE ACCOUNT LICENSES

The account licenses less than its materials might be taken to license, and the refusals are stated together here. This section states four and marks the ground of each. It proceeds refusal by refusal. The method is the statement of constraints.

The account licenses no conditioning of support upon a prior demonstration of effort. The ground is the requirement fixed in Chapter 51 together with the evidence reported in Chapter 25 that the capacity to act upon one's own situation is itself acquired in prior relations.

The account licenses no withdrawal of support from relations admitting no withdrawal. The ground is the region stated in Chapter 54 and the requirement fixed in Chapter 42.

The account licenses no assessment of a party by what that party is expected to produce. The ground is stated in Chapter 41 and the practice against which it is stated is reported in Chapter 33.

The account licenses no inference from a classification of an arrangement to a conclusion about the standing of a party within it. The ground is the diagnostic restriction, fixed in Chapter 42 and grounded in Chapter 37.

A fifth constraint holds alongside the four. An arrangement satisfying every criterion of this book may treat those it assists in a manner failing the standard reported in Chapter 30, and the two assessments are independent. A design recommended here is recommended subject to both.

56.8 SUMMARY OF RESULTS

The chapter has established six results carried forward.

Intervention is turned toward conversion. An intervention is identified by the component of pathway concentration it addresses, and an established practice addressing personal conversion factors leaves the social ones as they were.

Support admitting of withdrawal is secured by routing that leaves couplings to third parties, by assigning the position of one who reaches solutions, and by limiting what a recipient registers as support. The three rest on evidence of differing strength, and the third rests on the weakest.

The lever is the direction of an arrangement's accountability. An arrangement adopting the fading test as a reported quantity acquires a measure of what its doctrine holds to be its object, and recommendations addressed to dispositions are the weakest form the account may take.

The individual material is stated as prediction in place of recommendation, and the account offers a producer no strategy within the region stated in Chapter 54.

Administrative adoption of this account's categories would risk converting a diagnostic operation into an eligibility test, substituting a measure for its object, and narrowing what counts as support. Safeguards against each are stated within this book, and their adoption is a matter this book cannot secure.

The account licenses no conditioning of support upon prior effort, no withdrawal from relations admitting no withdrawal, no assessment of a party by expected production, and no inference from a classification to the standing of a party. A design recommended here is recommended subject also to the standard governing the manner of its supply.

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CHAPTER 57

THE BOUNDARIES OF THE ACCOUNT AND ITS CONCLUSION

57.1 THE FUNCTION OF THIS CHAPTER IN THE ARGUMENT

The account is complete at the close of Chapter 56, and what remains is the statement of its boundaries. A book assembling mechanisms from several domains and asserting a conjunction owes a final record of where its instruments fail, of what it declines to assert, and of what it leaves for other work.

The chapter undertakes four tasks. It states the limits attaching to the analogies on which the account rests. It states the claims the account declines to make, assembled from the refusals recorded across the Parts. It states the problems the account leaves open, distinguishing those requiring further work within it from those requiring instruments it lacks. And it concludes.

The chapter proceeds by stating limits, refusals, and open problems, and closes with the conclusion of the account. The method is assembly from results established in earlier Parts, adding no material of its own.

57.2 THE BOUNDARIES ATTACHING TO THE ANALOGIES

The account carries mechanisms from three domains, and each carries a limit stated at the point of use and assembled in Chapter 39. This section states the limits in the form bearing on the account as a whole. It proceeds analogy by analogy. The method is assembly.

The analogy with the onset of turbulence supplies a structural relation among variables and supplies nothing quantitative. No magnitude in this book is computed, no growth factor is estimated, and the control parameter fixed in Chapter 46 is composite and unmeasured. An account of this form states which relations hold and supplies no scale on which they are located.

The analogy with persistent deprivation supplies the shape of a threshold and supplies no measured stock. The quantity whose accumulation the account tracks admits of no scalar measure, as Chapter 23 establishes, and the assessment of an arrangement accordingly proceeds by separate components in place of by a single figure.

The analogy with scaffolded learning supplies withdrawal as a diagnostic act and supplies no presumption that withdrawal will be survived. The fading test identifies a property of an arrangement and supplies no prediction concerning any particular arrangement in advance of the withdrawal it examines.

A limit common to the three is that each was carried from a domain in which the mechanism was established under conditions the target domain may fail. Chapter 39 states the conditions under which each transfer lapses, and the account is committed to their statement.

57.3 THE BOUNDARY OF THE ACCOUNT'S ASSERTIONS

Refusals were recorded throughout the Parts, and they are assembled here so that the account's reach is visible in one place. This section states six and marks the ground of each. It proceeds refusal by refusal. The method is assembly.

The account declines to assert that the condition it examines is comparable in gravity to material deprivation. The ground is the distinction between mechanism and situation fixed in Chapter 2 and assembled in Chapter 39.

The account declines to attribute a disposition to any party receiving support. The ground is the requirement fixed in Chapter 27, under which extractive and generative are predicates of arrangements.

The account declines to derive any conclusion about what is owed from the classification of an arrangement. The ground is the diagnostic restriction fixed in Chapter 42 and grounded in Chapter 37.

The account declines to state a frequency. Neither the rate at which arrangements form, nor the rate at which constructions succeed, nor the proportion of producers occupying the condition of Part X is asserted anywhere, and Chapter 22 states why no such rate is available.

The account declines to explain why states supply assistance. The proposal examined in Chapter 29 is recorded as unestablished, and no argument in the book rests upon it.

The account declines to speak of a participant standing in no relation whatever. The resources developed here locate value in relations, and a case in which none obtains lies outside their reach, as Chapter 51 records.

57.4 THE PROBLEMS THE ACCOUNT LEAVES OPEN

Several problems arise within the account and are left unresolved, and they are stated here in place of being distributed among the chapters raising them. This section states five and distinguishes those requiring further work within the account from those requiring instruments it lacks. It proceeds problem by problem. The method is assembly.

The first is the measurement of the control parameter. Chapter 46 fixes four components and supplies no weighting among them, and Chapter 52 states that the account is committed

to their co-occurrence. A demonstration that the components vary independently would establish that several quantities have been treated as one, and the work required lies within the account.

The second is the level at which the ruin constraint binds. Chapter 20 adopts an objective admitting no principled setting for that level, so that the objective guides comparison among courses in place of selecting one. The work required lies within the account.

The third is the formal treatment of return arriving at a different level of organisation. Chapter 51 records the observation and supplies no model, and a formal account would require acts by parties and arrangements adopted by collectivities to enter one accounting. The instruments required lie outside this book.

The fourth is the coincidence between the criterion and the ethics. Chapter 43 records that the ground of worth and the criterion of classification are held apart by a requirement in place of a derivation, and that what the criterion classifies as self-sustaining and what the ethics holds to be owed coincide without explanation. The instruments required lie outside this book.

The fifth is the tension reported in Chapter 36. An inquirer receiving no external assessment requires self-trust sufficient to continue and the scepticism that assessment would otherwise supply, and the arrangement ordinarily balancing them is absent. The account states the tension and supplies no resolution.

57.5 THE CONCLUSION OF THE ACCOUNT

The account may be stated in a compass shorter than the book, and the statement concludes it. This section states the diagnosis, the criterion, the mechanism, and the consequence, and marks the respect in which each was established. It proceeds by the four elements. The method is the statement of a result.

The diagnosis is that generativity may be present in a producer while the interpretation in force admits no occasion of its application, and that the resulting observation is indistinguishable at the surface from the absence of generativity. The diagnosis is inherited from existing literatures, as Chapter 43 records, and this book supplies the quantity by which the two are separated from outside the producer.

The criterion is that a relation crosses the generative threshold at the point where the energy it returns for its own continuation equals the energy its maintenance consumes, and that the crossing is examined by withdrawal. The criterion classifies relations and confers no worth, and the restriction is what permits the account to employ it.

The mechanism is that a state stable against small disturbances admits large intermediate growth where the operator governing it is non-normal, that the source of that non-normality is the assignment of contributions to the categories a receiving arrangement maintains, and

that the feature suppressing a capacity is accordingly the feature rendering its amplification possible.

The consequence is that the infrastructure of a knowledge-producing system may be a consequence of generative relations among its participants in place of their precondition, and that support may be designed to be withdrawn. The account states the design and locates the lever in what an arrangement records of itself.

What the book claims is the conjunction of these four and nothing beyond it. Each element is held elsewhere, the position holding all four is unoccupied among the literatures surveyed, and Chapter 40 states the conditions under which the claim would be withdrawn.

57.6 SUMMARY OF RESULTS

The chapter has established four results.

The analogies supply structural relations and supply nothing quantitative, no measured stock, and no presumption that a withdrawal will be survived. Each was carried under conditions the target domain may fail, and the conditions under which each lapses are stated.

The account declines six claims: comparability of gravity with material deprivation, attribution of a disposition to a recipient, derivation of what is owed from a classification, statement of any frequency, explanation of why states assist, and description of a participant standing in no relation.

Five problems are left open, of which two require further work within the account and three require instruments it lacks.

The account is the conjunction of a diagnosis inherited from existing literatures, a criterion classifying relations and conferring no worth, a mechanism locating amplification in the same feature that suppresses, and a consequence reversing the order between infrastructure and production. The claim is the conjunction and nothing beyond it.

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