

Adjudicative and Enforcement Authority over Heterogeneous Subjects: A Preliminary Jurisprudence of Judgment, Expertise, Contestability, and Legal Power

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Abstract

This preliminary study investigates adjudicative and enforcement authority in disputes involving heterogeneous legal subjects and forms of expertise. Using source-specific international and domestic legal materials, it distinguishes competence to adjudicate, interpretation and reason-giving, specialized evidential contributions, decision adoption, procedural safeguards, remedies, sanction ordering, enforcement, and cross-jurisdictional recognition. The analysis compares human adjudication, AI-assisted and hybrid workflows, and prospective autonomous artificial adjudicators without inferring judicial authorization from computational capacity or AI regulation. Source-indexed documentary records clarify the distribution of legal power and technical dependency, the contestation of consequential evidence, and the risks created by opaque institutional infrastructures. Comparative cases address human-rights procedural protections, statutory representation of natural entities, expert evidence, judicial independence, corporate administrative sanctions, international adjudication, and recognition of judgments and awards. A three-level Generative Relational reconstruction examines historically constituted legal relationships and their documentary manifestations while suspending claims about ultimate subjectivity. The resulting framework remains provisional: legal validity, empirical reliability, normative acceptability, and ethical research safeguards require distinct forms of justification. Existing procedural protections retain their independent force, and hypothetical forms of artificial or extraterrestrial adjudication require separate juridical and institutional argument. The conclusion identifies research interfaces with heterogeneous social-contract formation and the jurisprudence of humanitarian aid and protection.

Keywords: adjudicative authority; judicial expertise; artificial intelligence; procedural contestability; enforcement power

Discussion Paper Note

This manuscript begins Paper XIV of the Braid–Justice research programme. Paper XIII developed source-sensitive distinctions among legal subjecthood, responsibility, sanctionability, and procedural standing [34]; the present paper separately examines the persons and institutions legally authorized to investigate, interpret, decide, and implement legal consequences. Its existing-law discussion is limited to the scope of the identified legal sources. Discussions of artificial or extraterrestrial adjudicators concern prospective institutional designs and do not assert existing legal competence.

The present edition is the first integrated revision of a complete scholarly draft containing the Introduction and Sections 2–15. Completion of the draft does not establish publication readiness; source-specific specialist review, substantive integration and typesetting inspection remain necessary. The paper does not provide legal advice, judicial directives, or institutional authorization.

Notices

Status. Paper XIV, integrated revision R17 (Introduction and Sections 2–15). The source-to-claim, ethical and formal-economy audit is a selective research revision, not a claim of complete independent

legal verification or publication readiness. Specialist review of jurisdiction-dependent doctrines, citation pinpointing, and typesetting inspection remain outstanding. This typeset edition is provided for manuscript review and remains subject to independent legal and publication review.

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Statement on the use of language models. OpenAI’s ChatGPT assisted with scholarly dialogue, source location, comparative framing, and drafting of the $\text{\LaTeX}$ manuscript. The author retains responsibility for the argument, final wording, legal claims, and independent source review. The bibliography and verification ledger document the sources checked prior to their use; the cross-record comparisons and claim-status audit in revision R17 remain methodological reconstructions and do not replace independent subject-matter assessment.

1 Introduction

This paper examines adjudicative and enforcement authority in legal relations involving heterogeneous subjects, with particular attention to the possible participation of artificial systems as providers of expertise, participants in decision-making, objects of judgment, or proposed holders of adjudicative power. Its object is the institutional constitution, exercise, and contestation of authority to determine legally significant disputes and to give effect to the resulting determinations. The paper asks how this authority can be identified, justified, limited, and reviewed when differences in cognition, embodiment, communicative capacity, evidential access, and political power become salient. The method combines source-specific legal interpretation, comparative institutional analysis, a preliminary Generative Relational (GR) reconstruction, and carefully marked counterfactual exercises. Existing adjudicative rights supply binding constraints within their applicable legal orders; proposed institutions involving autonomous artificial or extraterrestrial adjudicators remain objects of theoretical inquiry. The argument begins by disaggregating functions commonly compressed into the word “judgment,” before turning to institutional authorization, epistemic dependence, contestability, and the distinct authority to enforce.

The previous study in this programme treated legal subjecthood, rights attribution, responsibility, sanctionability, and procedural standing as differentiated juridical positions [34]. Those distinctions remain useful even where the person whose interests receive protection, the actor whose conduct is evaluated, and the applicant permitted to bring a claim are different participants. A further question arises once those positions become the object of a dispute: *who may give an authoritative legal determination concerning them?* Answering it requires identifying an institution competent to decide, persons or bodies authorized to interpret legal sources, and conditions under which the resulting decision binds the parties or can be executed. An assigned responsibility is distinct from the authority to find that responsibility has been breached; an available sanction is distinct from the power to order it; and an institutional right to review is distinct from the practical capacity to obtain such review. Paper XIV therefore shifts the unit of analysis from a juridical position held or imposed upon a subject to the *exercise of public or legally recognized decisional power over that position*. This shift is methodological. It does not suggest that a general account of law is exhausted by courts, or that every useful alternative dispute-resolution mechanism performs the same legal function as a state tribunal.

The distinction between expertise and adjudicative power becomes particularly important when artificial systems are involved. A system can retrieve relevant legal material, summarize disputed evidence, estimate the likelihood of factual hypotheses, or identify a potential inconsistency in a draft judgment. Such contributions may have epistemic value, although their reliability remains dependent on data, task definition, design, and evaluation. A legally authoritative judgment has additional constitutive conditions: the institution must have a source of competence, the decision must concern a matter within that

competence, and applicable procedural guarantees must be observed. The qualifications, intellectual sophistication, or computational performance of an adviser do not independently supply the legal authority of a judge. Conversely, a formally appointed judge’s legal authority does not establish that every factual or technical premise used in a decision is correct. Treating these as separate dimensions allows the present inquiry to investigate cases in which very high-quality technical evidence is used by an institution with contested authority, as well as cases in which a legally constituted institution relies upon opaque or unreliable technical advice.

Established human-rights law illustrates the distinct legal sources involved. Article 14 of the International Covenant on Civil and Political Rights provides for a fair and public hearing by a competent, independent, and impartial tribunal established by law within the article’s relevant proceedings; Article 6 of the European Convention on Human Rights protects a hearing before an independent and impartial tribunal established by law in the determination of civil rights and obligations or of a criminal charge [47, 6]. These sources specify legally protected dimensions of adjudication within their respective treaty regimes. The United Nations Basic Principles on the Independence of the Judiciary provide a further institutional reference for protecting judges from improper interference and for maintaining the integrity of judicial functions [49]. The Basic Principles have the status of internationally endorsed principles; they should be distinguished from the binding effect of a treaty provision in a particular legal order. None of these sources can be replaced by a general claim that a proposed decision-maker is more intelligent, more accurate, or less costly than an existing court. Equally, the sources do not settle every question concerning permissible use of technology in support of adjudication. Those questions require applicable domestic law, institutional arrangements, and context-specific analysis.

The Rome Statute of the International Criminal Court provides a more particular example of the differentiation of functions. Its provisions on judicial qualifications, independence, and disqualification sit within a treaty-based institutional structure, while its fair-trial guarantees, rules on cooperation, and provisions concerning the enforcement of sentences occupy different parts of the same legal instrument [37]. The prosecutor, judges, States Parties, witnesses, and enforcement institutions perform roles governed by distinct authorities and constraints. This institutional distribution is relevant to a heterogeneous-subject inquiry because the label “court decision” can obscure the chain linking investigation, proof, interpretation, finding, sentencing, review, and implementation. The existence of an independent adjudicator is only one component in a wider set of relations. Actual arrangements for custody, implementation of remedies, and cooperation may involve actors with resources and powers considerably different from those of the institution that issued the determination. A proposed theory of adjudicative legitimacy thus needs an account of its enforcement interface without treating that interface as equivalent to the judicial function itself.

The contemporary deployment of artificial intelligence makes this distribution more visible. The European Commission for the Efficiency of Justice adopted its European Ethical Charter on the use of artificial intelligence in judicial systems in 2018, articulating principles concerning fundamental rights, non-discrimination, quality and security, transparency and fairness, and user control [17]. As institutional ethical guidance, the Charter contributes criteria for scrutinizing how AI tools enter adjudicative environments. It does not appoint an artificial system as a judge or supply a general legal basis for delegating coercive authority. Within EU law, the consolidated text of Regulation (EU) 2024/1689 of 27 July 2026 identifies, in Annex III point 8(a), certain AI systems intended to assist judicial authorities with researching and interpreting facts and law, applying law to concrete facts, or performing comparable functions in alternative dispute resolution [31]. The Regulation’s classification structure addresses specified AI uses and duties of identified operators. That structure provides an important comparison for adjudicative governance while remaining legally distinct from the rules constituting judicial office and judicial competence.

Temporal applicability is material to that comparison. Article 113 of the 27 July 2026 consolidated AI Act provides a staggered timetable, including application from 2 December 2027 of Chapter III, Sections 1–3, for AI systems classified as high-risk pursuant to Article 6(2) and Annex III; other provisions have different dates and transitional terms [31]. As of October 2026, an enacted classification and a

future compliance date therefore need to be recorded separately when assessing a particular system. Proposals for institutional authorization must also be separated from requirements concerning safe deployment of software. Neither compliance with a risk-management framework nor successful independent benchmarking, in isolation, constitutes an adjudicative commission. Conversely, a technically modest decision-support tool might significantly affect judicial outcomes because it influences which arguments appear first, what evidence seems relevant, or which factual narratives are rendered legible. The law's allocation of formal authority and the technology's distribution of effective influence may therefore diverge. This divergence supplies a central relational problem for the paper.

The term *adjudication* is used here for a legally structured process in which a competent decision-maker determines questions of law, fact, rights, obligations, or legal consequences pursuant to a governing source. This provisional description remains sensitive to the diversity of courts, tribunals, administrative decision-makers, disciplinary bodies, arbitral institutions, and forms of Indigenous jurisdiction. It neither assumes identical constitutional standing among those bodies nor erases conflicts over the recognition of their authority. The term *enforcement* refers more specifically to legally authorized acts through which a decision or obligation is implemented, maintained, or made effective; some such acts involve coercion and some involve administrative or restorative measures. *Interpretive authority* concerns the legally recognized role of a person or institution in construing an applicable norm. *Epistemic expertise* concerns competence to assist in identifying relevant facts, technical possibilities, or interpretive considerations. The four functions can be coupled in institutional practice, yet their legal sources, safeguards, and grounds of criticism remain differentiable.

A preliminary analytic device will be introduced in Section 2: a *source-indexed decisional authority record*. Its purpose will be to document, for a specified controversy, the governing legal source, legally competent institution, assigned decision function, participating actors, object of judgment, admissible evidential basis, review pathway, temporal setting, and enforcement relations. The record is intended as a comparison and audit instrument. It will not decide which institution ought to exist or compute an authority score by aggregating intelligence, public acceptance, technical reliability, and legal compliance into one number. Such dimensions possess different normative and evidential standing and may be incommensurable for the question being asked. Later formal constructions will be added only if they solve a distinct problem, such as distinguishing advisory influence from decision attribution or reconstructing authorization across several institutions. In this regard, the paper adopts the formal-economy constraint developed during the revision of Paper XIII: the number of variables and equations should be justified by the additional distinctions they preserve.

The formal approach used below is intentionally *source-indexed and event-sensitive*. The records introduced in the substantive sections are views of particular juridical relations, rather than thirteen separate accounts of what makes a tribunal legitimate. A case identifier by itself is insufficient for joining records. A usable comparison should preserve the governing legal order, the relevant version of a source, its operative date, the institutional actor and legally assigned function, the proposition under investigation, and the provenance and uncertainty of supporting material. A technical log may establish that an output was generated; a signed decision may evidence adoption by an officeholder; and a judgment or statute may supply authority for a consequence. These records answer different questions. The analysis accordingly distinguishes *a source-based legal claim*, *a documented institutional act*, and *an empirical inference about its practical operation*. Across the paper, missing documentation is treated as an epistemic gap whose legal significance must be determined under the applicable burden and procedure, rather than as proof that a power or right is absent.

The documentary method is intentionally economical. A new mathematical expression is warranted when it isolates a relation that cannot be adequately examined with the existing authority, reason, dependency, and adoption records. Complex multi-actor workflows may require a source-linked matrix of functions and legal duties, but such a matrix need not be a new formal primitive. The claim concerns disciplined description and review, rather than mathematical sufficiency for lawful or fair adjudication.

Several heterogeneous configurations reveal different fault lines. In a conventional human criminal trial, the distribution of roles among a court, prosecution, defence, experts, and enforcement bodies is

shaped by applicable procedure and rights. In an AI-assisted human tribunal, an additional technical system may classify documents, propose legal analogies, or generate a recommendation. The relevant inquiry concerns the validity of its contribution, disclosure and testing opportunities, and whether the authorized decision-maker retains meaningful independent judgment. In a hypothetical tribunal constituted partly by artificial participants, the inquiry adds the constitutive source of the participants' authority, the scope of any delegation, and identifiable avenues for disqualification, appeal, or correction. In a proposed fully autonomous artificial tribunal, foundational questions arise about who can make and revise the delegation, how legal responsibility for operational failure is allocated, how an affected party can contest a decision, and whether governing law permits that institutional form. These configurations describe analytically different forms of power; their feasibility or desirability cannot be settled solely by their computational architecture.

The identity of the affected legal subject introduces another dimension. A person with a disability may require accessible formats, communication support, and procedural accommodations to exercise an existing right to participate in a proceeding. Article 13 of the Convention on the Rights of Persons with Disabilities explicitly addresses effective access to justice, including procedural and age-appropriate accommodations and the training of justice-system personnel [51]. These are existing human-rights protections, whose legal status should remain visible when comparing them with proposed procedures for animals, artificial systems, natural entities, or hypothetical extraterrestrial subjects. For an animal or natural entity, a governing legal order might recognize protective interests or authorize designated representatives; the identity and fiduciary obligations of those representatives must be established from the particular instrument. For an artificial entity or hypothetical extraterrestrial interlocutor, claims of independent standing, competence, or susceptibility to judgment remain conditional on evidence, legal sources, and normative justification. The capacity to communicate sophisticated arguments, the ability to experience harm, the formal possession of rights, and the procedural capacity to contest a decision are related questions, with no presupposed one-to-one correspondence.

Heterogeneity also affects the relation between an adjudicator and an expert. A tribunal evaluating the design of a sophisticated artificial system may depend on specialists whose technical capacities substantially exceed those of the judges. Such an asymmetry is familiar in outline from expert testimony in medicine, engineering, and complex financial disputes, although the institutional intensity may vary. A proposed artificial judge might in turn need evidence of human intentions, local institutions, or socially situated meanings that its computational resources cannot adequately recover. The expertise relation is consequently potentially reciprocal rather than a fixed ranking of human and artificial intelligence. This paper proposes the idea of *epistemic dependency with retained juridical responsibility*: a legally authorized institution can reasonably rely on external expertise under applicable rules, while remaining answerable for its evaluation of the evidence and the legal conclusions it adopts. That proposal requires qualification where an applicable legal regime allocates decision-making differently, including settings of arbitration and administrative delegation. It supplies an investigative question about real control, not a substitute for the underlying legal rules.

A central institutional difficulty is the control of the interfaces through which advice becomes authoritative. The party selecting a model, specifying its task, controlling access to training or case data, operating its retrieval system, determining the explanation presented to the tribunal, or suppressing alternative findings may exercise substantial influence on an eventual decision. Some of those activities will be ordinary, legitimate elements of judicial administration or expert preparation. Others may create unjustified asymmetries, conflicts of interest, or barriers to contestation. Their classification depends on the applicable rules and evidence. A convincing study therefore needs to distinguish *formal authorization* from *effective influence*, and *potential capture* from a documented breach of legal or ethical standards. It should also recognize that nondisclosure of particular information can sometimes be legally required or justified, including by protected interests, due-process limitations, or security rules. A demand for unrestricted transparency would be too blunt; a better research question asks whether the permitted procedures nonetheless sustain effective challenge and independent evaluation in the particular forum.

Enforcement introduces further asymmetries. An institution that pronounces a decision may possess

little direct capacity to implement it. Implementation can require a separate authority with physical custody, technical control, budgetary resources, or access to an affected entity's operating environment. For a human subject, enforcement may engage liberty, property, bodily integrity, and the availability of remedies. For an artificial system, proposed measures might involve access restriction, disabling functions, asset controls, or obligations imposed on operators. Such measures need independent attention to who is legally subject to the restriction, who may perform it, how authority is reviewed, and which human or other interests may be affected indirectly. A technical operation against a server cannot by itself be classified as punishment of an AI legal subject: the measure's legal characterization turns on the applicable law and institutional decision. For a natural entity or a collectivity represented by others, legal remedies may depend on institutional cooperation whose distribution of burdens merits separate examination. The analytic link between judgment and enforcement is therefore a chain of legally and practically mediated acts, rather than a direct implication from a declared outcome to a legitimate use of power.

The GR component is employed with three differentiated levels of inquiry. At the level of *ontological reality*, questions about the ultimate character of consciousness, moral agency, artificial experience, or extraterrestrial subjectivity remain suspended; successful legal or technical descriptions do not settle them. At the level of *relational reality*, historically constituted courts, expertise networks, authority hierarchies, software infrastructures, representation arrangements, and enforcement institutions can acquire sufficiently stable and generatively consequential structure to form objects of research. At the level of *manifestation reality*, their operations become accessible through hearings, records, official judgments, algorithmic outputs, institutional communications, and experiences of participation or exclusion. Manifested records are evidentiary and interpretive resources whose relation to the underlying institutional process is mediated and sometimes disputed. This three-level distinction permits the investigation of how authority is reproduced through legal and social relations while preserving established doctrine as an independent source of juridical conclusions. An ontologically suspended subjectivity claim cannot warrant the suspension of a person's existing rights, and a relational model cannot independently create a legal authorization that positive law withholds.

The proposed theoretical contribution has three parts. First, adjudicative authority is approached as a *source-constituted relational position*, linked to particular competences, objects, procedures, and review mechanisms. Second, expertise and juridical judgment are analyzed as coupled but differently accountable practices; technical sophistication or formal office alone supplies insufficient evidence for the reliability and legitimacy of a given outcome. Third, enforcement is treated as a distinct, potentially distributed set of authorized operations whose effects, beneficiaries, and accountability pathways require examination. The three parts are developed with historical and institutional sensitivity rather than a universal model of the ideal judge. Their possible value lies in disclosing where proposed heterogeneous arrangements redistribute legal power and where existing safeguards might be rendered ineffective. The paper does not presuppose that autonomous AI adjudication is either desirable or impossible. It asks which legal and normative burdens would have to be met before such a proposal could be meaningfully evaluated, while also examining the risks of treating human review as an empty ritual when technical recommendations dominate the actual process.

The subsequent sections follow this division of labor. Section 2 establishes a source-indexed vocabulary for jurisdiction, interpretive competence, evidence evaluation, decision, and enforcement. The following sections investigate legal reasoning, expertise, fair-trial guarantees, AI-assisted and hybrid adjudication, and proposed autonomous artificial adjudicators. Later sections examine affected heterogeneous subjects, evidential contestation, sanctioning and enforcement chains, legal plurality, institutional capture, and historical transformation. The concluding stages articulate research obligations and summarize what can be responsibly inferred. The discussion is a preliminary jurisprudential research paper, not a legal opinion or a proposal that any existing court should cede its authority to an artificial system. In particular, claims concerning adjudication of hypothetical alien–alien, human–alien, AI–animal, or AI–AI disputes are thought experiments whose intelligibility depends on specifying the relevant institutions and the sources of any purported norms. Existing human rights, applicable criminal safeguards, and

the duties of current organizations retain their legal force independently of those speculative configurations. The paper's contribution is a revisable framework for recognizing the boundaries of adjudicative authority as heterogeneous relations develop.

2 Adjudicative Competence and Source-Indexed Authority

The present section establishes the juridical vocabulary through which the competence of a decision-making institution can be examined before questions of interpretive quality, evidential expertise, and institutional power are addressed. Its objective is to identify the sources, boundaries, officeholders, procedures, decisional effects, and mechanisms of challenge that together condition an exercise of adjudicative authority. The method is doctrinal and comparative, supported by a deliberately limited formal record and an institutional counterexample analysis. The International Court of Justice (ICJ), international commercial arbitration, and European rights guarantees provide contrasting legal configurations. Their juxtaposition illuminates analytically separable positions while preserving differences in legal force and institutional remit. The account is intended to support later study of human, AI-assisted, hybrid, and hypothetically autonomous artificial adjudicators; it supplies no prospective authorization to any such arrangement.

2.1 Constitutive Sources and the Scope of Juridical Competence

Adjudicative competence is a legally constituted power to make determinations within a specified institutional order. Its source may include constitutional provisions, statutes, treaties, valid regulations, procedural rules, appointments, and legally recognized arrangements of private ordering. Which of these can create a tribunal, define a judicial office, or confer power to issue a binding determination is itself a question governed by the relevant system's rules of validity and allocation of competence. A juridical description therefore begins by identifying a concrete legal source, its relevant version and operative date, its territorial and personal reach, and the procedures through which a body or officeholder obtains authority. Recognition that an institution exists, evidence that it is socially influential, and recognition of its competence to resolve a particular dispute are distinct findings.

Within a legal order, several delimitations may have to be evaluated. *Subject-matter competence* identifies classes of issues entrusted to an institution; *personal competence* and rules of standing or access concern persons and legal entities who may appear or be proceeded against; *territorial and temporal competence* address the geographic and time-related boundaries of permissible adjudication. A further allocation concerns the particular chamber, panel, or officeholder assigned to the matter. These categories are analytic prompts, rather than a universal doctrinal taxonomy. For instance, an institution may possess general jurisdiction over a type of dispute while a particular judge is disqualified, a time limit has expired, or an initiating procedure has not been met. Conversely, practical access to pleadings or to the court's information system ordinarily does not supply the legal authority to determine the dispute.

The ICJ illustrates the importance of a source-indexed account. Article 34(1) of its Statute limits contentious parties to States; Article 36 identifies bases on which the Court's jurisdiction may arise, including matters referred to it and jurisdiction recognized under particular treaty or optional-clause conditions. Article 36(6) assigns the Court authority to settle disputes concerning its own jurisdiction. These provisions operate within the Statute's institutional scheme, and consent-related jurisdictional questions require attention to the particular State and instrument involved [46]. The Court's competence therefore cannot be described adequately by saying that it is internationally respected or that it possesses exceptional legal expertise. A well-reasoned submission involving a private company or an artificial system does not make either an eligible party to an ICJ contentious case. Such subjects may have interests addressed in other forums, but their appearance as direct ICJ parties would require a change to the applicable legal arrangement.

A distinct configuration appears in international commercial arbitration. The UNCITRAL Model Law, as amended in 2006, offers a legislative model concerning arbitration agreements, tribunal consti-

tution and jurisdiction, judicial intervention, recourse, and recognition and enforcement [52]. Its status as a *model* matters: it assists national legislative reform and does not itself create a freestanding universal jurisdiction over contracting parties. Arbitration authority depends on applicable law and a valid jurisdictional foundation, often incorporating party agreement; the enforceability of an ensuing award depends on further legal conditions. Consent within an authorized private-ordering framework, the eligibility of the dispute for arbitration, and the state’s rules on recognition remain analytically distinct. Comparison with the ICJ illustrates two different institutional logics, rather than a common right of any technically competent decision-maker to rule upon disputes.

2.2 Institutional Office, Personal Qualification, and Delegated Functions

A court or tribunal possesses an institutional identity whose legal powers are exercised through persons holding specified offices. Appointment, tenure, recusal, composition, and authorized delegation may affect the validity or legitimacy of a particular proceeding. The distinction between *jurisdiction of the institution* and *authority of the acting officeholder* is therefore material. The Rome Statute, for example, gives the International Criminal Court a detailed institutional structure, including judicial qualifications, appointment, independence, and disqualification arrangements, within its limited criminal jurisdiction [37]. The ICC’s rules provide a venue-specific example, rather than a ready-made definition of a judge across all jurisdictions.

An institution may entrust record management, scheduling, legal research, drafting assistance, expert evaluation, or implementation tasks to other actors. Whether a task can be delegated, how the result is adopted, and who remains answerable are legal questions. A researcher whose memorandum strongly influences a judicial opinion has exercised epistemic and possibly practical power; the binding juridical determination ordinarily remains attributable to the legally empowered court. A court administrator empowered to enter a particular procedural order might possess a narrower legal competence. A software tool that sorts evidence has operational capacity subject to system permissions, whereas legal authority to find guilt, determine custody, or impose a remedy requires a source of law conferring such power upon an authorized decision-maker.

A delegation inquiry should therefore identify at least three aspects: the *type of act* assigned, the *conditions of lawful assignment*, and the *legal location of responsibility* for its use. Delegation can be limited, supervised, retractable, or prohibited. Some constitutive norms distinguish an individual judge’s nondelegable judgment from procedural acts supportable by officials or specialists. A tribunal’s effective reliance upon a tool may create an evidential dependence even where the tool has received no delegation of legal power. Later sections will examine how this dependence may compromise substantive review if a nominally authorized officeholder cannot competently understand or challenge the tool’s essential premises. In the present section, the point is classificatory: influence and authority may become tightly coupled in practice while retaining different sources and accountability regimes.

For speculative artificial adjudicators, a proposal that the system is reliable, unbiased, or technically superior leaves several institutional questions unresolved. A legal order would have to determine what entity or office could exercise the role, whether legal personhood or another public-law status is necessary, who appoints or authorizes the system, what safeguards apply to continuity and updates, and how objections to the decision-maker are adjudicated. The existence of legal standards addressing AI used in judicial administration does not, by that fact, enact a new category of judicial office. In particular, the EU AI Act’s Annex III category for certain justice-related high-risk uses regulates specified systems and applications; its provisions cannot be read as a grant of judicial appointment or independent adjudicative jurisdiction [31]. The precise staged application dates of that regulation remain relevant when such safeguards are discussed as positive law.

2.3 Decisional Forms, Binding Effects, and Implementation Powers

A competent institution can issue different juridical acts with different consequences. An interim procedural order, an evidential ruling, a judgment on the merits, a declaration, a sentence, and a recommenda-

tion need not share the same binding force or mechanisms of revision. The classification of the act must be drawn from the governing law, the procedural stage, and the capacity of the decision-maker to affect the parties' positions. A decision may be final without being self-executing, immediately enforceable while open to challenge, or legally authoritative only as to particular persons and issues. Its persuasive effect for other institutions may exceed its strictly binding legal scope.

The ICJ Statute makes these distinctions visible. Article 56 requires judgments to state reasons; Article 59 confines the binding force of a decision to the parties and the particular case; Article 60 establishes finality and provides for interpretation; and Article 61 provides a restricted procedure for revision in specified circumstances [46]. The scope of an ICJ judgment accordingly cannot be inferred from the perceived persuasiveness of its reasoning alone. Nor does the finality of a judicial declaration imply that the Court itself possesses all the instruments required for its practical execution. Obligations of compliance and institutional mechanisms for implementation are separately structured questions of international law.

Within the Convention system, Article 6 ECHR supplies specific fair-hearing requirements within its material scope, whereas Article 46 addresses the binding force and execution of final judgments of the European Court of Human Rights against respondent States [6]. The institutional arrangement of execution under that provision differs from ordinary domestic execution by a court officer and from arbitral award recognition. Similarly, the UNCITRAL Model Law addresses the setting aside and recognition or enforcement of arbitral awards through distinct stages, subject to national enactment and applicable international instruments [52]. These differences matter when an award, an advisory assessment, and an enforceable court judgment are all described colloquially as an institutional "decision."

Enforcement entails an additional legally conditioned relation. An adjudicator may order payment, mandate a procedural measure, or issue a criminal sentence, while other public bodies, private parties, or international institutions control the assets, custody, networks, or services needed for implementation. The implementation actor may need its own authorizing source, competence and safeguards. A platform operator's technical ability to deactivate an AI system, for example, does not establish that an act of deactivation is a legally permissible punishment of that system as an independent juridical subject. The legally relevant act may instead concern contract termination, product safety, a regulatory order, property interests, or obligations borne by identifiable human and corporate persons. The scope of legal effect and the physical location of implementation must be traced separately.

2.4 Procedural Guarantees and Contestable Adjudicative Authority

Legal competence supplies one condition of an authorized determination. Procedural safeguards address the manner in which that competence is exercised and how errors or abuses may be corrected. Under Article 14 of the ICCPR and Article 6 of the ECHR, requirements concerning competent, independent, and impartial tribunals and fair proceedings arise within the legal scope of those instruments [47, 6]. Article 47 of the EU Charter similarly protects effective remedies for violations of rights guaranteed by Union law and includes guarantees of an independent, impartial tribunal established by law, with defense and representation rights in the provision's applicable scope [29]. Such rights belong to persons entitled under the respective regimes; their application does not turn on accepting a theoretical GR account of institutional legitimacy.

The legally available ways to contest a decision depend on the forum. An objection to jurisdiction, disqualification application, evidential challenge, internal appeal, judicial review, or request for interpretation may be available under different conditions. The existence of one route does not establish a general entitlement to every form of reconsideration. The final character of an ICJ judgment and its narrow revision and interpretation mechanisms illustrate that contestability can coexist with carefully delimited finality. A legitimate process need not be infinitely revisable; it does require compliance with the guarantees that its own applicable legal regime provides. The institutional purpose of finality must be examined alongside the consequences of mistakes and the feasible channels for correcting them.

Procedural participation must also be distinguished from legal representation. A person may hold

rights while exercising them with assistance, through an authorized representative, or subject to accommodations. Article 13 CRPD provides a particularly important human-rights anchor for effective access to justice for persons with disabilities, including procedural accommodations enabling effective participation [51]. This protection has a current juridical basis and should not be treated as a speculative case equivalent to hypothetical artificial or extraterrestrial legal subjects. Where a proposed future court would hear a dispute involving an AI system, alien intelligence, animal, or legally personified natural entity, the analysis would have to begin with the particular legal order’s rules on subject status and standing, then identify the separate arrangements enabling participation, assistance, and challenge. The absence of direct self-representation need not by itself establish an absence of protected interests or procedurally recognized status, but the legal positions at issue must be demonstrated from sources.

A safeguard may be legally justified even if it limits some forms of access or disclosure. Protected confidentiality, national security, legal privilege, privacy, and other applicable interests can constrain evidential openness. The inquiry is whether the legal system supplies conditions and procedures that legitimately accommodate the restriction while protecting the affected parties’ applicable procedural rights. Institutional power becomes especially salient when one actor controls both the data needed to contest an expert recommendation and the technical interface through which a tribunal receives that recommendation. Yet inequality of information is evidence of a potential dependency, not by itself a finding of unlawful capture. Legal violations and policy defects require source-specific and factual analysis.

2.5 A Source-Indexed Authority Record

The foregoing distinctions support a compact recording device for comparative inquiry. The proposed *authority record* is an analytical structure for organizing source-dependent findings about a forum, a case, and a time. It is neither an algorithm for validating judgments nor a substitute for a jurisdiction’s own rules of competence. Its use presupposes the existence of identifiable source materials and requires unknown or disputed entries to be recorded explicitly. The canonical form appears in Equation 1.

$$\mathcal{A}_{f,c,t} = \langle \Sigma_t, J_{f,c}, H_{f,t}, P_{f,c}, D_{f,c}, R_{f,c}, E_{f,c}; M_{f,c,t} \rangle. \quad (1)$$

Here f designates the forum, c the proceeding or proposed act, and t the relevant temporal index. The component Σ_t records the source hierarchy, textual version, and commencement or other temporal conditions. The component $J_{f,c}$ records the institution’s asserted jurisdiction and the case-specific nexus, including the legal status and procedural positions of affected participants. The component $H_{f,t}$ identifies the authorized officeholder or decision-making composition, with appointment, delegation, independence, and disqualification questions kept available for assessment. The component $P_{f,c}$ records required procedures and participation guarantees. The component $D_{f,c}$ identifies the type of determination and its legally specified effects. The component $R_{f,c}$ records authorized challenge, review, interpretation, or revision pathways. The component $E_{f,c}$ identifies who may lawfully give effect to the determination and under which further conditions. After the semicolon, $M_{f,c,t}$ registers documentary and empirical manifestations supporting, qualifying, or disputing the preceding characterizations: constitutive documents, notices, assignment records, transcripts, reasons, orders, audit trails, and evidence of enforcement.

The semicolon reflects an epistemically useful difference. A record describing a law’s grant of jurisdiction belongs to one category of inquiry; a court filing or audit log evidencing that a person purported to act under that grant belongs to another. Documentary manifestations can be incomplete, misleading, inaccessible, or contested. They provide necessary material for empirical and legal assessment while requiring interpretation. In the present formalism the components may be partial, unresolved, or mutually inconsistent; the structure does not assume that they are independent variables or that a consistent list proves legal validity. A particular legal system may assign dispositive force to a condition left uncertain by the investigator. Equally, a formally competent institution may issue an outcome affected by procedural error, bias, lack of evidence, or an unauthorized implementing act. The record retains those possibilities rather than reducing legitimacy to an easily computed score.

This analytical record is compatible with the source-indexed juridical-position dossiers of Paper XIII [34]. The former concerns institutions authorized to decide and implement; the latter concerns whose legal positions are affected and which forms of standing, duty, sanctionability, and remedy are recognized. Their relational link can be investigated without collapsing the identities of a right-holder, claimant, judge, expert, administrator, or enforcement officer. In a future formal implementation, each entry should also retain an evidence pointer, applicable legal version, and a note on the difference between what an authority asserts and what has been independently verified. Such provenance constraints are methodological commitments proposed by this paper, not rules already common to all legal orders.

The source-indexed authority record in Equation 1 also serves as the stable reference point for the subsidiary documentary records developed later in the paper. Interoperability requires careful matching, rather than numerical aggregation. An investigator should identify the same proceeding and decisional act, the forum that purports to act, the law in force at the relevant time, and the precise proposition the other record purports to support. A judicial reason trace in Equation 2 may refer to the court’s adopted reasons, while a technical trace may refer to an unadopted recommendation prepared for it. They cannot be joined merely because they mention the same litigant or case number. Similarly, a recognition inquiry in another jurisdiction concerns an additional legal event and may require a new source-based assessment even where the originating decision is fully authenticated.

Three kinds of unresolved entry merit separate treatment: information unavailable because it has not been collected, material contested by participants or affected institutions, and a legal field that is inapplicable under the governing scheme. Each requires a different response. The first calls for research, the second for source-sensitive procedures of evaluation, and the third for an explanation of legal scope. An institution may also confront a demonstrated statutory prohibition, which differs from all three. This protocol is a proposed documentary discipline. It supplies neither a universal evidential standard nor a sufficient test for jurisdiction, whose requirements derive from the legal order being investigated.

2.6 Comparative Authority Configurations and Diagnostic Cases

Table 1 illustrates the analytical differences captured by the authority record. The table contrasts source-defined regimes and a prospective arrangement rather than placing the examples on a single scale of institutional legitimacy. An ordinary claim that an institution has “jurisdiction” can conceal important differences among party eligibility, the legal conditions of decisional authority, and the institutional capacity to enforce the resulting determination.

Consider first a border dispute submitted to the ICJ by States that have accepted its jurisdiction within the relevant bounds. A tribunal comprised of qualified judges can render a final, legally binding determination between those parties. A sophisticated automated interpreter may offer factual analysis or a proposed delimitation, but it acquires no independent ICJ jurisdiction through the quality of its output. If the disputants later disagree about the meaning of the Court’s judgment, the Statute’s interpretation mechanism provides a defined route, whereas the executing institutions and diplomatic relationships remain distinct sites of legal and practical power. The source-defined limits of competence are therefore preserved despite considerable external influence on the factual and technical dimensions of the dispute [46].

Consider next a commercial arbitration employing an algorithmic damages estimator. A lawfully constituted tribunal might rely on its calculation, subject to applicable procedural safeguards, evidential challenge, and the tribunal’s independent responsibility for issuing an award. The estimator’s documented accuracy contributes to the weight that may appropriately be placed upon it; accuracy alone cannot establish the validity of the underlying arbitration agreement or the award’s susceptibility to recognition. Moreover, a Model Law provision is not an immediately applicable rule in an unspecified State merely because the jurisdiction has been described as an international arbitration venue. The investigator must trace the enacted law, the arbitration agreement, the tribunal’s powers, and the forum in which review or enforcement is requested [52].

Finally, imagine a proposed autonomous artificial tribunal hearing a dispute between two AI systems

Table 1: Selected adjudicative authority configurations and their analytically distinct legal conditions

Configuration		Source and competence	Decision and challenge	Implementation and principal limit
ICJ	contentious case	ICJ Statute; States as parties; jurisdiction under relevant consent or other applicable source	Reasoned judgment; case-specific binding force; restricted interpretation and revision	Compliance engages separate legal and institutional processes; access is State-specific
Convention rights review		ECHR procedural and substantive system, within its jurisdictional and admissibility conditions	Court judgment with Article 46 effects; distinct from domestic hearing guarantees in Article 6	Respondent-State execution subject to Convention supervision architecture
Commercial arbitration		Jurisdiction founded under applicable national law and valid arbitration arrangement; UNCITRAL Model Law is a legislative model	Award and potential recourse subject to applicable legal rules	Recognition and enforcement depend on implementing law and relevant conventions
AI-assisted judicial proceeding		Existing court's legal competence; software provides regulated or other permitted assistance	Legally empowered human or institutional decision-maker remains identifiable under governing law	Technical advice does not confer judicial appointment or execution power upon the system
Proposed autonomous tribunal	au-AI	Prospective constitutive source, office, jurisdiction, safeguards and case nexus would require specification	Status, reasons, challenges, independence and review mechanisms presently hypothetical	Technical capability supplies no independent legal enforcement authority

said to hold juridical interests. The claim would require at least two independent legal developments: a competent normative order recognizing the relevant legal positions and a source constituting an adjudicative institution authorized to determine them. It would then require procedures for representation, evidential access, challenge, reason-giving, review, and enforceable remedies. Even if the software were technically able to process all submitted materials and formulate plausible legal reasons, the source and exercise of juridical authority would remain separate questions. In the absence of an identified governing legal order, the configuration is an institutional thought experiment; the authority record should mark essential entries as undetermined rather than filling them with the analyst's preferred design. The thought experiment further exposes a possible asymmetry: a platform controlling the tribunal's computing environment might acquire practical influence over the decision's implementation without being the legally designated adjudicator.

2.7 Legal Validity, Relational Reality, and the Limits of Authority Reconstruction

The source-indexed account can be situated within the three differentiated levels of Generative Relational inquiry. At the level of *ontological reality*, the paper suspends claims about ultimate agency, consciousness, or the essence of legal normativity. An authority record does not resolve whether a putative artificial adjudicator has experience or moral agency. At the level of *relational reality*, courts, judicial offices, legal orders, expert networks, technological infrastructures, and implementation chains are historically constituted structures whose interactions can stabilize or alter the distribution of authority. At the level of *manifestation reality*, these relations are accessible through judgments, filings, constitutive texts, personnel records, technical artifacts, observed practices, and experiences of participation and exclusion. Such manifestations are interpreted under evidential constraints and may reveal different aspects of the same institutional arrangement.

The distinction between relational description and legal validity is especially important. A recurrent practice can affect institutional expectations, establish political dependence, or motivate legal reform. Whether the practice produces a binding customary rule, a legally cognizable precedent, or an authorized delegation requires a source-sensitive account appropriate to its legal order. It is possible for an unofficial actor to exercise sustained practical control over adjudication without valid legal authority. It is also possible for a properly constituted court to depend heavily on technically competent assistants while retaining formally defined decisional responsibility. The proposed model permits the interactions between these arrangements to be studied without treating their consequences as synonymous.

This section yields a bounded proposition for the research that follows: inquiry into adjudicative authority is improved when the *source and limits of competence*, the *position of the actual decision-maker*, and the *institutional pathway of review and implementation* are recorded separately. The proposition is methodological. Its value must be assessed through the clarity with which it handles difficult cases and through its capacity to expose failures of attribution or contestability that less differentiated vocabularies might obscure. Section 3 will examine interpretive authority and the production of legally adequate reasons; later sections will consider expert dependency and the institutional safeguards that would condition both existing and proposed AI-assisted or autonomous arrangements. The source record alone cannot decide whether any proposed system deserves adjudicative authority, and it cannot replace the legally guaranteed protections already owed to persons appearing before competent tribunals.

3 Juridical Interpretation, Legal Reasons, and Decisional Forms

The exercise of adjudicative competence ordinarily involves selecting governing legal materials, establishing legally relevant facts, explaining their connection, and issuing a decision in a form authorized by the applicable institutional order. This section examines the interpretive and justificatory work performed within that exercise. Its objective is to distinguish the authority to determine the meaning and application of law from the epistemic capacities used to formulate possible interpretations. The inquiry is doctrinal and comparative where legal sources identify the requirements of decision-making; it is analytical where it reconstructs relationships among sources, evidence, reasons, and holdings; and it is expressly prospective where artificial systems or heterogeneous subjects are considered beyond presently recognized institutions. Seven subsections address the interpretive mandate, applicable interpretive disciplines, fact–law relations, reason-giving, decisional forms, a limited reasoning trace, and heterogeneous configurations viewed through three levels of Generative Relational reality. The competence inquiry in Section 2 supplies the institutional boundary: interpretive skill may contribute to legal judgment, while legally effective judgment requires an authorized source and an appropriate act of institutional adoption.

3.1 Interpretive Mandates and the Location of Juridical Authority

Judicial interpretation is performed within a source-governed mandate. A court may be authorized to identify applicable rules, resolve disputed meanings, assess institutional powers, and specify legal consequences. The mandate’s extent depends on subject matter, jurisdiction, procedural posture, and the competent legal order. In the contentious jurisdiction of the International Court of Justice, for example, Article 38 of the Statute identifies the categories of international-law materials the Court applies when deciding disputes submitted to it, while Articles 56 and 59 respectively concern reason-giving and the limited binding effect of a judgment [46]. The Statute thereby provides an identifiable institution-specific relation among legal sources, interpretation, and adjudication. It supplies neither a general algorithm of interpretation nor a grant of comparable interpretive jurisdiction to other entities.

At least four roles can participate in a single interpretive episode: the claimant advancing a construction, the expert or assistant evaluating its plausibility, the officeholder authorized to determine the issue, and the institution authorized to give the determination legally specified effects. These roles may overlap in the same persons or be distributed across professional and technical networks. A legal researcher may correctly identify a relevant treaty, and a computational model may retrieve a line of decisions,

yet the authoritative resolution of competing arguments remains subject to the mandate and procedure of the competent institution. Conversely, a person formally occupying judicial office may rely heavily on assistance to the point that the practical production of reasons is distributed. Such dependence calls for scrutiny of adoption, understanding, and review; it does not dissolve the legal distinction between advisory participation and authorized decision.

Interpretive authority should also be distinguished from an assertion that one meaning is necessarily unique. Legitimate legal disputes may turn on ambiguity, conflicting purposes, incomplete facts, different permissible remedies, or competing sources of comparable authority. An interpreter can identify alternatives and demonstrate their consequences without yet having an institutional warrant to select a binding outcome. Where a judicial decision resolves one of these alternatives, the relevant questions concern the method employed, the legal range of discretion, the sufficiency of reasons, and the effect of the disposition. A computationally generated interpretation may be persuasive, erroneous, or incomplete under those standards. Its persuasive force is epistemic; its legal force derives from the governing regime and the acts through which an authorized institution adopts it.

The distinction is particularly consequential in heterogeneous-subject cases. A proposed dispute between an artificial system and a corporation might require the recognition of a legal interest, the existence of a forum, and the identification of rules governing the relation. Even a technically flawless reading of fictional or inapplicable provisions could not establish those missing legal predicates. The analyst must first locate the source of the legal question before evaluating the proposed interpretation. The same discipline protects human parties whose procedural entitlements already exist: their rights cannot be suspended merely because an interpretive model asserts greater predictive confidence or recommends a different institutional configuration.

3.2 Interpretive Sources and Domain-Specific Legal Methods

Interpretive methods acquire relevance through the norms and institutional practices of particular legal orders. The Vienna Convention on the Law of Treaties supplies a relatively explicit example. Article 31 addresses good-faith interpretation in accordance with ordinary meaning, context, object, and purpose, together with specified contextual materials and subsequent agreements or practice. Article 32 regulates resort to supplementary means of interpretation, including preparatory work and circumstances of conclusion. Article 33 addresses treaties authenticated in multiple languages [48]. Within the Convention's domain, these provisions structure the legal assessment of treaty meanings. Their applicability to a concrete treaty still calls for examination of parties, time, and the relationship of treaty rules to customary international law.

A treaty-interpretation problem should accordingly be recorded with the relevant treaty version and authentic languages, the proposed meanings, the applicable interpretation rules, and the parties' submissions. A semantic similarity measure can help locate parallel formulations across translations, but a similarity score is not itself a rule for establishing which text is authentic or how divergent terms are legally reconciled. A language model that privileges the most common translation might obscure the equal authority of other authentic texts under the governing rule. Likewise, identifying one treaty clause without its defined context may present a coherent answer that fails the domain-specific legal inquiry. Such cases reveal the difference between extracting linguistic patterns and giving legally situated reasons.

Other adjudicative orders condition interpretation differently. A court applying binding precedent must consider the rules that determine which prior holdings bind it, at what level of generality, and under what conditions distinctions or departures are authorized. A legislative provision may carry effective-date rules, amendments, transitional clauses, and jurisprudential qualifications. An arbitral tribunal may be required to identify applicable substantive law through the arbitration agreement and the relevant *lex arbitri*, subject to mandatory restrictions. The International Court of Justice's description of its sources in Article 38 is specific to that Court's mandate; it should not be treated as a complete source hierarchy for every legal system [46]. Nor should analogies to precedent, custom, or treaty interpretation be taken as proof that those sources have interchangeable legal effects.

Source conflicts create especially demanding questions. Two rules may differ in temporal applicability, territorial scope, personal scope, institutional rank, or the procedural remedies they support. A judgment can be legally attentive to each source yet reach an unjustified result by combining provisions from incompatible periods or institutions. The relevant discipline is therefore partly one of provenance: what text, recognized practice, decision, or rule is relied upon; when and where did it operate; which legal order recognizes it; and what inferential role does it play? The source-indexed authority record introduced earlier can supply the institutional boundary for these inquiries; the reasoning analysis below records the particular use of each source in a decision. The result is a method for making interpretive disagreement examinable rather than an aspiration to resolve every disagreement through a single universal semantics.

A defensible interpretation may also require engagement with values or purposes acknowledged by the applicable law. Such engagement should identify its normative source and permitted role. Under a treaty's interpretive rules, object and purpose enter the reasoning in a structured way; elsewhere, proportionality, legislative purpose, rights protection, established doctrine, or procedural precedent may enter differently. A philosophical GR account of generative relations can generate questions about consequences, vulnerability, or institutional dependence, while the authority of those questions within a proceeding must be justified using its own sources. This maintains the distinction between an external normative evaluation of adjudication and an interpretation the court is legally entitled to adopt.

3.3 Fact Finding, Norm Application, and Inferential Dependence

Legal reasons depend upon characterizations of events and persons whose evidential status may be disputed. A judicial account typically identifies some set of alleged facts, admissible materials, standards or burdens of proof, and legal categories into which findings are placed. The sequence is rarely wholly linear: the meaning of a legal category influences which facts seem relevant, while contested evidence can change which interpretive issues become decisive. An assessment of adjudicative reasons should thus examine the reciprocal conditioning of factual inquiry and normative classification without treating their distinct legal functions as indistinguishable.

Consider a dispute in which an organization deploys an automated system to recommend whether an applicant should receive a service. The source of the organization's authority and the applicant's legal interests must be specified before assigning legal significance to the recommendation. A technical log may establish that the software returned a score at a certain time, while leaving open whether the score was adopted, overridden, misunderstood, or associated with an unlawful criterion. Witness testimony, administrative records, contractual arrangements, and reproducible technical inspection may bear on different propositions. A decision-maker could accept the system's technical reliability and still reject a proposed legal inference from score to justification. Conversely, a technical failure may create evidential uncertainty without determining the full legal outcome. The allocation of the burden of proof and the significance of uncertainty remain regime-specific.

In criminal proceedings, the consequences of an evidential mistake and the applicable guarantees differ from those in many civil or administrative settings. The Rome Statute's procedural architecture, including the burden and standard of proof at trial and the requirement of a reasoned decision, illustrates one institution's criminal adjudication framework [37]. Its standards are not a general evidential template for private arbitration or national administrative review. In each regime, explanatory adequacy requires attention to the difference between a claim that evidence is reliable, a finding that a fact is established under the applicable standard, and a determination that the established fact meets a legal element. The inference may be contestable at each stage.

A further difficulty arises when a case concerns the subjective experience of a person or other putative subject. Reports of pain, distress, preference, intention, or consciousness enter proceedings through available testimony, expert evaluation, statutory presumptions, and other authorized evidential forms. They are not unmediated measurements of ultimate ontology. The legal system can establish standards for evaluating suffering and protected interests while the analyst suspends claims about exhaustive knowledge

of another being's experience. In existing human-rights proceedings, this epistemic limitation should prompt careful application of procedural protections, including access and accommodations where applicable, rather than skepticism about the human status or equal legal capacity of affected persons [51].

For hypothetical AI–AI or extraterrestrial disputes, the lack of validated evidence concerning subjectivity poses an additional research problem. It cannot be solved by simply assigning an AI-generated description the status of an admission or a verified self-report. A proposed adjudicative system would need both legally established subject positions and an evidential practice able to distinguish outputs, operational states, attributed interests, and independently established facts. The absence of one kind of evidence does not logically settle every other kind of claim. A formal model can identify the locus of uncertainty and the possible costs of error; it cannot establish a positive-law right or a subjective experience by definitional stipulation.

3.4 Judicial Reasons, Contestability, and Reviewable Justification

The obligation to give reasons performs several institutional functions: it constrains arbitrary choice, communicates what has been decided, allows parties to understand the disposition, and makes relevant errors open to scrutiny through available review mechanisms. Its legal content is source-dependent. Article 56 of the ICJ Statute requires the Court's judgments to state reasons [46]. Within the European Convention's civil fair-trial jurisprudence, the duty to provide sufficient reasons is evaluated in light of the nature of the decision and the circumstances of the case. The European Court of Human Rights' official guide explains both that a court need not answer every argument in detail and that decisive submissions can require an express response [23]. The guide summarizes Strasbourg case-law; it is neither a universally applicable procedural code nor a substitute for the judgments themselves.

A reasoned judgment may accordingly be tested at several levels. Its factual premises can be examined against the admitted evidence and governing proof rules. Its legal premises can be examined against authoritative sources and accepted interpretive methods. Its inferential connections can be assessed for consistency, relevance, and responsiveness to decisive opposing arguments. Finally, its disposition can be checked for conformity with the available remedies and the acting tribunal's competence. Failure at one level may affect others, but it is useful analytically to identify the location of the failure. A judgment might correctly interpret a provision while relying on an unsupported finding; another might establish the facts carefully while overlooking a dispositive limitation on jurisdiction.

Reviewability also varies by institution. Article 60 of the ICJ Statute establishes a final judgment and an interpretation procedure for disputes concerning meaning or scope; Article 61 provides a qualified revision mechanism. Neither provision supplies ordinary appeal on the merits [46]. Some arbitral awards are subject to limited setting-aside proceedings, while domestic appellate procedures can address further types of legal error under applicable law. The legal possibility of challenging reasons and the normative desirability of more extensive review should be considered separately. A record of disagreement is useful even when finality legitimately limits the available remedies.

AI-generated explanations create a distinct risk of apparent completeness. An output may contain a well-formed sequence of citations and conclusions without faithfully reporting the process that influenced the actual decision, the evidence retrieved, or the decisive parameters of a recommendation. Such an account can be evaluated as a proposed argument; it should not be assumed to document the causal production of a model's output. Conversely, a technically accurate process log may explain how a score was computed yet leave the legal question unresolved. Courts that employ such systems may require a separate, substantively reviewable adoption of reasons by authorized decision-makers. The practical adequacy of that adoption calls for evidence of meaningful engagement and lawful procedure, not merely a signature below generated prose.

Reasons also have a relational dimension. Litigants may possess unequal capacities to obtain counsel, translate documents, contest technical evidence, or understand an institutional explanation. Existing procedural guarantees, including Article 13 of the Convention on the Rights of Persons with Disabilities within its proper scope, constrain how institutions address barriers to participation [51]. The demand for

Table 2: Selected interpretive and decisional forms distinguished by source, juridical effect, and review context. The descriptions are bounded by the indicated regimes and do not assert cross-jurisdictional equivalence.

Form or regime	Role of interpretation and reasons	Legal effect or qualification
ICJ contentious judgment	Article 56 requires stated reasons; interpretive questions arise within the Court’s mandate	Binding scope limited by Article 59; finality and restricted interpretation or revision under Articles 60–61
Strasbourg Article 6 civil-limb adjudication	Sufficient reasons judged contextually; decisive arguments can require a response	Fair-trial obligation in the Convention’s applicable scope; review routes depend on institutional rules
UNCITRAL Model Law arbitral award	Article 31(2) supplies a reason-giving default with specific exceptions	Model law depends on implementation; award challenges and recognition follow distinct procedures
Technical or expert memorandum	May supply evidence or a proposed legal interpretation	Advisory influence unless incorporated through authorized legal action
Proposed autonomous AI judgment	Would need source-defined reasons, competence, adoption and contestation procedures	Hypothetical institutional design; current technical capability alone supplies no adjudicative authority

intelligibility should account for different communicative capacities without allowing the appearance of simplicity to displace legally material complexity. An effective reasoned decision may therefore require accessible communication, carefully qualified confidentiality, and a usable avenue of challenge. These are institutional practices whose legal obligations and practical costs require particularized analysis.

3.5 Decisional Forms and the Juridical Effects of Reasoned Texts

An interpretation can appear as an internal memorandum, party submission, expert opinion, interim ruling, dispositive judgment, arbitral award, separate judicial opinion, or published advisory analysis. The existence of a reasoned text leaves open its institutional author, intended addressee, binding effects, and procedures for correction. A court’s majority reasoning may affect later cases through applicable precedent rules, while a concurring or dissenting opinion may carry interpretive influence without sharing the judgment’s dispositive legal force. An expert memorandum may later be incorporated into adopted reasons, yet its original author does not thereby acquire judicial office. The distinct legal effects of documents should be recovered from their jurisdictional and procedural setting.

Under Article 31(2) of the UNCITRAL Model Law on International Commercial Arbitration, an award is ordinarily to state reasons, with expressly described exceptions where the parties agree that reasons need not be given or where the award records agreed terms. That model-law provision illustrates a legally structured variation in reason-giving arrangements rather than a general permission to dispense with reasons in adjudication. The status of the Model Law as legislative guidance, the law enacted by a particular jurisdiction, and the arbitration agreement all require examination before claiming the rule applies to an actual award [53]. The related setting-aside and recognition stages have their own requirements. Reasons, binding force, and enforceability thus remain connected but separately conditioned legal properties.

Table 2 summarizes selected configurations. Its purpose is to compare the legal role of reasons and texts, rather than to rank their substantive correctness or institutional legitimacy. Differences in compulsory reasoning, review, finality, and public accountability resist reduction to a scalar score.

The differences become vivid in a decision produced through a legal language model. A memorandum drafted by the model and approved by a clerk has one possible institutional location; a judge’s reasoned order incorporating verified elements of the memorandum has another. An automated platform message that immediately freezes a person’s account may have consequential practical effects, but its classification as a judicial act requires a source of lawful authority and cannot be inferred from the se-

riousness of the effects. The resulting legal inquiry should distinguish the text’s origin, the actual actor of adoption, the legally designated decision, and the subsequent implementing act. Where the origin of material reasoning is concealed or misunderstood, the concern extends beyond literary attribution to the integrity of legally attributable judgment.

3.6 Source-Indexed Reason Traces and the Limits of Formal Extraction

The authority record proposed in Section 2 identifies the institution and conditions under which a decision can possess legal effect. A different, narrower representation is useful for assessing a particular decision’s reasons. The *source-indexed reason trace* records the materials and inferential steps disclosed or reasonably reconstructable from the proceeding. Its analytical object is the path from asserted propositions to an institutionally adopted disposition; the legal authority of that disposition must still be established independently. Equation 2 defines a documentary research record, without assigning numerical weights or suggesting that the relationship is a formal proof of legal correctness.

$$\mathcal{R}_d = (S_d, I_d, E_d, F_d, N_d, H_d, A_d, Q_d). \quad (2)$$

Here d denotes a specifically identified adjudicative or proposed adjudicative decision; S_d is the set of legal source texts with versions and jurisdictions; I_d records the invoked interpretive disciplines and contested alternatives; E_d contains disclosed evidential sources, admissibility decisions, and relevant uncertainty; F_d records fact findings and the operative burden or standard of proof; N_d records the articulated inferences from sources and facts to applied norms; H_d identifies the holding and legally prescribed decisional form; A_d records the act and office of authorized adoption, if any; and Q_d describes legally available challenge, clarification, or review procedures. The entries may contain explicit unknowns, rival interpretations, source disagreements, and legally restricted information. They are typed documentary fields, rather than commensurable variables whose addition would quantify legitimacy.

The reason trace earns its distinct role by exposing defects that the prior authority record alone might miss. A legally competent court can issue an inadequately reasoned decision; its competence record may be complete while E_d , N_d , or H_d discloses a missing evidential or inferential link. An unauthorized technical analyst can produce an internally sophisticated opinion with plausible S_d , I_d , and N_d , while A_d remains absent and the text lacks binding effect. An accurate judicial disposition may contain a short explanation because the applicable legal order permits concise reasoning in the circumstances; the trace should record that legal condition before evaluating sufficiency. A formally articulated chain can also conceal errors in premise selection, changes in applicable law, or reliance on fabricated authorities. Review remains legal and epistemic work; it is not supplied automatically by the completion of eight record fields.

The representation is deliberately limited. It describes documented justifications and potential points of contestation. It neither replicates private judicial deliberation nor recovers the complete causal pathway of an opaque AI system. A confidential document may be lawfully withheld; a restricted access order may be lawful or contestable according to its own regime. The trace should identify restrictions and their sources rather than equating missing public access with illicit secrecy. It is also possible that legal reasoning is embodied in oral rulings, procedural conventions, or accepted records with variable documentary form. The method must adapt to the legal order’s evidential and decisional practices rather than imposing an external template of full written disclosure. For empirical use, independent review could compare the trace with underlying case files, public decisions, interviews subject to ethical approval, and documented operating procedures. The resulting analysis would still be an account of a particular institutional practice, not a universal measure of justice.

A counterexample clarifies the boundary between an accurate legal summary and legally sufficient justification. Suppose a language model accurately reproduces the text of a binding provision and a genuine precedent, but its application silently assumes that the decisive contract was formed in a jurisdiction to which neither source applies. Source authentication succeeds; inference about governing law fails. Conversely, a tribunal may identify the appropriate sources and explain its findings adequately

while reaching an outcome that is later corrected on appeal. These cases should be recorded differently: a defect in evidential provenance, an interpretive disagreement, a procedural irregularity, and a legally authorized reversal are distinct diagnoses. A reason trace therefore identifies the location of a disputed inference without purporting to replace appellate or doctrinal evaluation. This distinction applies to human and AI-assisted drafting alike.

3.7 Heterogeneous Adjudicators and Three Levels of Generative Relational Reality

The differentiated account of interpretation has immediate implications for proposed heterogeneous adjudication. The capacity to parse statutes, retrieve decisions, compare multilingual texts, or generate complex legal prose is an epistemic characteristic whose value depends on the task and evidence. Independent authority to interpret and decide would require a legal source allocating that office or power, together with procedures capable of satisfying the relevant legal guarantees. A hybrid court in which an AI system drafts arguments while an authorized human judge evaluates and adopts the holding differs fundamentally from a hypothetical AI tribunal vested with independent legal competence. It also differs from an administrative process whose technical platform implements an agency decision under a separate statutory mandate. Their institutional roles should be investigated on their own terms.

Human–AI arrangements introduce difficult cases in which an officeholder’s formal signature does not reveal whether relevant reasoning was understood. A judge might read a model-generated memorandum critically, verify decisive authorities, identify errors, and explain the chosen disposition. In another case, the judge might approve the same memorandum under workload pressure with little capacity to detect its failures. Identical documentary outputs can thus coexist with different relations of practical control and epistemic responsibility. The distinction is empirical, and evidence of actual practice is required before claiming either meaningful review or systematic abdication. Institutional safeguards can include provenance records, independent expert scrutiny, access to relevant source material, and reviewable explanations, each subject to the governing law and practical constraints. The Council of Europe’s CEPEJ ethical charter offers guidance concerning AI uses in judicial systems, but it does not itself confer a judicial appointment or alter procedural rights [17].

The analysis becomes more uncertain when the party, the alleged harmed entity, or the adjudicator is an artificial or extraterrestrial system. Some arrangements may concern familiar legal persons whose operations are technologically mediated; others would require new legislation, institutional agreements, or other valid legal bases for recognizing unfamiliar interests or forms of agency. An interpretation of a hypothetical obligation to assist a possibly suffering artificial system would have to specify whose legal order authorizes the obligation, which entity may assert it, how contested suffering is evidenced, and who may adjudicate the claim. A sophisticated argument concerning moral consideration may be relevant to legislative deliberation without itself constituting an enforceable present-day right. The same reasoning applies to questions of extraterrestrial parties, for which there may be no recognized jurisdictional relationship or shared interpretation rule.

The three levels of Generative Relational reality help state the epistemic posture. *Ontological reality* remains suspended: neither the reason trace nor an algorithm’s verbal sophistication establishes the ultimate nature of consciousness, agency, or legal normativity. At the level of *relational reality*, interpretive authority, legal offices, expert dependence, institutional histories, and enforcement connections are historically constituted and potentially causally consequential relationships. At the level of *manifestation reality*, they appear through judgments, pleadings, citations, logs, testimony, technical reports, and the accessibility of proceedings to affected persons. The manifestations are partial and context-dependent; they may sustain more than one plausible account of the relations that produced them.

This orientation produces a bounded methodological conclusion. An institution’s competence, the legal adequacy of its reasons, and the conditions under which its decisions are recognized and enforced warrant separate examination. Source-indexed reasoning can expose ambiguities, missing inferential links, and contested dependencies, while legal interpretation ultimately remains situated within authorized institutional practices and available legal remedies. For future systems, the present section proposes

a research architecture rather than an endorsement of autonomous artificial adjudication. Section 4 turns to the experts and evidential infrastructures upon which contemporary courts already rely, asking how their operational influence shapes the accessibility and contestability of legal reasons.

4 Epistemic Expertise and Evidential Dependency

This section investigates the relation between adjudicative authority and the specialized knowledge on which legal determinations may depend. Its objective is to distinguish the institutional powers to admit evidence, assess its weight, determine disputed facts, and issue a binding disposition from the scientific and technical activities that inform those powers. The inquiry proceeds through a comparison of selected rules on expert testimony, a methodological examination of reliability and inferential uncertainty, an account of technical intermediaries, and a proposed representation of distributed evidential dependence. Existing legal duties are identified by jurisdiction and source; the proposed Generative Relational representation supplies a research language for comparing their institutional effects. A concluding discussion addresses heterogeneous participants and the three levels of reality adopted in the present research programme.

4.1 Judicial Knowledge, Technical Mediation, and Dependence

Legal proceedings can require determinations concerning matters that exceed the routine knowledge of an adjudicator. A court may need to understand a medical history, the source of a digital message, the error characteristics of a forensic examination, the output of a statistical model, or the operation of a technical system. Expert assistance can be valuable precisely because a specialized practice has developed methods, vocabularies, instruments, and forms of experience that remain difficult to reproduce during litigation. This epistemic division of labour is a regular institutional condition rather than an exceptional deviation from adjudicative competence. Yet the existence of specialized assistance creates a question of authority: which parts of a decision's evidential basis are supplied by others, and which legal operations remain attributable to the authorized decision-maker?

The distinction can be described by the difference between a legal decision-maker's *decisional competence* and an expert contributor's *epistemic competence*. Decisional competence derives from the governing legal source and may include powers to manage evidence, make findings, give reasons, and issue a disposition. Epistemic competence refers to warranted ability to perform a particular inquiry, such as analysing an image or assessing an experimental protocol. The qualifications, limitations, and relevant evidential foundation of that ability require examination in the particular case. An experienced expert may produce a reliable report without acquiring judicial office. Conversely, a properly appointed adjudicator may have legal power to decide a scientific dispute while reasonably requiring expert assistance to understand the evidence. The division also remains relevant when a statute permits a specialist tribunal to incorporate technical members or particular forms of scientific assistance: their legally prescribed decisional role depends on the applicable rules and should be specified rather than presumed.

Dependence develops through more than the exchange of opinions. A forensic witness may rely on a laboratory technician who maintained a device, a reference database curated by another organisation, a sampling protocol chosen by an investigator, and statistical software written and updated by a commercial supplier. A party may be able to challenge the expert's final statement while lacking access to the material needed to assess one of those upstream operations. Such an arrangement can concentrate practical influence in a technical intermediary whose name is not prominent on the judgment. It can also be legitimate: specialised instruments and delegated measurements support adjudication in many settings, and a court need not personally perform every laboratory procedure. The legal and ethical problem arises when an important dependence becomes difficult to identify, evaluate, correct, or contest under the applicable procedural framework.

Evidential responsibility is therefore distributed but differentiated. The scientist bears professional and legally applicable duties concerning the integrity and limits of the contribution. Lawyers and parties

may bear distinct duties concerning presentation and disclosure. A court exercises its lawfully allocated powers over admission, evaluation, procedural opportunities, and the decision itself. Technical providers may be subject to contractual, professional, statutory, or other obligations depending on the setting. The present analysis calls for a trace of these roles rather than the automatic assignment of identical liability to every participant. When specialized knowledge supports an erroneous outcome, the fact of causal contribution helps identify a question for inquiry but does not settle fault, breach, or remedy without further legal analysis.

4.2 Expert Roles, Admission Standards, and Institutional Competence

The United States federal evidence regime offers one structured approach to the evidential authority of experts. Federal Rule of Evidence 702, as amended in 2023, conditions admissibility on a qualified witness's helpful specialised knowledge, adequate facts or data, reliable principles and methods, and a reliable application to the facts. The proponent must show that the specified conditions are satisfied on a more-likely-than-not basis [57]. This is an admissibility determination governed by the Federal Rules of Evidence, rather than a general epistemological theorem concerning scientific truth. The resulting expert opinion can be admitted while remaining open to contestation concerning its evidential weight, competing explanations, or factual premises. The 2023 clarification addresses the threshold inquiry; it should not be simplified into a claim that judicial evaluation can mechanically certify science.

Rule 706 provides another institutional design. It permits a court, subject to the rule's appointment conditions, to appoint a consenting expert and sets out procedural avenues for parties to receive findings, take depositions, and conduct cross-examination [58]. A court-appointed expert possesses a different procedural location from a party-retained expert. The appointment may change perceived independence and the distribution of access to expertise, but the appointed expert's conclusions do not thereby become the judgment of the court. The institutional design retains an evidential role for the expert and a distinct role for the adjudicator. Questions concerning fees, selection, instructions, and party participation also demonstrate that the distribution of resources and the institutional constitution of expertise can be legally salient alongside technical accuracy.

England and Wales provide a useful comparison through Civil Procedure Rule 35. Under Rule 35.3, an expert's duty is to help the court on matters within the expert's expertise, overriding duties to the instructing or paying party. Part 35 also addresses the court's permission to rely on expert evidence, written questions, and the possibility of a single joint expert [1]. Practice Direction 35 elaborates expectations regarding independent opinions, the facts and instructions underlying a report, the range of relevant expert views, and the disclosure of uncertainty or limitations [2]. These provisions make the expert's relationship to the court procedurally visible. Their precise operation depends on the case and applicable orders; they do not establish identical requirements across all common-law or European jurisdictions.

The foregoing regimes demonstrate several legitimate methods of coordinating expert contribution and judicial evaluation. Admission may be made conditional on scientific reliability; appointment may involve the court; party instruction may coexist with a duty to the court; and questions or opposing reports may provide opportunities for critical response. Some arrangements reduce the need for duplicated expertise, while others seek protection against an expert's dominance by supporting disagreement and independent scrutiny. Their evaluation requires attention to the quality of information available, the significance of the disputed issue, the cost of further examination, and the procedural rights of the participants. The present paper proposes comparison at the level of source-indexed institutional relations while retaining the distinct doctrinal tests of each regime.

4.3 Scientific Reliability, Uncertainty, and Inferential Transfer

Reliability involves several questions that can diverge in a concrete proceeding. A measurement method may be supported by laboratory validation while the particular specimen was contaminated. An operator may have followed a prescribed protocol exactly while the protocol itself performs poorly under the conditions of the case. A classifier may exhibit strong average accuracy in one population while exhibiting

different errors when applied to a different population, device, or operational environment. The validity of an analytic method, its appropriate application, the quality of the underlying inputs, and the connection between its output and a legally relevant proposition are analytically separable. Expert evidence becomes difficult to evaluate when those distinct questions are condensed into a single professional credential or seemingly precise number.

The distinction between *method conformance* and *method performance* developed by Swofford and colleagues in a study of inconclusive forensic decisions offers a concrete illustration. Conformance concerns whether an analyst followed the method as specified, whereas performance concerns the method's ability to distinguish the propositions of interest. The authors also analyse how treatments of inconclusive outcomes affect reported error characteristics [43]. These distinctions concern a specified field of forensic methods and do not, without further study, supply a performance assessment for a different technology. They nevertheless illustrate why a court may require more than a declaration that a recognised procedure was applied correctly.

Statistical evidence raises an additional question of inferential transfer. A likelihood ratio, a confidence statement, or a model probability is meaningful only in relation to defined hypotheses, data, calibration and assumptions. NIST's overview of evidential statistics notes that plausible likelihood-ratio values can depend on modelling choices, processing protocols, and expert judgment [41]. The legal question may concern an individual's conduct, the cause of a particular event, or the satisfaction of a statutory condition. Moving from a scientifically valid population-level model to an individual legal proposition thus involves a case-specific inference whose warrant must be stated and assessed. This remains true when technical outputs are computationally reproducible. Repeating a calculation may establish what a program returns under specified inputs while leaving the relevance and adequacy of those inputs disputed.

Scientific disagreement can also have a productive role in adjudication. Experts may identify different assumptions that yield the same practical conclusion, different methods that yield divergent results, or different questions to which the available evidence is responsive. An adjudicator need not transform every disagreement into a numerical estimate. A legally adequate decision may identify the material point of disagreement, the governing burden of proof, the reason for accepting a particular inference, and any remaining uncertainty whose legal significance has been considered. Conversely, a written judgment that repeats a confident expert conclusion without examining an identified limitation may leave a central inferential dependency unexplored. Evaluation remains contextual: the procedures needed for a minor technical fact and for evidence decisive to an irreversible penal consequence may differ substantially under the applicable law.

4.4 Technical Infrastructures, Artificial Assistance, and Epistemic Control

Artificial systems introduce further layers between primary evidence and judicial understanding. A technical assistant may translate records, cluster documents, retrieve legal authorities, estimate forensic likelihoods, summarize scientific reports, or generate an initial explanation of a case. These tasks differ in their evidential stakes and in the degree to which a human reviewer can verify results independently. Retrieval from a bounded archive can allow direct comparison with source texts. An image classifier or predictive system may require access to validation datasets, model versions, input preprocessing and operational logs before an expert can assess its performance. The legal significance of the resulting output is likewise sensitive to whether the system supplied a preliminary lead, an admissible expert opinion, or a materially decisive evidential proposition.

At least four kinds of operational control warrant distinction. The *data custodian* determines collection, retention and some conditions of access; the *method designer* shapes the inferential approach; the *operator* chooses how the system is used in the relevant case; and the *decision-maker* determines its legally permitted evidential role and weight. These functions may be performed by one institution, several organisations, or a mixture of professional and automated components. A supplier may retain exclusive knowledge of a model's architecture without possessing authority to determine the legal dispute.

A court may possess formal power over admission while relying heavily on a provider's representations about error characteristics. This division makes supplier documentation, independent testing, conflict assessment, and the availability of effective technical challenge relevant to a source-specific analysis.

The Council of Europe's CEPEJ charter identifies ethical principles for AI use in judicial systems, including attention to fundamental rights and user control [17]. Such guidance is relevant to institutional design and professional evaluation; its status differs from a binding procedural code. The EU AI Act, in its consolidated July 2026 text, classifies certain intended uses in the administration of justice among high-risk systems and supplies a staged regulatory framework [31]. Its classification does not constitute appointment of an artificial judge or a general authorization for algorithmic adjudication. Applicable commencement provisions also require care: the relevant high-risk requirements for the Annex III judicial category are scheduled for later application under the cited consolidation. Analysis of an actual deployment must establish which obligations are in force and what separate national or international procedural rules govern the proceeding.

A workable review architecture would distinguish source verification from result interpretation. A human expert may verify that a source document exists but remain unable to reproduce the training of a proprietary model. A technical audit may validate model performance in an institutional benchmark yet leave the lawfulness of using its output in a specific case open. A judge may assess that the parties had legally adequate opportunities to respond while lacking the specialist expertise to resolve a scientific dispute without further evidence. The proposed inquiry calls for documented limits of access and competence at each level. Confidentiality, trade secrecy, privilege, cybersecurity, privacy and procedural economy may provide legitimate grounds to restrict some disclosures. The question for the relevant legal order is whether the available process still affords the rights and opportunities required by that order, including proportionate substitutes where appropriate.

4.5 Neutrality, Reciprocal Expertise, and Effective Contestation

An expert's proximity to an institution can matter differently from demonstrated scientific unreliability. A technical specialist employed by an administrative body may produce a careful and methodologically sound report. A privately retained scientist may be independent in method but have incentives shaped by repeat engagements. A court-appointed professional may still carry prior commitments or possess unequal access to contested information. An evaluation of neutrality therefore requires evidence concerning the expert's actual role, relationships, conduct, and influence in the proceeding. Institutional position deserves scrutiny without supporting an automatic inference of partiality or misconduct.

The European Court of Human Rights' Article 6 civil-limb case-law supplies a distinct legal context. As synthesized in its February 2026 official guide, effective opportunities to challenge expert evidence, the expert's procedural position, and the influence of the report on the outcome can all matter to the fairness and equality-of-arms assessment. The guide also identifies cases in which courts were permitted to rely on opinions originating in specialized bodies despite an institutional relationship to a party; relevant objections and the overall opportunity for contestation remain significant [23]. These are contextual Convention assessments rather than a universal requirement that each party must always have a separately retained expert. The governing law may legitimately limit repetitive proof or make procedural arrangements responsive to the complexity of a dispute.

The availability of *reciprocal expertise* is a further institutional consideration. When a claim relies on a specialized device or scientific method, the party challenging that claim may need expert assistance of a comparable kind merely to articulate a meaningful objection. Money, language, disability-related accessibility, technical literacy, intellectual property restrictions, and differential access to case data can shape the opportunity to contest. Such disparities do not by themselves demonstrate that a proceeding is unlawful. They identify possible bottlenecks at which the governing procedural guarantees and the specific significance of the evidence should be examined. Under England and Wales' Part 35, written questions and regulated expert discussions offer legally structured mechanisms for clarifying disagreement; their scope and deadlines remain governed by the rules and relevant orders [1, 2].

Three counterexamples delimit a careful assessment. First, an expert report may be decisive because it is transparent, replicable, unchallenged on reasonable grounds, and responsive to the material dispute. Its influence alone provides insufficient evidence of capture. Second, a party may demand expansive disclosure that would reveal unrelated confidential information or jeopardize other protected interests; full publication of all technical details may be neither necessary nor lawful. Third, a judge might reject a technically sophisticated opinion because the factual assumptions used do not match the questions the law requires the court to decide. That rejection may be an exercise of adjudicative judgment rather than an expression of technical incompetence. Institutional evaluation must permit these possibilities while also examining cases where source opacity, undisclosed interest, and practical dependence jointly undermine meaningful challenge.

4.6 An Epistemic-Dependency Graph and Comparative Institutional Cases

The authority record in Equation 1 specifies the source and structure of adjudicative competence. The reason trace in Equation 2 specifies the materials and inferences documented for a decision. Neither by itself captures how evidence may depend on upstream laboratories, expert instructions, data transformations, and model suppliers whose roles are only partially disclosed in the judicial reasons. A distinct *epistemic-dependency graph* is therefore proposed to represent the organizational and evidential paths through which a selected finding is produced and tested. Equation 3 defines this documentary representation.

$$\mathcal{D}_d = (V_d, E_d, \tau_d, \sigma_d), \quad (3)$$

Here d identifies a particular proceeding or decision; V_d contains identifiable sources, actors, instruments, datasets, expert claims and material judicial findings; E_d contains directed dependency relations between them; τ_d assigns each relation a type, such as measurement, calibration, interpretation, authorization, disclosure, contestation, or adoption; and σ_d records source documents, legal access conditions, confidence qualifications and unresolved information. These entries describe heterogeneous relations and documentary evidence. The graph permits multiple sources, rival interpretations, reciprocal review and cycles of institutional dependence. It is neither assumed to be acyclic nor treated as a causal model in the absence of corroborating empirical work. Unknown relations can be marked as such. A legal judgment’s validity cannot be inferred from graph connectivity, and a complete graph is generally unavailable in practice.

This construction contributes a distinct investigative function. In a digital-forensic case, the reason trace may contain an expert report asserting that a file originated on a device. The dependency graph asks which extraction process, software version, examiner, reference procedure and evidential chain underlie that assertion. It can reveal that several ostensibly independent experts relied on the same measurement platform, or that competing analyses obtained distinct results from the same original data. In a medical dispute, an expert’s clinical assessment may incorporate institutional records and laboratory tests with differing opportunities for verification. Mapping those dependencies can help a reviewing institution determine which disagreement requires attention and where additional information could be proportionately sought. It does not by itself determine the legal consequences of incomplete disclosure.

Table 3 compares several contexts without flattening their governing rules into a universal scale of expert reliability. The table identifies the epistemic bottleneck and a legally or institutionally meaningful way to examine it. A particular measure is binding only where supported by the relevant source; otherwise it remains a proposal for responsible research or institutional design.

The graph’s usefulness is conditional on bounded questions and proportionate documentation. Extensive reconstruction may be expensive, intrusive or impossible. Research could begin with a decisive evidential proposition, identify its immediately material inputs and technical contributors, record authorized access conditions, and test whether alternative expert scrutiny changes the finding or the ability to contest it. Cases where apparently different expert reports share hidden common dependencies are particularly instructive: convergence can result from genuinely robust evidence or from shared methodological

Table 3: Selected evidential-dependency configurations and available modes of scrutiny.

Configuration	Principal epistemic dependence	Scrutiny and legal qualification
US federal expert testimony	Scientific method, case inputs, and reliability of application	Rule 702 admissibility inquiry; weight and counter-evidence separately assessed under applicable rules
England and Wales civil expertise	Expert instructions, professional conclusions, and disputed assumptions	CPR Part 35 permissions, questions, reports and directions; specific orders control procedure
ECtHR Article 6 civil-limb dispute	Influential expert report and opportunities for a party's effective response	Contextual fairness and equality-of-arms assessment; no automatic entitlement to a second expert
Digital-forensic or AI-assisted finding	Data custody, software or model version, validation context, operational use	Technical provenance and independent assessment where justified; disclosure constraints remain source-specific
Hypothetical nonhuman-party adjudication	Uncertain identity, modes of testimony, and translated evidence	Proposed investigative design only; authority, standing and procedural guarantees require independently valid legal sources

assumptions, and either interpretation requires verification. Across legal orders, the graph serves as a comparative analytical aid, with the judicial consequence determined by the applicable legal regime and the case's actual procedural record.

A technically reproducible report can still be institutionally difficult to contest. Consider a forensic classifier whose executable model is reproducible within the vendor's secured environment, but whose training distribution and known limitations are unavailable to a party required to address its conclusions. Reproducibility of an output is evidence concerning one technical relation; access to its material assumptions and the weight it should receive are further questions. Conversely, a specialist may provide persuasive testimony without exposing a proprietary implementation, where the applicable rules and available safeguards permit the court to evaluate reliability adequately. The legal question is whether the proceedings meet their governing standard of fairness, admission, and challenge. The research question concerns which dependencies can be documented and what rival explanations fit the record. Neither question is resolved by a general demand for maximal technical disclosure.

4.7 Heterogeneous Participation and Three Levels of Relational Reality

Expert dependence becomes more complex where the person providing knowledge, the party affected by a decision, and the technical medium of communication differ substantially. A human litigant may be able to question a technical witness through counsel while a party with disabilities may require procedural accommodations under applicable law. The Convention on the Rights of Persons with Disabilities affirms effective access to justice and appropriate procedural accommodation for persons with disabilities; their existing rights should be treated as legally established protections within the applicable framework [51]. A corporation participates through legally constituted agents. The presentation of interests attributed to an animal or a legally recognized natural entity may depend on particular statutes and legally designated representatives, as examined in Paper XIII [34]. These positions differ materially from speculative proceedings involving an artificial system as an independently recognized litigant or adjudicator.

Hypothetical AI or extraterrestrial parties raise epistemic difficulties additional to those encountered in existing legal institutions. If a proposed subject communicates through an unfamiliar interface, evidence of preference, injury, intention or understanding may require several layers of interpretation. A translator, scientific investigator or model designer could thereby acquire exceptional influence over what becomes legible as a claim. A purportedly impartial technical method may already incorporate normative categories chosen by its designers. A valid institutional proposal would need to distinguish the recognition of standing, the authorized presentation of evidence, the standards for its assessment, and the legal competence to decide. None of these propositions follows solely from a claim about computational intelligence, phenomenological experience, or cross-species analogy. The speculative inquiry is relevant

to prospective jurisprudence while leaving existing human procedural rights intact.

At the level of *ontological reality*, ultimate claims concerning consciousness, agency and the meta-physical status of expert knowledge remain suspended. A report that a system can classify expressions of pain would not establish the ontological nature of the purported experience. At the level of *relational reality*, historically constituted legal offices, evidential professions, instruments, datasets, and practices of expert validation interact to shape which propositions acquire practical force in proceedings. A court's authority and a laboratory's informational influence can coexist as different relations within the same institutional field. At the level of *manifestation reality*, those relations become selectively visible in judgments, expert reports, calibration records, transcripts, disclosure orders, model documentation, and technically accessible logs. Visible artefacts may omit significant upstream operations, and the resulting gaps remain empirical questions rather than warrant for automatic allegations of concealment.

A research programme built upon this distinction may examine when an authorized judge can critically assess specialized evidence, what additional expertise is necessary, how parties can effectively contest decisive assumptions, and which institutional resources sustain that capacity over time. It should compare cases with successful technical challenge alongside cases where further inquiry would be disproportionate or legally inappropriate. The proposed epistemic-dependency graph remains an analytical and documentary device requiring operational tests; it establishes neither a new rule of admissibility nor any transfer of adjudicative authority to experts or artificial systems. The present investigation thus prepares the examination of independence, impartiality and fair-hearing guarantees, for which the practical distribution of expertise forms an important, but legally differentiated, condition.

5 Independence, Impartiality, and Fair-Hearing Guarantees

This section examines the institutional safeguards that condition the legitimate exercise of adjudicative competence. Its immediate objective is to distinguish the independence of a tribunal, the impartiality of its decision-makers, and the procedural opportunities afforded to persons affected by its determinations. The analysis proceeds through source-specific human-rights provisions and judicial-ethics instruments, an account of institutional and technical influence, comparative examples, and a documentary safeguard register. These materials supply established legal standards within their respective domains, together with interpretive guidance and a limited Generative Relational proposal for investigating practical dependence. The paper's enquiry into heterogeneous adjudicators remains prospective; no capacity for computational reasoning itself supplies legal competence or dispenses with the rights of existing legal subjects.

5.1 Judicial Independence and the Institutional Conditions of Decision

Judicial independence concerns the legally protected position of an adjudicative institution and the capacity of its authorized officeholders to determine matters according to applicable law and evidence. It has institutional, functional and case-specific dimensions. A court may be constituted by law yet face external pressure in the appointment, promotion, discipline, remuneration or removal of its members. A judge may have secure tenure while experiencing informal interference during the handling of a particular proceeding. The legal character of the interference, the applicable safeguards and the available remedies require identification from the governing regime and the actual record. This distinguishes a doctrinal inquiry into judicial independence from a sociological inquiry into the distribution of influence, while allowing the two to inform each other.

Article 14(1) of the International Covenant on Civil and Political Rights (ICCPR) protects a hearing before a competent, independent and impartial tribunal established by law in the circumstances specified by that provision [47]. The Human Rights Committee's General Comment No. 32 interprets this guarantee by discussing protections associated with appointment procedures, tenure, promotion, suspension, dismissal and disciplinary processes, as well as the need to prevent improper political influence [56]. The Committee's interpretation deserves attention within the Covenant system, although the General Comment and the binding treaty provision occupy distinguishable positions as sources. Article 6(1) of the

European Convention on Human Rights (ECHR) likewise prescribes a hearing before an independent and impartial tribunal established by law for the determination of civil rights and obligations or a criminal charge within its scope [6]. The European Court of Human Rights' guides summarize case-law in which independence, impartiality and lawful constitution of the tribunal are interrelated, while retaining the domain and factual sensitivity of each guarantee [23, 24].

The United Nations Basic Principles on the Independence of the Judiciary articulate institutional safeguards, including the duty of public institutions to respect independence and provisions concerning the exercise of judicial functions, tenure and professional secrecy [49]. These principles operate as international guidance and should be distinguished from obligations generated by an applicable treaty, domestic constitution or statute. Their analytical value lies in identifying interfaces at which administrative control can affect adjudication. Appointment by a political branch, for example, does not in itself establish prohibited interference under every governing legal system; appointment design, security of tenure, review procedures, actual pressures and the applicable legal standard must be considered together. Likewise, judicial budgeting and court administration are necessary activities whose allocation can shape effective independence without automatically converting administrative cooperation into domination.

The relationship between independence and accountability requires particular care. Independence protects the exercise of lawful decisional judgment from improper intervention; it can coexist with reasoning, appellate review, disciplinary processes and legal responsibility for misconduct. Conversely, the absence of visible disciplinary action establishes little by itself about the protection of judicial integrity. An analytical approach should ask who may impose a consequence, on what grounds, under which procedures and with what opportunity for review. The critical distinction is between lawful institutional accountability and means of influencing the content of an individual judgment through extraneous pressure. The source-indexed authority record of Section 2 identifies the competent tribunal; the present section investigates the safeguards governing the tribunal's performance in a particular institutional environment.

5.2 Impartiality, Conflicts, and Case-Specific Disqualification

Impartiality addresses the tribunal's relation to the particular parties, issues and interests submitted for judgment. It encompasses personal bias and the appearance of impartiality under applicable objective standards. This distinction matters because a finding of deliberate prejudice may require evidence different from that relevant to the appearance of an improper connection. General Comment No. 32 identifies both a judge's freedom from prejudgment or improper preferential conduct and the need for the tribunal to appear impartial to a reasonable observer [56]. The Strasbourg case-law discussed in the Court's Article 6 guides similarly distinguishes subjective and objective approaches, while recognizing their practical interaction and the particular circumstances of the case [23, 24]. An evaluation should therefore describe the source-defined test and the facts capable of satisfying it, rather than substituting a researcher's impression of fairness.

The International Criminal Court provides a more specific institutional example. Article 40 of the Rome Statute concerns judicial independence; Article 41 establishes mechanisms for excusing and disqualifying judges, including circumstances in which impartiality might reasonably be doubted, subject to the Statute's own allocation of procedural authority [37]. These rules do not define the recusal practices of national courts, arbitral tribunals or hypothetical AI adjudicators. They illustrate how a legal order can distinguish the existence of judicial office, permissible professional conduct, circumstances requiring withdrawal and procedures through which the issue is determined. Their institutional particularity is essential to the comparison.

Conflicts can arise through personal relationships, financial interests, prior involvement in a dispute, institutional commitments and certain forms of dependency on an evidentiary provider. The legal significance of these circumstances is conditional. A judge who once published a general academic opinion about a field of law may occupy a materially different position from one who previously advised a party about the same contested facts. A judge may encounter a methodologically valuable expert

report produced by a court-contracted provider without thereby becoming personally aligned with that provider. Yet a concealed financial stake in the provider, dependence on promised future benefits, or unilateral access to material communications may give rise to distinct legal concerns under the relevant rules. The presence of a conflict allegation should lead to legally structured fact-finding, notice and a source-authorized determination; it should not be treated as proof of partiality.

The Bangalore Principles of Judicial Conduct associate judicial ethics with independence, impartiality, integrity, propriety, equality, competence and diligence, including attention to the appearance of proper conduct [39]. Their guidance is relevant to professional deliberation and institutional policy, with the caveat that the Principles neither create an international court nor independently govern the consequences of a judge's participation in a specific case. Domestic or international legal provisions may incorporate related standards through their own procedures. A robust comparative analysis records both the ethical concern and the legally available response, such as disclosure, objection, recusal, reassignment, correction or appeal. The remedies and time limits may differ significantly among systems.

5.3 Fair-Hearing Guarantees and Effective Participation

Fair-hearing guarantees regulate the opportunity to participate in, understand and challenge proceedings whose outcomes may affect legally protected positions. Their constituent elements vary with the jurisdiction, the type of dispute, the stage of proceedings and the applicable procedural rules. In the ICCPR, Article 14 combines general requirements concerning equality before courts and tribunals and the fair and public hearing with specified criminal-process guarantees [47]. A distinct criminal-trial safeguard should therefore be cited as such, rather than exported to every civil, administrative or arbitral proceeding. The ECHR's Article 6 similarly has civil and criminal dimensions, interpreted through the Court's case-law [6, 23, 24]. Article 47 of the EU Charter provides an effective-remedy and fair-trial guarantee within the Charter's Union-law domain, including access to an independent and impartial tribunal previously established by law [29].

The opportunity to be heard has an epistemic as well as a legal dimension. A party may formally receive permission to submit observations while being unable to identify the contested evidential premise or obtain timely assistance with an unfamiliar scientific method. Expert material may be technically accurate yet presented in a way that defeats meaningful participation. In proceedings where specialized evidence is decisive, the relevance of disclosure, adversarial questions, access to appropriate expertise and an intelligible explanation depends on the applicable legal procedure. The expert-dependency analysis in Section 4 provides a way to locate consequential technical intermediaries; it does not itself determine disclosure entitlements. Confidentiality, legal privilege, privacy, public security and protection of other parties may lawfully restrict access in particular cases, subject to the governing rules and available counterbalancing guarantees.

Effective participation also concerns the accessibility of proceedings. Article 13 of the Convention on the Rights of Persons with Disabilities (CRPD) obliges States Parties to ensure effective access to justice for persons with disabilities on an equal basis with others, including procedural and age-appropriate accommodations, facilitating effective participation in legal proceedings [51]. This existing human-rights guarantee addresses persons with disabilities as rights-holders. It warrants independent doctrinal treatment and practical implementation; it is not a speculative analogy to potential legal standing for artificial systems. Particular parties may require interpretation, assistive communication, accessible documents or other accommodations as required by applicable law and factual circumstances. Their ability to engage with technical evidence should be examined through the accessibility of the whole proceeding, including timelines, explanations, representation and the availability of suitable assistance.

Procedural equality does not entail identical participation arrangements in every case. Some criminal guarantees protect the accused in ways shaped by the stakes and institutional power of prosecution. Civil proceedings may accommodate different burdens, evidentiary presumptions or legal roles. Public proceedings can coexist with justified exceptions to publicity under applicable rules. The assessment therefore concerns source-based sufficiency of procedural opportunities and the practical ability to use

them, rather than a fixed symmetry of every procedural resource. The analytical importance of this distinction becomes especially acute when one party controls a complex model or repository of technical records while another has limited resources to contest its interpretation.

5.4 Technical Providers, Administrative Dependence, and Adjudicative Control

The independence of adjudication may depend in practice on infrastructures controlled beyond the formal bench. Courts use scheduling systems, evidential repositories, transcription services, digital communications, translation assistance and, increasingly, computational search or drafting tools. Such arrangements can improve consistency, accessibility and speed. They can also create channels through which providers, administrators or system designers influence the information available to decision-makers and litigants. The existence of a dependence is an analytical starting point for tracing a relation of power; its actual legal significance depends on contractual arrangements, technical capabilities, decision procedures and evidence of the relevant practice.

Consider a tribunal using an externally maintained service to retrieve precedent and organize incoming evidence. The service may select default rankings, omit inaccessible sources, supply summaries and log queries. A judge who cross-checks decisive materials and remains free to reject suggestions occupies a different practical relationship from an officeholder required to accept an opaque score without sufficient opportunity for scrutiny. The outward form of the final judgment might remain the same in both arrangements. An inquiry into independence should therefore address actual influence pathways: who can alter the corpus, what material was displayed, whether disputed propositions were independently examined, which technical outputs were adopted and whether the parties possessed a legally adequate opportunity for challenge. Section 3 treats the adopted legal reasons; Section 4 locates epistemic dependencies. The additional object here is the interaction between those dependencies and the tribunal's protected ability to decide.

Technical providers are situated within contractual, regulatory and organizational relationships. A vendor's ordinary obligation to maintain infrastructure differs from a power to dictate adjudicative outcomes. A court's internal case-allocation process may serve legitimate administration while creating risks if discretionary assignment can be used to target a particular result. Algorithmic ranking may structure attention without automatically determining a decision. To evaluate any alleged interference, empirical research would need logs, procurement and governance records, appointment or allocation rules, communications subject to lawful access, and the relevant procedural history. A restriction on disclosure may itself have a defensible legal basis. Insufficient public documentation should be recorded as uncertainty, rather than used to infer covert manipulation.

The European Commission for the Efficiency of Justice (CEPEJ) has offered ethical guidance for artificial intelligence in judicial systems, emphasizing issues including fundamental rights, non-discrimination, quality, security, transparency and user control [17]. Its charter offers design-oriented considerations; it is not a statutory appointment instrument. The consolidated EU AI Act also regulates specified AI uses involving judicial authorities, subject to the Act's definitions, exclusions and staged application provisions [31]. A high-risk designation concerns regulatory requirements for a relevant system, without conferring the office of judge upon the system. In particular, the 27 July 2026 consolidation provides a deferred application date of 2 December 2027 for the pertinent high-risk provisions applicable to the Annex III use in question. These differences in normative status and commencement are material when designing or evaluating actual judicial technology.

A further tension concerns dependence on human assistants. Clerks, experts, translators and administrators can perform essential work, and some may exercise delegated tasks according to governing sources. An institutional design that allows review of decisive contributions, preserves accountability for legally adopted holdings and provides remedies can accommodate substantial assistance. The precise conditions of adequate review remain contingent. Requirements for an effective ability to revise, correct or refuse generated material should be assessed empirically and by reference to the applicable law, rather than inferred solely from the presence of a human signature.

5.5 Source-Indexed Safeguard Records and Verification Obligations

The authority record in Equation 1 and the reason trace in Equation 2 serve different functions: the former identifies the legal competence and authorized office, while the latter documents the reasons adopted in a particular decision. The epistemic-dependency graph in Equation 3 records relevant upstream evidence relationships. A narrower safeguard record is useful for investigating whether the exercise of this authority was exposed to legally material pressure, conflicts or procedural deficits. This record is intentionally procedural and documentary; it provides fields for an audit, not a quantitative fairness score or proof of legal validity. Equation 4 represents its components.

$$\mathcal{G}_{c,t} = (L_{c,t}, J_{c,t}, D_{c,t}, X_{c,t}, P_{c,t}, V_{c,t}, U_{c,t}). \quad (4)$$

Here c designates a defined proceeding, case or institutional practice, and t denotes its relevant time. The field $L_{c,t}$ identifies the applicable legal sources, institutional competence and text versions; $J_{c,t}$ identifies decision-makers, appointment and assignment arrangements, tenure, safeguards and possible conflicts; $D_{c,t}$ records relevant dependencies on administrative officers, expert contributors or technological providers; $X_{c,t}$ documents specific allegations or evidence of inappropriate influence and their provenance; $P_{c,t}$ records legally prescribed participatory guarantees and their observed implementation; $V_{c,t}$ identifies available and exercised procedures for disclosure, recusal, challenge, correction or review; and $U_{c,t}$ holds unresolved facts, contested interpretations, protected information and evidential limitations. Each field can contain internally indexed documents and rival accounts. None is assumed to be numerically commensurable with another.

The record is derived from a concrete inquiry. First, the researcher identifies the proceeding and the governing legal source, fixing the competence and procedural domain. Second, the identity of relevant officeholders and their legally prescribed roles is established from constitutive documents. Third, a consequential influence or procedural concern is identified and linked to evidence, rather than inferred from a general property of the institution. Fourth, the legally relevant conflict, participation or independence standard is determined and applied provisionally to the known facts. Fifth, the record notes the legally available avenue for response and its outcome, including situations where the governing law offers restricted remedies. The result is a traceable analytical dossier, which must remain open to correction where new evidence or authority changes the assessment.

The representation separates institutional dependence from improper interference. A case may have substantial $D_{c,t}$, such as ordinary dependence on public funding or a court-appointed scientific specialist, while $X_{c,t}$ discloses no verified instance of prohibited influence. Conversely, detailed rules in $L_{c,t}$ and formal procedural steps in $P_{c,t}$ may coexist with a verified improper communication or an unresolved appearance of partiality. The record cannot decide the legal issue automatically: a court or other authorized body must apply the relevant rule under the applicable procedures. Nor does an unresolved entry in $U_{c,t}$ justify public disclosure of material protected by law. Comparative study should distinguish legally established violations, empirically supported vulnerabilities, ethical concerns and speculative design risks.

Table 4 shows why a source-indexed method is needed. The substantive content of independence and fair-hearing standards has common concerns across regimes, but their institutional forms, source status and remedies vary considerably.

5.6 Comparative Counterexamples and Institutional Design Boundaries

Comparative counterexamples expose the limits of a single abstract measure of impartiality. A specialized tribunal may employ members with substantial expertise in the industry whose disputes it hears. The institutional design could enhance the evaluation of evidence while creating possible conflict questions concerning present economic interests or prior involvement. Whether a particular member should be disqualified depends on the tribunal's legal constitution, the governing impartiality standard, the member's relationships and the material facts. A categorical rule that specialized knowledge diminishes independence would misdescribe many lawful arrangements; a categorical claim that expertise guarantees

Table 4: Institutional independence and procedural safeguards in selected adjudicative settings

Setting	Relevant source and protected institutional relation	Scope and analytical caution
ICCPR Article 14	Treaty guarantee of a competent, independent, impartial tribunal and specified hearing rights; Committee interpretation addresses tenure and interference	Distinguish general and criminal guarantees; applicability and available remedies are regime-specific
ECHR Article 6	Independent, impartial tribunal established by law; subjective and objective impartiality assessed under case-law	Civil and criminal limbs have differing procedural contents; fact-sensitive, source-based review
International Criminal Court	Rome Statute Articles 40–41 provide independence and rules for judicial excuse or disqualification	Specific institutional procedures; no direct transposition to domestic tribunals
UN judicial-ethics standards	Basic Principles and Bangalore Principles guide institutional independence and ethical conduct	Soft-law guidance; does not itself create adjudicative competence or remedies
Human court using technical assistance	Competent tribunal adopts reasons under applicable national or supranational law; material technology influence can be investigated	Ordinary technical assistance does not establish interference; provenance, actual control and legal guarantees require evidence
Proposed autonomous AI tribunal	Would require constitutive authority, protections from controlling interests, review and remedies	Prospective research case; existing AI regulation supplies no general office or exemption from human-rights duties

neutrality would be equally unsupported. The research question concerns the institutional coupling of knowledge, interest, role and legally recognized safeguards.

A second case concerns a court funded and administratively supported by the State. Financial dependence on a public budget may be an unavoidable condition of the judiciary's operation, and an independent court does not require the absence of such organizational relationships. A credible allegation of interference would need to identify a decision-relevant mechanism, such as targeted retaliation, improper allocation control or threats linked to the handling of a case, and evaluate it under the applicable guarantees. Budgetary constraints may also affect waiting times, quality of access, interpreter availability and practical opportunities to contest evidence. These effects warrant empirical and policy analysis even where the evidence does not establish the legal violation of judicial independence. Distributive access problems and improper interference are distinct though potentially coupled objects of inquiry.

A third case involves confidential evidence or privacy-restricted technical records. A litigant might be unable to inspect some material directly, yet the restriction could follow a valid legal procedure accompanied by judicial scrutiny or alternative protections. The mere absence of unrestricted access is insufficient to decide the fairness issue. In another case, a decisive technical conclusion could be supplied without any meaningful opportunity to understand or challenge its foundation, raising a materially different question under the applicable law. The analysis should examine what was withheld, why, how the decision-maker assessed the restriction, which alternatives existed, and how the limitation affected the ability to participate. The source-indexed safeguard record can expose these distinctions while avoiding claims that every fair proceeding entails unlimited disclosure.

A fourth case tests the significance of meaningful human review in AI-assisted decision-making. A judge may obtain a machine-generated account of the evidence and then check decisive facts and legal propositions against independently accessible sources. A different judge may approve a comparable output because workload or interface design discourages examination of alternatives. The outwardly similar order supplies weak evidence for the quality of review. Evidence might include access logs, contemporaneous reasons, expert challenges, correction histories and authorized procedural inquiries. This does

not make an external researcher the arbiter of judicial legality. It shows why nominal human involvement, technical sophistication and actual institutional control should be distinguished before assessing the legitimacy of a proposed architecture.

A fifth comparison concerns an AI system hypothetically assigned judicial office by an imagined future legal order. Such an arrangement would create questions about control by model developers, update authority, conflicting optimization objectives, security dependencies, continuity of office, disqualification and independent review. Calling the system an adjudicator would settle none of these questions. In jurisdictions subject to existing human-rights guarantees, a proposed institutional reform would need to satisfy the applicable protections and other legal constraints. The possibility of hypothetical nonhuman litigants or judges supplies a reason to specify these conditions more precisely, while leaving intact legal rights already held by human persons. The analysis remains prospective and conditional on valid institution-building.

5.7 Procedural Independence across Three Levels of Generative Relational Reality

The three-level distinction in Generative Relational research provides a way to describe the object of these institutional investigations without replacing the applicable legal standards. At the level of *ontological reality*, claims concerning the ultimate nature of impartiality, consciousness or a purported artificial judge's moral agency remain suspended. A human judge's obligation of impartiality is a legally prescribed relation whose existence within a legal system does not require a metaphysical theory of an underlying impartial essence. Similarly, the ability of an AI system to reproduce judicial vocabulary neither establishes autonomous agency in the ultimate ontological sense nor supplies juridical recognition. Questions of ethical worth and the possible consciousness of nonhuman systems may remain important research problems, but they do not determine the positive law by conceptual stipulation.

At the level of *relational reality*, judicial independence is constituted and maintained through historically developed relationships among courts, appointing bodies, disciplinary authorities, litigants, professional communities, experts, budgets and evidential infrastructures. Formal tenure protections, for example, interact with material incentives, public norms and institutional procedures. A judicial office can remain legally stable while its practical dependency relations change through procurement, digital infrastructure or reforms in case allocation. Conversely, the introduction of a new technical intermediary may leave decisional authority formally unchanged while reorganizing who can present, filter or contest material information. The resulting relations can have causal and normative consequences, but the model does not presume that every change constitutes institutional capture. Claims about capture require evidence of the relevant influence pathway and its legal significance.

At the level of *manifestation reality*, these relationships become accessible through appointment records, recusal applications, procedural directions, judgments, case-allocation policies, contracts, expert reports, model documentation and available technical logs. Such records are produced by institutions with differing archival practices and lawful limits on disclosure. A manifestation may support several relational hypotheses, including ordinary administrative dependence, a legally permissible restriction or improper influence. Comparisons therefore require attention to selection effects, institutional history, the identity of those able to generate records and the practical possibility of contesting their interpretation. The safeguard record in Equation 4 offers a method for preserving these distinctions rather than a substitute for evidential inquiry.

These levels also clarify the possible contribution of relational jurisprudence. Independence and impartiality can be studied as historically sustained institutional achievements whose effective operation depends on resources, professional practices and channels of challenge. Their positive-law content, however, derives from particular constitutional, statutory, treaty and case-law arrangements. Where an official legal mechanism supplies a remedy, the availability and scope of that mechanism should be assessed within its own order. Where a novel AI-related institutional risk lacks a settled remedy, further legal design may be proposed with explicit attention to affected human parties, empirical uncertainty and democratic or otherwise legally authorized processes of institutional change.

The next stage of the argument concerns artificial intelligence used as judicial assistance. Section 6 will distinguish lawful technical support, decisions practically shaped by model outputs, and prospective proposals for stronger technological delegation. The present section supplies the constraints necessary for that inquiry: legally specified competence and fair-hearing guarantees, scrutiny of actual sources of influence, source-governed impartiality procedures and an accessible path for contesting consequential decisions. These conditions identify research obligations for institutional design without presupposing that existing forms of adjudication can be replicated through computational performance alone.

6 Artificial Intelligence as Judicial Assistance

Artificial intelligence deployed in judicial work can reorganize the acquisition of legal materials, the assessment of evidence, the preparation of draft reasons, and the practical conditions of adjudicative choice. The objective of this section is to specify the forms of assistance that such systems can provide, the institutional sources governing their use, and the evidential conditions for assessing whether judicial responsibility remains meaningfully exercised. The method combines a source-specific reading of European AI regulation and judicial guidance, comparative analysis of documented professional failures, a narrowly defined documentary representation, and a Generative Relational account of technical influence. The research object is *assistance in an authorized adjudicative process*. Proposals for constituting autonomous adjudicative office belong to Section 8; institutional architectures for distributing tasks between people and technical systems are developed further in Section 7.

Assistance deserves independent treatment because a formally advisory contribution may reorganize the evidence, vocabulary and alternatives available to the authorized decision-maker. A recommendation may be rejected, checked, modified, or incorporated into reasons. A retrieval tool may expose relevant legal materials while systematically omitting particular classes of sources. A language model may draft an intelligible judgment whose apparently plausible citations fail documentary inspection. Conversely, a well-governed tool may improve access to materials, surface contradictions and help an adjudicator discharge existing obligations more effectively. The legal assessment depends on the actual function, the applicable institutional rules, the conditions of use, and evidence of consequential influence. The premise that software is powerful or that human involvement is formally present settles neither that assessment nor the allocation of public power.

6.1 Assistive Functions and the Proximity of Technical Output to Judgment

Judicial assistance encompasses activities with different degrees of proximity to adjudication. A first group concerns administration and access: scheduling, anonymization, speech transcription, file organization and general search. A second group involves analysis of case materials: extraction of proposed facts, identification of contested propositions, comparison of submissions and presentation of potentially relevant authorities. A third group produces recommendations bearing directly on contested determinations: assessments of credibility, proposed legal classifications, arguments about the application of a norm to a particular factual record, or suggested orders. A fourth group supplies text intended for direct incorporation into legally adopted judicial reasons. These groups are analytical conveniences rather than a universal classification in positive law. Actual systems may combine several functions, and a nominally administrative component may become consequential when it shapes the information subsequently available for deciding a case.

The distinction between retrieving materials and determining their legal relevance is especially significant. A search interface that locates statutes by keywords performs a different task from a system that receives the dispute narrative, selects rules and precedents, and proposes their application to a particular claimant. Both may return links and excerpts. The second participates in the production of potential legal reasons because the selection embodies propositions about materiality, authority and interpretation. Likewise, a transcription service that converts an audio hearing into text serves a different role from a system that infers credibility from speech patterns or ranks witnesses according to an undisclosed measure. To

classify assistance responsibly, the researcher must examine intended purpose, integrated functionality, information pathways and the relation of outputs to the legal decision.

These distinctions interact with prior sections. Section 2 locates the legal source constituting the adjudicator’s competence. Section 3 records the legal reasons adopted by the competent authority. Section 4 describes evidential dependence on external knowledge. The additional question is how a technical contribution enters, structures, or distorts the pathway between source material and the decision. An adjudicator who verifies a model-supplied statutory provision directly against an authoritative text occupies an epistemically different position from one who treats a generated characterization as proof that the provision exists. The difference is observable through the process of verification and adoption, although some procedural materials may legitimately remain confidential.

AI-generated predictions require special care. Historical outcome distributions can, under specified sampling and modelling assumptions, provide empirical information about prior adjudication. That information is distinct from the legal justification required for an individual judgment. Legal change, selection biases, disparities in representation, variations in tribunal composition and non-public settlements may alter the conditions of predictive relevance. A statistically accurate predictor of recorded outcomes can still reproduce patterns that a governing legal standard demands be examined or corrected. Its analytical value therefore depends on the question asked and the normative constraints of the institution using it. The utility of prediction for resource planning or uncertainty analysis should not be confused with the legal authority to decide according to the predicted majority outcome.

6.2 European Regulatory Classification and Temporal Applicability

The European Union’s AI Act supplies one specific regulatory framework for assessing these systems. Annex III, point 8(a), addresses AI systems intended to be used by, or on behalf of, a judicial authority to assist in researching and interpreting facts and law and applying law to a concrete set of facts, as well as specified analogous uses in alternative dispute resolution [31]. The classification is linked to the statutory concept of a high-risk AI system and the relevant application of Article 6. The existence of such a category does not confer adjudicative office or authorize the judicial transfer of a court’s legal powers to a software provider. The competence and constitution of the decision-maker remain questions of the law governing the particular tribunal.

The Commission’s AI Act Service Desk provides useful illustrative contrasts [15]. A tool that proposes the legal reasoning or drafts a judgment by applying law to the concrete facts of a dispute is presented as within the relevant high-risk use case. A general search engine, an ordinary speech-to-text facility, or a system confined to strictly ancillary administration is treated differently. The examples also address narrower preparatory and editorial tasks potentially falling within the Article 6(3) filtering conditions. The regulatory classification must be undertaken for the actual intended purpose and combined functional configuration; the examples are administrative explanatory material, while the enacted and consolidated Regulation supplies the governing text. The same nominal description, such as “case summarization,” may cover merely locating passages or substantively determining which evidence deserves weight. Functional investigation is therefore necessary before asserting that a specific system falls inside or outside a regulatory category.

The timing of the legislation must also be distinguished from its subject-matter scope. Under the consolidated EU AI Act dated 27 July 2026, Article 113 provides a general application date of 2 August 2026, alongside staggered provisions. In particular, the requirements of Chapter III, Sections 1–3, for systems classified as high-risk under Article 6(2) and Annex III are scheduled to apply from 2 *December 2027*; other provisions have different dates [31]. A description of the regulatory design in October 2026 should therefore distinguish enacted obligations already applicable from future-applying requirements. A paper about ethical or institutionally responsible judicial assistance may invoke the latter as prospective design benchmarks, but their scheduled legal effect should not be backdated. Any assessment of a later deployment would require checking the law applicable on the actual deployment date.

Article 14 of that Regulation articulates human oversight requirements for relevant high-risk systems,

including the ability of designated natural persons to understand limitations, recognize over-reliance, interpret output, disregard or reverse it and intervene appropriately. Article 26 addresses obligations of deployers, while Article 27 regulates fundamental-rights impact assessments for defined categories of deployers and systems [31]. These provisions have their own conditions and dates; they should not be recast as an unconditional legal requirement that every algorithm used in court undergoes the same assessment. Their analytical significance lies in recognizing that effective oversight is partly an architectural and organizational property: interface design, training, access to supporting material, records, authority to refuse output, and remedial processes shape what oversight can achieve.

A further source distinction concerns the CEPEJ European Ethical Charter on the use of AI in judicial systems, adopted in 2018. Its principles of fundamental-rights respect, non-discrimination, quality and security, transparency and fairness, and user control form an institutional ethics framework [17]. They are informative when assessing court procurement and responsible development, while their legal status differs from the requirements of a directly applicable EU regulation or the domestic law constituting a tribunal. Research in this field benefits from a source register that preserves treaty guarantees, statutory rules, judicial decisions, administrative guidance, ethics instruments and proposed reforms as differently authoritative objects.

An integrated-use counterexample prevents an artificially narrow classification. A model that merely indexes documents by keywords may remain outside the justice-specific high-risk use case described by the Commission’s explanatory examples. If the same workflow combines fact extraction, precedent selection according to case facts, and a proposed disposition, assessing only the indexing module may miss the combined intended purpose and its influence on adjudication. The Commission’s Service Desk expressly treats combined configurations as relevant to its illustrations, while the legal classification itself continues to be governed by the Regulation’s operative criteria [15, 31]. Nor does an Annex III classification establish a lawful basis for replacing the judge. Conversely, the staggered timetable of Article 113 prevents researchers in October 2026 from presenting the Chapter III, Sections 1–3, requirements for Annex III systems as already generally applicable when their scheduled date is 2 December 2027. These are distinct questions of intended use, source scope, temporal effect and judicial competence.

6.3 Source Integrity, Generated Assertions, and Professional Responsibility

The reliability of generated legal content is a concrete procedural concern. A model may produce a recognizable citation pattern for an authority that does not exist; it may attribute an invented passage to an authentic case; or it may combine real statements from different jurisdictions into a proposition that no cited source supports. An apparently fluent answer can conceal the absence of a documentary path from its proposition to its claimed legal authority. For that reason, the primary verification unit should be the consequential *proposition and its asserted source*, rather than the surface fluency of the document containing it. A source checker should confirm the authority’s identity, the applicable version, the relevant passage and the scope of the proposition. When possible, it should also inspect contrary authority and procedural limits on the use of the material.

Judicial guidance in England and Wales has addressed these risks directly. The Courts and Tribunals Judiciary’s updated October 2025 guidance identifies hallucinations, bias and confidentiality concerns and emphasizes the personal responsibility of judicial officeholders for material issued in their name [12]. That guidance concerns professional judicial practice within its institutional audience. It illustrates a governance response to technical assistance; it is neither a general legislative prohibition on AI use nor a constitutive source granting a model judicial authority. Disclosure of case-sensitive material to an external model raises separate questions concerning privacy, confidentiality, professional duties, security and lawful processing. Whether particular use is permissible therefore requires a regime-specific assessment of the data and technical setting.

The Divisional Court’s judgment in *Ayinde v London Borough of Haringey; Al-Haroun v Qatar National Bank* provides a documented illustration of the importance of authenticating legal authorities in court submissions [33]. The proceedings concerned fictitious or inaccurately represented authorities and

duties of legal professionals to check material relied upon in litigation. The example supports the proposition that professionally consequential citations require verification and that apparently authoritative text can undermine the administration of justice when submitted without reliable checking. Its scope is important: the litigation concerned legal representatives and documents presented to a court, and fictitious references by themselves do not conclusively establish which software, if any, was used to generate them. A comparative account should avoid treating the episode as a judicial finding that autonomous AI adjudication had taken place.

Verification is more than confirming that a citation resolves to a genuine document. A judgment may rely on an accurately quoted authority while omitting a controlling qualification, taking a dictum for a holding, applying superseded law, or transferring a principle across jurisdictions without the necessary legal bridge. A technical assistant may also amplify errors already present in an unverified database. Verification should therefore distinguish existence, text accuracy, authority, applicability, temporal validity and inferential relevance. Many of these tasks require legal interpretation rather than mechanical string matching. This is one reason an apparently successful automated citation audit cannot establish the legal sufficiency of an entire judicial decision.

Verification arrangements can also distribute burdens unequally. A party with extensive resources may challenge a proprietary system through retained experts, while another may lack access to models, records or technical assistance. An institution seeking efficient processing must examine whether the new arrangement alters realistic opportunities for participation or review under applicable law. This issue connects the evidential-dependency analysis of Section 4 with the fair-hearing guarantees of Section 5. Where confidentiality or protected material restricts access, adequate contestation must be assessed under the particular procedural regime, including any lawful alternative safeguards. Full public disclosure of an entire system is neither presumed nor prescribed by the present analysis.

6.4 Human Oversight, Adoption of Reasons, and Institutional Incentives

Human oversight is sometimes described through a simple institutional sequence: a technical system recommends, a human reads, and a judge signs. That sequence records the formal presence of a person, but it leaves open how the person evaluated the recommendation, what materials could be examined, and whether rejection was a practical and authorized option. The relevant analytical question concerns *effective decisional control within the institution*. A judge may remain empowered to disregard an output yet face a large caseload, interface defaults favoring acceptance, limited time for checking, or a contractual system that prevents access to the assumptions behind its recommendation. Such conditions may create vulnerability to over-reliance; a finding of unlawful delegation or denial of a fair hearing still depends on the applicable source and evidence of actual effects.

Oversight can be examined through a sequence of distinguishable operations. The adjudicator first identifies the intended technical task and whether the system is authorized for that use. The adjudicator then inspects the material sources for consequential assertions and evaluates alternative interpretations. Where the output incorporates empirical or predictive claims, its assumptions and data limitations should be considered at the level necessary for the legal decision. The adjudicator finally determines which propositions to adopt as reasons, records the resulting disposition in the legally prescribed form, and permits legally required challenge or correction. These operations may involve clerks, qualified experts, interpreters, security staff and other authorized contributors. The law of the forum determines which acts can be delegated and which must be performed by the competent officeholder; the process should avoid presuming that the judge must technically reproduce an entire model to evaluate its consequential claims.

The effect of assistance may be indirect. A model that drafts a factual summary can influence which testimonies appear central before any legal conclusion is proposed. A search ranker can define the apparent universe of relevant cases. A risk score can anchor discussion even when the adjudicator expressly states that it is advisory. Such mechanisms have been studied in broader human–automation contexts, but their existence in a particular adjudicative institution remains an empirical question. A proper inquiry

asks about available alternatives, changes in attention, reasons for adoption, instances of override and the relationship between technical outputs and final decisions. Institutional performance may benefit from measured efficiencies while also exposing previously hidden dependencies. The analytical framework treats these effects as possible, context-dependent couplings requiring investigation.

The CEPEJ Charter’s emphasis on user control and the AI Act’s specified human-oversight architecture provide two differently situated reference points [17, 31]. Neither instrument supplies a universal measurable threshold for adequate judicial deliberation. It may be more informative to ask whether the decision-maker has legal authority to reject a suggestion, access to enough underlying material to assess decisive propositions, protected time and resources to exercise judgment, and a record allowing authorized review. A human signature becomes more informative when situated within those relations. Conversely, the fact that a technological recommendation was used does not itself demonstrate improper delegation if the tribunal validly adopted independently supportable reasons under governing procedures.

6.5 A Documentary Trace of Technical Influence and Adoption

The formal materials established in the earlier sections can be joined through the specific event in which an output offered by a technical system becomes relevant to an adjudicative act. The authority record in Equation 1 identifies the governing competence. The reason trace in Equation 2 identifies what a competent decision-maker ultimately adopted. The epistemic-dependency graph in Equation 3 identifies upstream knowledge and evidence relations. Section 5 introduces a source-indexed account of procedural safeguards. The remaining analytical gap concerns the *provenance of a particular assistive contribution and its disposition in the adjudicative workflow*. Equation 5 introduces a bounded documentary record for that purpose.

$$\mathcal{T}_{c,t} = (S_{c,t}, I_{c,t}, O_{c,t}, K_{c,t}, A_{c,t}, C_{c,t}, U_{c,t}). \quad (5)$$

Here c denotes the proceeding or authorized workflow and t fixes the relevant time. $S_{c,t}$ identifies the system and its technically and legally relevant configuration, including provider or institutional provenance and the authorized task. $I_{c,t}$ identifies accessible inputs, source datasets and restrictions on their lawful use. $O_{c,t}$ records the particular outputs or propositions that may affect the decision. $K_{c,t}$ documents verification and interpretive checks of consequential material. $A_{c,t}$ records whether an authorized officeholder adopted, revised or rejected a contribution and the recorded reasons where such recording is lawful and available. $C_{c,t}$ identifies authorized channels of challenge, correction or oversight. $U_{c,t}$ captures unresolved provenance, lawful confidentiality restrictions, rival causal explanations and evidential gaps. The record’s fields are documentary classes; no numerical function, normative ordering or common unit of value is implied.

The construction begins with an actual asserted contribution rather than a generic model name. A researcher identifies the work product and its material effect on a defined decision. The governing authority and applicable temporal version of the law are obtained from the existing competence record. The technical system, permitted inputs and a reproducible description of the output are then connected to the verified legal and factual sources. Next, the researcher inspects what the authorized actor could review, what was checked, and what the actor demonstrably adopted or declined. Finally, the investigator records the lawful means by which the proposition or outcome may be contested. Where access to the required evidence is absent, the record remains incomplete rather than receiving an invented value. Some fields may be intentionally inaccessible to an external scholar, and the method does not override legal privilege or security requirements.

The analytical return of this record is visible in a counterexample. Suppose an identical model-generated paragraph appears in two judgments. In the first, the judge checks its legal citation and adapts its reasoning to the accepted facts, with the relevant workflow properly authorized. In the second, the cited source cannot be produced and the paragraph was accepted despite a documented challenge. The surface similarity of the text conceals different verification, adoption and contestation pathways. Conversely, if both judgments contain the same minor wording error, the records might reveal no legally

Table 5: Selected AI assistance configurations, juridical proximity, and verification concerns

Assistance configuration	Relation to adjudicative work	Principal source-dependent inquiry
Administrative transcription or anonymization	Enables access or processing without necessarily evaluating legal merits	Accuracy, privacy, authorized use, and any later analytic transformation of the output
General legal-source search	Retrieves candidate authorities, often by query terms	Completeness, source version, jurisdiction and independent assessment of relevance
Case-specific legal analysis	Selects law for facts and suggests its application	Annex III 8(a) and Article 6(3) classification; correctness, contestability and effective human review
Judgment-drafting assistance	Produces proposed holdings or reasons for a competent official's consideration	Authority and adoption of reasons, verified citations, records of correction, and applicable procedural guarantees
Judicial outcome prediction	Summarizes or predicts historical patterns relevant to a decision	Dataset and selection effects, source of legal normativity, and risk of undue anchoring
Proposed automated disposition	Executes a legally consequential decision pathway with reduced human intervention	Constitutive authority, lawful delegation, available human challenge and the separate research questions in Sections 7–8

material difference. This illustrates why technical similarity alone cannot diagnose judicial impropriety and why the proposed record is a source-dependent descriptive method rather than a verdict-generating algorithm.

6.6 Comparative Assistance Configurations and Failure Cases

A comparison of actual and proposed applications clarifies the interaction among technical function, legal regulation and adjudicative responsibility. Table 5 distinguishes operational roles and the questions that would need to be answered before making juridical or empirical claims about their legitimacy. Its entries describe representative configurations rather than a universal risk ranking. In the EU column, statutory classification must be determined under the actual Regulation and its exceptions; the Commission's examples assist interpretation but do not replace that legal analysis [15, 31].

Several counterexamples sharpen the classification. A court may use automated transcription to improve the accessibility of a hearing. If corrections are available and a human decision-maker evaluates disputed evidence according to the governing rules, the tool can support participation; transcription errors nonetheless remain relevant where a decisive passage is misstated. A document-retrieval system may list only a fraction of legally relevant authorities because a licensed database omits particular jurisdictions. The court's conclusions could still be valid on independently adequate grounds, but a claim about comprehensive retrieval would require verification. A drafting assistant may offer authentic sources and legally sound language; its use becomes problematic when the institution substitutes a prediction for the governing standard or conceals a material technical dependency contrary to applicable procedural obligations.

A further case concerns a highly capable AI whose performance in identifying relevant legal materials exceeds that of a particular human operator. Greater observed accuracy could justify its consideration as a specialized aid under appropriate legal and institutional conditions. The result does not settle who is competent to deliver binding judgment. Conversely, an adjudicator's limited technical understanding does not necessarily prevent lawful reliance on externally verified scientific expertise. Institutional legitimacy can be maintained through procedures for obtaining, evaluating and contesting specialized knowledge, subject to the governing law. The possible gains from AI assistance and the requirements of adjudicative authority are therefore distinct, potentially mutually supportive analytical objects.

A final comparison addresses the allocation of responsibility when an output proves wrong. A vendor may be contractually responsible for defined performance and security duties; a court may have procedural obligations concerning material placed before it; a lawyer may owe professional duties concerning citations submitted in proceedings; and an affected party may possess rights of challenge under the applicable regime. These obligations may coexist. Their allocation must be identified from sources and facts rather than assigned mechanically to the nearest human or newest technology. The documentary trace in Equation 5 helps identify the contribution's provenance, while the source-indexed authority record remains necessary to locate legal competence and legal responsibility. The appropriate response to error may involve correction, reconsideration, an appeal or another legally available measure, depending on the legal order and procedural posture.

6.7 Generative Relational Analysis and the Boundary of Judicial Assistance

The proposed Generative Relational interpretation organizes the analytical objects across three levels without replacing positive-law criteria. At the level of *ontological reality*, the ultimate nature of consciousness, judgment, intentionality or putative artificial agency remains suspended. The technical production of persuasive legal reasoning supplies evidence of a system's operational capabilities under particular conditions. It does not, by itself, resolve whether the system is conscious, bears an ultimate moral identity or has received adjudicative office under any legal order. Likewise, human judicial authority is a legally constituted position whose operative status can be described without assuming one definitive metaphysical account of human rationality. Suspending ultimate ontology permits comparison of heterogeneous contributors while preserving the distinct legal authority of existing human-rights protections.

At the level of *relational reality*, judicial assistance emerges from relations among litigants, courts, experts, lawyers, datasets, model providers, administrators, procurement arrangements and reviewing institutions. These relations are historically formed, subject to change and capable of altering practical opportunities for participation. A new system may improve retrieval yet increase dependence on a concentrated provider, creating a coupling between efficiency and control over the conditions of knowledge. A more sophisticated model may reduce some categories of factual error while increasing the volume of unreviewed proposed reasons. The direction and magnitude of these effects are empirical matters. The relational method studies the structure and historical development of the dependencies rather than assuming that increased computational capacity generates either injustice or justice by itself.

At the level of *manifestation reality*, the researcher observes judicial reasons, citations, electronic case files, procurement records, model configurations, available logging, correction histories, official guidance and accounts of the participants. These records mediate access to the institutional relations under study. A generated draft may have been prepared but never read; a displayed recommendation may have been read and rejected; an apparently independently written judgment may incorporate verified technical assistance. The outward text of the final decision underdetermines those possibilities. Documentation, lawful audit, adversarial challenge and independent evaluation can reduce uncertainty, while evidential restrictions must remain visible as limitations. The provenance trace of Equation 5 records these uncertainties and therefore does not equate manifestation with an exhaustive description of the underlying relational process.

The section's conclusion is correspondingly bounded. AI can contribute to legal research, procedural administration, evidential organization, and the drafting or testing of candidate reasons. The legality and legitimacy of each use depend on the governing adjudicative source, procedural protections, authorized adoption of legal reasons, and the empirical realities of dependence and control. The regulatory category of high-risk judicial assistance provides safeguards for specified systems, subject to classification and temporal application, while the CEPEJ Charter and domestic judicial guidance offer differently situated ethical and professional standards [31, 17, 12]. Section 7 examines more systematic hybrid arrangements and the distribution of human responsibility. Section 8 considers the further and currently speculative question of autonomous artificial adjudicative office. Throughout those inquiries, technical proficiency remains an object of evaluation and legally constituted authority remains an independently specified

institutional relation.

7 Hybrid Adjudicative Structures and Human Responsibility

Hybrid adjudication describes an institutionally organized workflow in which legally authorized human officeholders make consequential determinations while technical systems and other contributors participate in preparing, filtering, evaluating, or presenting material relevant to those determinations. This section examines the juridical structure of such workflows, the distribution of operational control, the conditions for meaningful human supervision, and the allocation of duties when a collective process produces an erroneous or contested decision. Its method combines source-specific comparison of European regulatory and national judicial materials, institutional analysis of differentiated tasks, a limited documentary formalism, and counterexample testing across the three levels of Generative Relational reality. The inquiry concerns hybrid configurations situated within adjudicative orders that already identify competent authorities. A future legal order purporting to confer independent adjudicative office on artificial systems presents different constitutive problems and is reserved for Section 8.

Hybrid arrangements require examination because juridical adoption often represents the end of a long sequence of socially and technically distributed activities. A judge may independently decide a dispute while using expert reports, case-management systems, retrieval interfaces, algorithmically sorted evidence, and externally hosted computational services. A human signature records an act of adoption, yet it cannot by itself describe the quality of the preceding scrutiny or identify every actor with control over the factual premises presented. Equally, the existence of an influential technology does not establish unlawful delegation or a failure of impartiality. A satisfactory legal account locates particular powers and obligations within the governing institutional arrangement, then investigates whether the material dependency structure preserves the procedures required by that legal order. The distinctive research object is the relation between the distributed production of candidate reasons and the legally accountable adoption of a judgment.

7.1 Hybrid Institutional Architectures and Task Allocation

An adjudicative process can be decomposed into distinguishable operations without presuming that each operation is legally delegable. Incoming claims are registered, parties and issues are identified, legal materials are located, evidence is acquired and assessed, competing submissions are considered, candidate reasons are drafted, a disposition is formally adopted, and authorized review or implementation follows. These descriptions refer to functions within a workflow. The authority to perform them depends on sources specific to the court, tribunal, type of proceeding, and governing date. In some systems clerks undertake substantial preparation; expert witnesses assist on technical questions; judges retain determinations of law and disputed fact subject to applicable procedural law. A computational system may join one or several of these operations, while its software provider and administrative operator remain distinguishable from the adjudicating institution.

Four ideal-typical architectures help specify the resulting relations. In a *retrieval-supported architecture*, the software locates documents and an authorized professional determines their relevance and legal force. In a *structured-analytic architecture*, the software proposes issue maps, extracts propositions, or identifies inconsistent evidence, and authorized participants scrutinize the reconstruction. In a *recommendation-centered architecture*, the system supplies an assessment or proposed disposition closely connected to the merits, so the institutional question becomes whether the adjudicator can evaluate reasons and alternatives independently. In a *draft-integrated architecture*, technical outputs enter the language of the final judicial act, although the legally prescribed official must still carry out the assessment and adoption required by the applicable law. These types can coexist within a case. They describe patterns of contribution and legal proximity, not a hierarchy of technical sophistication or an exhaustive taxonomy of court practice.

Allocation of tasks can shift the structure of attention even where formal judicial competence is stable. A search tool determines which judgments a user first encounters; a classifier determines which alleged facts enter a preliminary summary; a model-generated draft supplies the initial ordering of issues; an interface may make acceptance easier than revision. The effect of any such design depends on the actual implementation and institutional use. It may reduce the cost of checking an argument, or it may increase reliance on a narrow representation of the record. A researcher must therefore identify the precise operation, relevant alternatives, and plausible pathways of influence. Describing the process as “human in the loop” contributes little if the human role, available evidence, permitted interventions, and time for independent judgment remain unspecified.

The legally relevant structure extends beyond the visible human–machine interaction. Access to a model, selection of its training or retrieval corpus, authority to update its version, policies for retaining prompts, and contractual control over audits may reside with judicial administrators or external providers. Those actors may possess operational power without adjudicative office. Their contractual, data-protection, procurement, and professional obligations require separate examination under applicable sources. The hybridity of the institution lies in this coupling of tasks and dependencies; it cannot be settled by counting the number of human and technical participants.

7.2 Source-Governed Human Control in Judicial Practice

European Union law supplies relevant requirements for particular high-risk systems while preserving the separate question of judicial competence. The consolidated AI Act of 27 July 2026 classifies specified AI systems intended to assist judicial authorities in researching, interpreting, and applying facts and law to concrete cases under Annex III, point 8(a), subject to the Regulation’s classification provisions. Article 14 sets out the design of effective oversight by natural persons, including the ability to understand capacities and limitations, identify automation bias, interpret outputs, and intervene, disregard, or override results when appropriate [31]. The particular requirements applicable to Annex III high-risk systems under Chapter III, Sections 1–3, are scheduled to apply from 2 December 2027 under the consolidated Article 113 timetable. Analysis conducted in October 2026 should treat those requirements as enacted provisions with staggered application, distinguishing them from obligations already in force and from independent procedural duties. The oversight framework regulates systems within its scope; it supplies no appointment of an AI system to judicial office.

Spain provides a more immediate example of institution-specific rules governing the human–AI relationship. Instruction 2/2026 of the General Council of the Judiciary, approved on 28 January and published in the official gazette on 30 January 2026, governs AI use by judges and magistrates in the exercise of jurisdictional functions. Its Fourth provision demands real, conscious, and effective human control, excludes autonomous substitution in judicial decision-making and the evaluation of facts, evidence, and law, and places responsibility for judicial resolutions on judges and magistrates. Its Fifth through Seventh provisions condition permitted uses of approved tools and impose personal, complete, and critical review and validation of drafts generated through authorized AI systems [5]. These are Spanish institutional directions whose precise scope and relationship to higher-ranking applicable law must be preserved. They provide evidence of one legal response to hybrid arrangements, not a universal rule applicable to every tribunal.

The Council of Europe’s European Commission for the Efficiency of Justice (CEPEJ) adopted guidelines on generative AI for courts in December 2025, complementing its 2018 Ethical Charter [18, 17]. The guidance places emphasis on judicial independence, effective human supervision, traceability, and governance of infrastructure. Its institutional recommendations can inform normative evaluation and comparative design, but CEPEJ guidance does not itself constitute a judicial office or prescribe identical legal duties across member jurisdictions. Similarly, the October 2025 guidance for judicial officeholders in England and Wales warns of inaccurate or fabricated output and emphasizes independent checking, confidentiality, and personal professional responsibility [12]. Each instrument must be located by issuer, legal status, intended audience, and operative context before its insights are employed.

The juxtaposition yields an analytically important relation. Formal human control appears both as a technical design objective, as in the EU’s regulation of certain high-risk systems, and as a rule or professional expectation attached to a legally empowered human decision-maker, as in domestic judicial practice. The first concerns the system and the actors overseeing its operation; the second concerns the judicial office and its duties under procedural and institutional law. They may reinforce each other when the tool permits interrogation of sources and the judge is authorized and resourced to perform it. They may diverge if a system technically allows an override but the institutional workflow makes independent scrutiny practically unavailable. Compliance and legitimacy require examination at their respective legal levels rather than the inference that one automatically establishes the other.

The Spanish Instruction 2/2026 provides a particularly useful boundary case for assigning authority at different points in an AI-supported workflow. Within its scope, judges and magistrates may use authorized systems for defined supporting functions, subject to substantive restrictions and effective human control. AI-produced judicial drafts require personal, complete and critical review and validation; autonomous replacement of fact evaluation or adjudicative decision-making is excluded. Under its Ninth provision, the Instruction distinguishes officially supplied tools from external systems used for limited preparatory or study purposes with exclusively publicly available information; judicial case data must not be entered into those external systems [5]. Thus, the mere fact that a magistrate reads AI-generated text, or that the same model can be used outside a courthouse, does not determine whether a particular use was permitted. The relevant assessment considers the user’s official function, the authorized system, the origin and confidentiality of the data, the task performed, and the observed method of judicial adoption. These source-specific constraints should not be generalized as the positive law of every jurisdiction.

7.3 Human Judgment, Operational Control, and Institutional Responsibility

A hybrid process distributes conduct among participants whose duties arise from different sources. The judicial officeholder may bear responsibility for the decision and for procedures required of the court. An expert may owe duties concerning the reliability, scope, and candour of specialized testimony. A legal representative may have duties to verify authorities placed before the court. Court administration may control procurement, access rights, retention periods, or case-allocation infrastructure. A system provider may have applicable contractual or regulatory obligations concerning documentation, risk management, security, and performance. These positions can coexist and interact. A single erroneous outcome therefore calls for an inquiry into distinct acts, duties, proof requirements, and remedies rather than a presumption that one participant absorbs every form of accountability.

Attribution of the judicial act and causal analysis of an underlying error are especially easy to conflate. A competent judge may issue the binding decision, while a flawed retrieval index causes an important precedent to be omitted from the materials presented. Whether that omission legally affects the decision depends on the forum’s standards for error, materiality, due process, and review. An operator’s awareness of the problem, any contractual promises by a vendor, and institutional policies for independent source verification are additional questions. The final judicial attribution cannot by itself establish that the provider committed a civil wrong; evidence of technical contribution cannot by itself dissolve a judge’s applicable public-law obligations. Paper XIII’s differentiated responsibility positions supply a conceptual interface for making those assessments [34].

Human responsibility also requires analysis of institutional conditions for its actual exercise. Review demands time, source access, sufficient technical literacy, and freedom from improper pressure. Where a platform presents confident but difficult-to-verify recommendations to an overburdened adjudicator, its formally available controls may be little used. That possibility does not permit an inference of individual negligence from workload alone. It directs attention to evidence of what the adjudicator could reasonably assess, the training and tools supplied by the institution, and the rules determining the required standard of conduct. Distinguishing an officeholder’s legal duties from managerial support obligations prevents a system-level explanation from becoming an unsupported excuse for a particular decision, and prevents an individual-fault narrative from concealing remediable institutional weaknesses.

Three distinct responses follow from different kinds of finding. A *legal error* in the adopted reasons may engage correction, reconsideration or appeal within the governing procedural scheme. A *technical failure* may require software maintenance, access restriction, incident reporting, or provider accountability under the relevant technical and legal regime. A *structural deficiency* may call for revised court procedures, procurement standards, professional training or institutional resource allocation. Some cases implicate more than one response; others establish none. Remedial pathways must be grounded in sources and available evidence. The purpose of a relational analysis is to map their coupling while preserving differences in institutional authority and the procedural protections due to affected persons.

7.4 Meaningful Review and the Conditions of Decisional Adoption

Meaningful human review is best specified through capacities and actions relevant to the actual dispute. A legally competent adjudicator should possess the authority and practical opportunity, consistent with the governing rules, to examine the evidence relevant to consequential propositions, consider an opposing party's challenge, identify the legal sources supporting a recommended outcome, and adopt reasons that can be defended within the applicable adjudicative form. Where a recommendation relies on statistical or expert conclusions, the adjudicator need not necessarily reproduce the underlying technical procedure personally. The relevant question is whether it has been subjected to the scrutiny, evidential standards, and expert challenge that the legal order requires. The appropriate degree of examination will differ by type of case and the materiality of the technical contribution.

The quality of review cannot be inferred from one visible marker. A signed judgment supplies evidence of formal adoption; a record of an override supplies evidence of a particular intervention; a large number of overrides may reflect either independent scrutiny or an unreliable assistance tool. Low override rates may reflect high-quality recommendations, strong anchoring effects, or many other mechanisms. Neither rate serves as an autonomous criterion for fair adjudication. Institutional assessment would require a defensible baseline, case-mix controls, qualitative examination of selected decisions, and legally permissible access to the relevant records. Judicial independence and confidentiality also constrain the collection of those records; an empirical proposal does not justify unrestricted inspection of judges' deliberations.

Some forms of oversight are preventive and system-wide. A court can restrict a model to publicly accessible sources, test it on representative legal questions, preserve a verified database of authoritative texts, or require disclosure and correction of identified output faults. Other safeguards are case-specific, including examining the underlying evidence, inviting submissions on a contested expert report, or declining to rely on unverifiable citations. These levels should be distinguished because a well-governed institutional platform may still produce a misleading assertion in a particular case, while an individual judge's conscientious verification cannot repair every upstream systemic defect. The compatibility of preventive and case-specific safeguards depends on workflow design and on powers vested in the participants.

Contestability likewise requires a relational rather than purely technical account. A party may challenge the admissibility of evidence, the interpretation of law, or the sufficiency of a judgment's reasons without needing an unrestricted copy of a proprietary model. In some proceedings, however, information about the system's function or the provenance of a decisive claim may be necessary for an effective challenge. The legal result depends on disclosure rules, confidentiality, privilege, competing rights, and the possible availability of independent expert examination or other protective arrangements. The analysis records what information was available, what reasons were furnished, which objections could be raised, and how the institution addressed them. An absence of complete technical transparency does not automatically establish a procedural violation; a nominal opportunity to complain does not by itself establish meaningful access to an effective remedy [6, 29].

7.5 A Source-Indexed Hybrid Responsibility Map

The preceding distinctions permit a small documentary formalization. Section 2 records the legal source of office and jurisdiction; Section 3 distinguishes legal materials from adopted reasons; Section 4 represents dependencies among knowledge-producing contributors; and Equation 5 records the provenance and adoption of a particular technical contribution. Hybrid institutional inquiry adds a question about the *assignment of legally differentiated responsibilities across the stages of one actual workflow*. A role-by-function responsibility matrix supplies a practical representation of that assignment by combining the existing authority, adoption, and dependency records. This avoids introducing a separate mathematical object for a relation already recoverable from their documentary fields.

The proposed matrix is indexed by the particular proceeding and the applicable date and source version. Its rows identify officeholders, professional contributors, institutional units and technical providers; its columns document the consequential function actually performed, the governing duty or permission, the evidence for an asserted act, its pathway into judicial adoption, the available channels for challenge and remedy, and remaining evidential uncertainty. Each asserted role–duty link must identify the legal source that could establish it. The matrix records documentary relationships rather than quantities on a common scale, and missing evidence remains unresolved. Its contribution is practical: investigators can compare contributors within one bounded workflow while referring back to the already defined authority, adoption and dependency records.

The construction follows from observable institutional relations. First, identify a bounded proceeding and its legally constituted authority using the competence record. Second, reconstruct which contributor performed each consequential function using procedural files and legitimately available technical and administrative evidence. Third, attach the legally applicable duty or restriction to the relevant role, rather than inferring duties from mere technical causation. Fourth, examine whether an authorized officeholder adopted the decisive propositions, with which documented checks and reasons. Fifth, identify possible challenges and remedies without presuming that a grievance succeeds. Finally, mark missing documentation and unresolved rival causal explanations. This method deliberately permits incomplete records; confidentiality, missing logs, and uncertainties about actual software use must be stated rather than filled with inferred details.

The supplementary matrix is useful only to the extent that assignments across contributors cannot conveniently be recovered from the earlier adoption trace. Equation 5 follows a particular output into judicial reasoning; the role-by-function matrix follows the duties and authorized acts of *multiple contributors* through a common process. In a simple case with one accountable judge and an independently checked retrieval result, a full responsibility map may add little. In a complex case involving outsourced data processing, an expert model, platform maintenance, a drafting system, and judicial adoption, the map clarifies which institutional questions remain open. It neither allocates legal liability automatically nor proves that a court is independent or that its decision is correct. Its use is to discipline investigation and to make the limits of the proposed comparison explicit.

7.6 Comparative Configurations and Adversarial Counterexamples

Table 6 compares six configurations and the distinct source and verification questions raised by each. The examples represent architectures or legally described practices, not a universal ordering of safety or institutional legitimacy. In particular, the Spanish instruction is a real national institutional rule; the CEPEJ materials are nonbinding guidance; and the hypothetical configurations are research devices requiring separate legal authorization before possible adoption [5, 18].

Consider first a technically accurate model whose recommendations a judge adopts after reviewing the case file and verifying the governing law. The involvement of the model does not itself demonstrate that adjudicative authority was transferred. A second process may produce an identically worded order while the judge was prevented from accessing the underlying material and compelled by workload policy to approve machine-generated drafts. The outward decision may be identical, but the dependency and review records pose different institutional and legal questions. Conversely, even that second example

Table 6: Hybrid adjudicative configurations and their source-indexed responsibility questions

Configuration	Distribution of contribution and formal authority	Main verification question
Court with legal retrieval software	Software locates materials; authorized judge interprets and decides	Authentic sources, coverage limitations, relevance checks and actual adoption
Human judge with an independent scientific expert	Expert supplies technical opinion; court assesses its admissibility and weight	Reliability, fair challenge, source of expert duties and decisional reasons
Spain's regulated judicial AI assistance	Authorized systems aid judges under Instruction 2/2026; magistrates retain judicial decisions	Permitted system and use, personal critical validation and institutional auditing
Case-specific AI recommendation	Technical model proposes fact or law assessment; authorized human retains determination	Material influence, alternative views, ability to contest and demonstrable independent scrutiny
Vendor-operated court platform	External provider maintains systems while court directs legal procedures	Contractual duties, change control, logging, security and evidential availability
Prospective multi-stage human-AI tribunal	Several technical and human contributors construct candidate decisions; an authorized officeholder is proposed to adopt	Valid constitutive source, allocation of duties, review and compatibility with procedural rights

cannot be conclusively classified as unlawful without identifying the actual rules, evidence, and grounds of review. The contrast illustrates the evidential underdetermination of visible decisions and the need to examine both legally authorized roles and material possibilities for scrutiny.

A second pair concerns conflicting recommendations. A highly accurate model may disagree with a less accurate human expert. A legally competent tribunal should consider the admissibility, evidential basis, and reasons supporting each contribution according to its governing procedure; it cannot use the general statistical success of a model as an automatic replacement for the relevant legal standard. In another case, the human expert may introduce bias or an unsupported methodological claim while the model identifies an overlooked contradiction. Human involvement therefore provides no universal guarantee of epistemic quality. The question is whether the process affords adequate testing of both contributions and assigns their evaluation to the legally authorized adjudicator. Hybrid design can enlarge the available space of informed judgment, though its actual benefit requires empirical evaluation.

A third pair concerns error and responsibility. An administrator may approve a platform that omits a class of legal sources; a vendor may unknowingly ship a configuration that produces that omission; a judge may adopt a proposed citation after checking it against the authentic text and thereby correct the omission before judgment. In that instance, upstream risk need not become a defect of the judicial act, even if separate maintenance obligations exist. Alternatively, the omission may influence a legally material finding and remain undiscovered until an appeal. The causal pathway, institutional duties, procedural materiality and available remedies must then be investigated separately. Assignment of all responsibility to the visible signing judge could obscure upstream institutional obligations, while assignment of all responsibility to a technical supplier could obscure the lawfully constituted court's role. The role-by-function matrix is intended to preserve these distinctions without creating a further independent equation.

A final counterexample concerns formal transparency. Publishing every model input or judicial draft could appear to improve public scrutiny, but unrestricted publication may violate privacy, confidential court processes, or legally protected deliberations. A protective procedure that permits controlled inspection by an independent expert might offer a better legally acceptable balance in a particular order. Such arrangements can also be inadequate where the expert lacks time, resources, or authority to test the disputed proposition. An adequate inquiry therefore evaluates whose interests the information restriction protects, which alternative means of challenge are available, and how materially the restriction affects the right to a fair hearing. The result must remain contingent on governing law and evidence rather than

on a single generalized transparency ideal.

7.7 Generative Relational Interpretation and Limits of Hybrid Attribution

At the level of *ontological reality*, the present analysis suspends judgments about the ultimate nature of human deliberation, artificial consciousness, and the inner metaphysical status of a technically generated recommendation. The descriptions of legal office and legal responsibility refer to institutionally constituted positions within identifiable legal orders. The capacities of an artificial system may be investigated empirically, including its ability to generate and critique legal reasons. Neither its linguistic fluency nor its measured task performance resolves whether it possesses consciousness or an independent juridical authority. The inquiry also avoids assuming that the metaphysical status of every participant must be decided before lawful procedural responsibilities can be assigned to human officeholders and organizations.

At the level of *relational reality*, hybrid adjudication is a historically developing configuration of people, offices, rights, norms, systems, data infrastructures, procurement relations, and practical dependencies. Adjudicative authority is sustained through appointments, institutional practices, review channels, legitimate enforcement arrangements and public expectations. New technical systems can reorganize how expertise is accessed, how disputes are presented, which information becomes salient, and which actors can correct errors. These effects interact with the legal constitution of courts and with asymmetric material power over software and data. A change in technical infrastructure may strengthen access, increase dependence, or do both under different conditions. The relational perspective treats these potential outcomes as objects of evidence-guided investigation. It does not infer institutional capture merely from an external contract, nor infer justice from technological efficiency.

At the level of *manifestation reality*, the relevant structure appears through orders, reasons, hearing records, expert reports, software documentation, logs, procurement terms, challenge proceedings, and available empirical observations. Each manifestation provides a partial, institutionally filtered view. A final judgment does not disclose every draft considered; an audit log need not show the substantive quality of human attention; a vendor's system card does not identify every use in a particular case. The source-indexed responsibility map preserves those gaps and supports comparison where source material permits. It also records limits on evidence collection required by privacy, privilege, judicial independence or security. Manifestation is therefore the empirical entry point to relations, not a claim to exhaustive access to them.

The practical implication is a qualified model of responsibility within authorized hybrid institutions. Courts and regulators can specify purposes, assign tasks, require verification proportionate to their legal significance, establish safe processes for expert challenge, and maintain review or correction channels. The precise obligations depend on applicable law and legally legitimate reform processes. A proposed improvement should be tested against difficult cases involving confidential evidence, contested expertise, limited judicial resources, and failures of technical providers; consultation with affected parties and empirical monitoring may reveal additional limitations. These steps neither substitute for the independence and fairness guarantees already applicable to human litigants nor make every dependency legally suspect.

Section 8 will consider a different institutional possibility: whether an imagined future legal system might assign an artificial system an autonomous adjudicative office and what constitutive, independence, and review conditions such a proposal would face. The current section establishes the boundary for that investigation. Hybrid assistance ordinarily operates through legally recognized human adjudicators and distributed supporting contributions; a hypothetical artificial office requires a separately valid source of delegation or constitution and cannot be inferred from effective technical participation. The resulting separation permits a sustained inquiry into both the benefits and risks of heterogeneous intelligence while maintaining juridical accountability as a source-governed and contestable relationship.

8 Autonomous Artificial Adjudicators and Delegation Conditions

The possible constitution of an autonomous artificial adjudicator raises a question of public authority that differs from the institutional use of artificial intelligence as an instrument of judicial assistance. The objective of this section is to identify the legal and relational conditions that would have to be investigated before an artificial system could plausibly occupy an adjudicative office, and to identify the circumstances in which a proposal should be suspended. The argument proceeds through a functional distinction between autonomy and office, a source-specific analysis of constitution and delegation, an examination of institutional independence and contestation, a limited formal research screen, and comparative counterexamples. The method combines positive-law interpretation with explicitly prospective institutional design. The resulting construction is an analytical proposal within Generative Relational (GR) theory. It is not a claim that existing law recognizes autonomous artificial judges or that legal competence follows from computational ability.

Two separations organize the inquiry. An artificial system can produce a conclusion without being an authority empowered to adopt it; a system might also receive a future legal mandate without becoming metaphysically autonomous, conscious, or morally responsible. In the first case, the legal question concerns reliance on technical assistance, already considered in Sections 6 and 7. In the second case, the law would need to identify the office, holder, manner of constitution, procedural constraints, potential consequences, and effective routes of challenge. The latter possibility must also confront existing human rights protections owed to parties appearing before courts. The paper treats their protection as an independent constraint, not as an engineering preference to be traded against a higher score on a benchmark.

8.1 Functional Autonomy and the Juridical Office

The term *autonomous* can refer to several characteristics that should be distinguished before asking whether autonomy can support legal authority. A system may select computational steps without a continuous instruction stream; adapt a model to new information; generate reasons and orders; decide between legal outcomes; or initiate their implementation. Each describes a form of operational control. Juridical autonomy, in the narrower sense examined here, concerns the authority to issue a decision as the designated adjudicator of a competent legal order. The former characteristics may be present in an unauthorized research prototype. The latter depends on the law that purports to establish an adjudicative office and on the legally operative conditions of the particular case.

For analytical purposes, *artificial adjudicator* designates a proposed computational system whose independently issued determination is claimed to carry the legal effect of an act of an adjudicative office. A searchable library, an automated docketing system, a legal prediction service, or a draft-generating assistant is not thereby an artificial adjudicator. Likewise, the use of the label “AI judge” in promotional discourse supplies no juridical appointment. The stronger definition is deliberately demanding: if a legally empowered person must examine the full case and independently adopt every dispositive judgment, the arrangement continues to resemble the hybrid architecture of Section 7, even when computational assistance is pervasive. Institutional form should be established from sources and actual procedures, rather than from a product’s stated degree of autonomy.

The place of *office* in this account also differs from that of *legal personality*. Paper XIII distinguishes subjecthood, capacity, representation, responsibility, and standing [34]. A corporation may hold rights and obligations without exercising public judicial power; a natural person may possess full legal personality without appointment to judicial office. The possible creation of a limited artificial legal subject and the possible delegation of decisional authority are therefore separately contestable legal innovations. An artificial adjudicator might be modeled as a legally recognized officeholder, or as a tool of a legal institution to which an issuing power is ascribed. These designs distribute obligations and potential remedies differently. The analyst cannot infer either institutional arrangement from a generic statement that “AI has agency.”

An additional distinction concerns normative competence and causal influence. A software provider may select training data, alter inference parameters, determine access to a service, or control a deploy-

ment environment. Such acts can substantially influence outcomes without constituting a grant of legal competence. Conversely, a future statutory grant would not guarantee that the purported office acts independently from its provider. The two directions of mismatch explain why recognition, institutional control, and documentary manifestation must be investigated together. They also suggest that a putatively autonomous office could become practically dependent on more intermediaries than a conventional court.

8.2 Constitutive Sources, Delegation, and Institutional Limits

A proposal for autonomous artificial adjudication must begin with an identified legal order and an effective constitutive source. Under current positive law, such sources may take the form of constitutional provisions, statutes, treaties, rules governing recognized tribunals, or valid delegations within a defined institutional hierarchy. Their relevance is jurisdiction- and function-specific. The ICJ Statute, for example, provides an international tribunal with a defined composition, judicial qualifications, jurisdictional rules, and legally differentiated consequences of judgments [46]. The UNCITRAL Model Law describes a model of arbitration to be implemented through applicable domestic law, and arbitral authority in a particular case depends on the governing framework and valid agreement [52, 53]. Neither legal framework supplies an implied office for independently acting software.

The constitutional or statutory inquiry would have to identify the permissible type of officeholder, the body authorized to appoint or constitute it, the scope of delegated functions, qualifications, incompatibilities, duration, procedures for removal, and mechanisms for review. Where the legal order limits adjudicative power to judges appointed through specific procedures, substituting a computational artefact may conflict with those requirements even if a legislature wishes to encourage innovation. Article 47 of the EU Charter guarantees, within its field of application, an independent and impartial tribunal previously established by law [29]. The ECtHR’s Article 6 case-law assesses the legal basis of a tribunal and the lawfulness of its composition and appointments in a context-sensitive manner; the Court’s case-law guide is a synthesis of that jurisprudence rather than itself an operative judgment [23]. These safeguards supply grounds for constitutional and treaty-conformity scrutiny of a new institutional design. They do not amount to a judicial finding on a machine tribunal that has never been constituted.

Source fidelity requires attention to express national limitations. Spain’s General Council of the Judiciary Instruction 2/2026 provides for effective human control of judicial AI tools and rules out their autonomous substitution for judges in exercising judicial functions. It confines permitted systems to support or assistance under specified conditions, and assigns judicial responsibility to judges and magistrates within that national setting [5]. This is a concrete counterexample to the suggestion that the EU’s regulation of high-risk judicial AI systems itself authorizes their direct exercise of judicial office. The consolidated EU AI Act classifies certain systems intended to assist judicial authorities in factual or legal analysis within Annex III point 8(a), subject to its statutory conditions and phased application. Its classification, transparency, and oversight requirements are distinct from constituting courts; the relevant Chapter III provisions for Annex III high-risk systems are scheduled to apply from 2 December 2027 under the consolidation reviewed here [31]. A regulatory permission to place a conforming product on the market should not be read as a transfer of judicial sovereignty.

A privately constituted arbitration process presents a different, though still legally limited, possibility. Parties might agree to use automated evaluation and bind themselves contractually to particular outputs, depending on applicable law. Such an arrangement does not automatically satisfy the legal requirements for a recognized arbitral award, eliminate opportunities for setting aside an award, or provide coercive execution. Institutional classification depends on the legal status of the procedure and the act ultimately rendered. The distinction between a contractually agreed computational result and the public coercive judgment of a court is central when coercive measures might follow an erroneous classification. Describing both as “automated dispute resolution” can conceal separate sources of authority and protection.

8.3 Independence, Qualification, and Institutional Integrity

A hypothetical artificial office poses institutional integrity problems that cannot be answered through ordinary accuracy testing. The independence of a tribunal concerns, among other matters, its protection from improper external direction and the appearance of such dependence under applicable law. The UN Basic Principles on the Independence of the Judiciary and the Bangalore Principles provide relevant nonbinding institutional standards concerning judicial independence and conduct; they do not create a machine appointment pathway [49, 39]. For an artificial adjudicator, analogues of these questions would arise at the level of hardware supply, access to model weights, training, fine-tuning, update authorization, data ingestion, system prompts, inference infrastructure, monitoring, and operational continuity. The question is who can change, suspend, observe, or override the system, under what legal conditions, and with which procedures protecting adjudicative independence.

Distinct conflicts may emerge even where a vendor has no formally recognized right to influence judgments. A provider might also sell litigation-support services to one party, administer security updates that alter outcome distributions, or charge usage fees linked to case volume. Such facts can create dependencies that warrant conflict-of-interest investigation. They do not by themselves establish improper influence or bias: a court might lawfully procure neutral technical services with enforceable safeguards. A source-sensitive analysis therefore differentiates ordinary public procurement, legally controlled technical maintenance, material conflicts requiring disclosure, and unauthorized interference. This diagnostic approach is compatible with the epistemic-dependency analysis in Section 4; independence must be evaluated through particular mechanisms and evidence.

The legal significance of *qualification* would also require reconception if a legislature attempted to confer adjudicative office on a machine. Human qualifications typically involve legal education, experience, character, professional duties, an appointment procedure, and a status permitting discipline or removal. Proposed computational substitutes could involve performance across legal domains, ability to follow procedural changes, robustness across populations and languages, auditable reasoning traces, handling of incomplete evidence, and secure resistance to adversarial manipulation. These are relevant engineering and institutional design questions. None necessarily establishes a morally responsible judge or reproduces the constitutionally specified qualifications of an existing human judicial office. An institution purporting to substitute technical performance for statutory appointment criteria would first need a source-authorized basis to do so.

The temporal dimension intensifies the problem. Human judges may develop their views while remaining legally the same officeholder. A versioned machine may undergo weight replacement, policy changes, retrieval-index revision, hardware migration, or provider succession. Whether such a change amounts to maintenance of an officeholder, a new appointment, an alteration of delegated powers, or an impermissible substitution would depend on the prospective constitutive source. A research protocol should record version identity, functional changes, authorizing acts, affected pending cases, and transition remedies. Where continuity of the adjudicator cannot be demonstrated to the standard demanded by the governing law, prospective delegation would remain institutionally unstable. An audit trail may document a change, yet cannot authorize it.

8.4 Legal Reasons, Contestation, and Effective Remedies

The legitimacy of autonomous artificial judgment would turn substantially on whether parties can understand and challenge the legally consequential findings and on whether an institution possesses authority to correct them. A legal system's requirement to give reasons is generally more structured than an obligation to reveal software internals. It may require identifying the controlling sources, findings of fact, standards of proof, operative reasoning, disposition, and review opportunities, with different detail depending on the proceeding. Section 3 developed a legal-reason trace; it can be applied to a proposed artificial adjudicator only after the governing law determines what reasons and records the office is permitted or required to provide. The ability to generate fluent text cannot establish that the underlying factual assessment was accurate, that conflicting materials were considered, or that the text represents

the actual grounds of an authorized decision.

The institutional problem has at least three separable evidential layers. First, case-facing reasons and rulings must be susceptible to the review required by law. Second, technical provenance may be needed to determine whether the stated reasons were actually generated through the authorized process, with controls over model version, case material, deployment configuration, and intervention. Third, the parties' ability to contest the outcome depends on accessible procedures, legal representation or assistance when required, a competent reviewing institution, and remedies with meaningful legal effects. Full disclosure of proprietary details is neither automatically necessary nor automatically compatible with confidentiality, security, privilege, and privacy. The legal requirement is a source-defined and context-sensitive account of effective challenge, rather than a universal command to publish all software components.

For proposed artificial adjudication, a crucial question is whether review by a human or otherwise independent tribunal provides meaningful protection. Review might involve errors of law, factual sufficiency, procedural defects, apparent bias, or challenges to the appointment and operation of the system. Merely adding a button labelled "appeal" has little value where the reviewing body cannot obtain material records, cannot suspend harmful execution, or habitually defers to unexaminable outputs. Conversely, an independent, legally competent appellate body may mitigate identified defects without requiring the entire first-instance workflow to mimic every procedure of a conventional court. The scope of review, the burden of production, and available interim relief would have to be designed under the applicable legal order. Existing fair-trial guarantees remain applicable on their own terms and cannot be weakened merely because the trial forum is experimental [6, 47, 29].

A useful prospective governance comparator is the Council of Europe Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law, opened for signature in 2024. Its official explanatory materials emphasize transparency, remedies, procedural safeguards, and AI risk-and-impact assessment [7]. The official treaty-status chart consulted for this draft recorded entry-into-force conditions and did not display an entry-into-force date as of its September 2026 status [8]. The Convention is therefore used here as a normative and institutional design reference, subject to treaty status and applicability, rather than as an assertion of operative universal obligations or a source of independent judicial authority for software. Similarly, the CEPEJ's 2025 guidelines are governance recommendations, not constitutive laws [18]. Their relevance lies in the institutional questions they invite rather than any hypothetical competence they might confer.

Effective remedies must be matched to potential harms. For a civil dispute, correction, reconsideration, interim protection, damages, or annulment may be available subject to applicable law. For criminal matters, deprivation of liberty, erroneous conviction, detention conditions, and the difficulty of reversing inflicted harm create especially severe constraints. For a dispute between purported artificial legal subjects, one must additionally ask whether they possess standing to participate or receive a remedy under the relevant positive law, questions treated separately in Paper XIII [34]. Remedial design also cannot make technical vendors the default bearers of judicial responsibility solely because the system is commercially supplied; contractual, regulatory, public-law, and individual obligations require their own legal foundations. The availability of different remedies should not be compressed into a single technical metric of "human control."

8.5 A Source-Constrained Delegation Research Screen

The existing authority record in Equation 1 supplies the principal formal vocabulary: source, jurisdiction, office, procedure, decision, review, enforcement, and documentary manifestation. Repeating that record under a different title would add little explanatory power. A supplementary instrument is nevertheless useful for the narrower task of deciding whether an asserted artificial appointment deserves further legal analysis or should be suspended at an earlier stage. The proposed *delegation research screen* is a classification of the researcher's presently substantiated claims, rather than an algorithm for adjudicating validity. Let ℓ denote the identified legal order, t a legally relevant date, m a proposed artificial

officeholder, and c the proposed class of decisions. The screen is stated in Equation 6.

$$\mathcal{T}_{\ell,t}(m, c) = \begin{cases} \text{barred,} & \text{an applicable source prohibits the office or act;} \\ \text{unsubstantiated,} & \text{necessary authorization or safeguards lack proof;} \\ \text{reviewable,} & \text{grant and safeguards are documented for review.} \end{cases} \quad (6)$$

The ordering is deliberate. Where an applicable source expressly prohibits the proposed judicial substitution, a favorable technical audit cannot convert a barred proposal into a lawful one. Where the researcher lacks an adequate source or evidence of a necessary condition, the proposal is recorded as unsubstantiated, even if no express prohibition has yet been identified. The category reviewable indicates that a legal inquiry has enough material to proceed; it does not mean that the delegation is valid, desirable, immune from challenge, or capable of implementation. A later conflict of norms, defective appointment, constitutional constraint, or case-specific procedural failure may defeat a proposal that initially passed the screen. A legally sufficient conclusion would have to be reached within the governing legal system’s doctrines and competent institutions. The screen depends on their criteria and does not introduce a free-standing legal test.

This distinction has a methodological consequence. Evidence of improved performance in a complex legal task can inform an assessment of expertise, reliability, or utility; it does not change the screen’s source conditions. Conversely, valid constitution would not remove requirements of fair proceedings or license unsupervised execution. Each screen entry should be traceable to identifiable texts, dates, actors, case classes, and evidentiary materials and should preserve alternative readings. When the researcher’s evidence is partial, the appropriate status is unsubstantiated. The mechanism thereby guards against a frequent equivocation: treating technical feasibility, market compliance, or a policy recommendation as legally sufficient authorization. Its advantage is documentary discipline, while its principal limitation is that the meaning of “affirmatively excludes” or “required conditions” can itself be legally contested.

One might object that this screen prejudices innovative procedures by requiring present sources. The objection distinguishes two research stages. A reform proposal is appropriately evaluated for desirability, feasibility, and expected effects even when current law bars its implementation; it should be labelled proposed reform. The research screen, by contrast, is designed for *claims of current legal competence*. Keeping the stages separate protects conceptual openness while preserving fidelity to existing law. It also clarifies why a future legislature or international lawmaker could become an object of separate constitutional analysis without the present paper claiming that such authority already exists.

The research screen in Equation 6 classifies the evidential posture of an asserted delegation; it does not decide whether such an office would be constitutionally permissible or desirable. For example, a future statute explicitly purporting to create an artificial hearing officer may satisfy a preliminary inquiry into the existence of a legal text while remaining vulnerable to constitutional challenge, incompatible with particular procedural guarantees, or inapplicable to the claimant’s dispute. By contrast, a highly accurate model operating without any enabling source may yield helpful advice but supplies no juridical appointment through its performance. A third case involves an AI-based determination issued in an administrative workflow and made subject to full review before a separately constituted tribunal: the legal order must identify which initial act has legal effect, what review is genuinely available, and which public official is legally responsible. The difference among these cases is a difference in legal acts and institutional safeguards, not in a single scale of machine intelligence.

8.6 Comparative Delegation Configurations and Counterexamples

Table 7 contrasts six configurations that may appear similar from an engineering perspective while implicating different legal powers. It is designed to reveal where a claim of judicial autonomy is overstated, where existing law expressly restricts substitution, and where uncertainty about a prospective legal order must be preserved. The entries state analytical classifications rather than final judicial determinations about imagined implementations.

Table 7: Prospective artificial-adjudication configurations and source-dependent delegation issues

Configuration	Claimed or existing function	Source question	Institutional consequence
Spanish court using generative AI	AI drafts or retrieves under a judge's control	Instruction 2/2026 permits defined assistance and excludes autonomous judicial substitution	Judicial office and full responsibility remain with authorized judges
EU judicial high-risk tool	AI assists research or application of law within a court's workflow	AI Act classification and phased duties regulate system use; separate court law controls office	Regulatory conformity does not constitute an AI judge
Automated private settlement engine	Parties accept a calculated result through contract	Applicable agreement, contractual rules, and any arbitration law determine legal character	A binding private arrangement may lack tribunal status or public coercive power
Statutorily proposed AI hearing officer	Software is named as first-instance decision-maker in a hypothetical new law	Constitutional competence, permissible officeholder, appointment, due process, and review all require inquiry	Legislative designation alone may be legally insufficient
Provider-controlled AI tribunal	Deployed system issues purported final judgments without independent control safeguards	Conflicts, tampering, provenance, appointment, and independent review remain disputed	High technical accuracy cannot answer institutional dependence
Hypothetical inter-species or AI-AI forum	Artificial office adjudicates claims by differently recognized subjects	Subject status and standing plus forum authority require two independent legal foundations	Legal pluralism and unresolved recognition prevent presumptive validity

The first configuration is deliberately ordinary. An AI system may draft a legally polished proposal that the judge rejects after independent review. Such a result illustrates assistance without transfer of decisional authority. The same software might generate an output that is adopted through inadequate scrutiny. The latter problem concerns the quality of human supervision and potential breaches of source-specific judicial duties, not the sudden constitution of a new machine office. The Spanish instruction provides a particularly clear institutional limit on autonomous substitution [5]. The distinction avoids conflating the causes of an improper judgment with a theory that its actual juridical author has necessarily changed.

The second configuration illustrates the converse error. Because a judicially deployed AI tool falls within a regulatory regime for high-risk uses, one might infer that the legal order has accepted the system as a judge. The inference confuses the object of risk regulation with the bearer of public adjudicative office. A court may be both authorized to use a conforming instrument and forbidden to delegate final decisions to that instrument. Effective dates and intended use require careful verification under the applicable version of the AI Act [31]. In an actual procurement or deployment inquiry, additional national judicial, procedural, and data-protection provisions may also control.

The private settlement case reveals a different form of overclassification. If two sophisticated commercial parties agree to a formula for resolving an accounts dispute and perform the result voluntarily, they may have established a legally effective contractual mechanism. The mechanism need not thereby be a tribunal issuing a recognized arbitral award. The public enforcement consequences depend on the law of the relevant forum and any applicable recognition regime. A technologically impressive system can thus generate legally consequential results without ever holding public judicial office. This case

counsels against a general classification in which all binding algorithmic outputs count as “AI adjudication.”

The proposed statutory hearing officer is the strongest speculative case because it includes a purposive act of legal recognition. It still confronts constitutional design, existing guarantees, limits on delegation, appointment standards, procedures, appeal rights, and implementation authority. An AI system might perform a limited administrative determination whose full legal review is reserved to an independent human tribunal. Whether such a design would comply with a particular legal order depends on the nature of the decision, scope of review, and rights at stake. An administrative classification, an arbitral award, a civil judicial judgment, and a criminal conviction should be kept apart. These distinctions prevent a modest successful pilot in low-stakes processing from being cited as evidence for the legitimacy of autonomous criminal sentencing.

The provider-controlled tribunal illustrates that technical competence and institutional independence are different dimensions. An external administrator able to alter the system silently could affect judgments without holding judicial office. The proper response requires evidence of the modification authority, real access practices, technical dependencies, applicable procurement obligations, and available independent review. Security features and transparent contracts might mitigate some threats; a particular vendor relationship is not per se evidence of capture. The legal relevance of a detected dependency follows from the governing rules and the practical effects on affected parties, not from mere technological unfamiliarity.

The final configuration has two layers of speculation. A purported AI–AI dispute must first be situated in a legal order that recognizes the claimed juridical positions, or the dispute may be a contractual conflict between the human or organizational institutions responsible for the systems. A hypothetical alien or animal party may have procedural protections or representation only to the extent recognized by a source and legal order; human protections under treaties such as the CRPD operate under established human-rights obligations and must not be recast as speculative subject-status experiments [51, 34]. An independently constituted tribunal would then require its own legal foundation. The existence of a distinct type of claimant offers no logical warrant for relaxing the second requirement.

8.7 GR Reality Levels and Staged Research Obligations

The three levels of Generative Relational inquiry clarify both the promise and the limits of the proposed analysis. At the level of *ontological reality*, the ultimate status of consciousness, agency, and legal normativity remains suspended. The question whether an artificial system possesses inner experience has neither been resolved by contemporary judicial technology nor answered by the source-indexed formalism developed in this paper. A future legislature might use functional qualifications to constitute an office while retaining uncertainty about consciousness; the permissibility and effects of that act would remain subject to the jurisdiction’s legal and ethical constraints. Ontological suspension leaves substantive human-rights protections fully in place.

At the level of *relational reality*, the possible artificial judge is constituted through historically situated relations among legal institutions, parties, officeholders, software providers, technical infrastructure, public expectations, review bodies, and enforcement authorities. Delegation is a relation that changes who may issue decisions and whose acts may alter protected positions. It can also redistribute dependence: a new office may reduce routine burdens on judges yet increase the control exercised by technical vendors or data intermediaries. Changes in the wider institutional structure can feed back into the performance, legitimacy, and practical independence of the office. Such reciprocal conditions, rather than isolated competence scores, provide the distinctive GR object of inquiry.

At the level of *manifestation reality*, these institutional relations become accessible through constitutive laws, administrative decisions, appointment acts, model cards, version logs, hearing records, reasoned decisions, parties’ testimonies, appellate outcomes, and observed enforcement. A successful technical evaluation supplies a manifestation of performance on a defined task; an authenticated appointment record supplies evidence of an asserted legal act; a reasoned judgment may show how an office

purports to apply law. Their distinct evidential roles should be retained. No single artifact resolves institutional legitimacy, and a manifestly smooth workflow can conceal substantial exclusions of parties whose complaints never reach the official record.

A responsible research programme should proceed through stages with explicit suspension conditions. The first stage identifies the legal order, source hierarchy, and claims of permissible delegation. The second investigates substantive and procedural safeguards, including appointment, independence, accessible participation, meaningful reasons, and review. The third examines empirical risks within the actual domain, using representative and adversarial cases, disclosed uncertainties, and independent assessments. The fourth examines institution-wide consequences: concentration of technical power, costs of contestation, incentives to automate judgment, remedies for injured parties, and capacity to discontinue or reverse a harmful deployment. The fifth records the limits of available evidence and articulates conditions for suspension, reauthorization, or reform. These stages are research obligations proposed here, not a claim that existing law has enacted this particular sequence.

Several proposed stopping conditions are especially significant. A credible finding of prohibited delegation requires withdrawal from the claim of current authority. An inability to provide the procedural guarantees owed in the relevant case warrants withholding deployment; an inability to secure independent review or to prevent unauthorized modification warrants further institutional scrutiny; and disproportionate or irreversible consequences may justify limiting inquiry to nonbinding research or simulations. Prospective studies should include affected people, legal practitioners, civil-society participants, and competent public institutions; consultation alone does not confer legal authority or waive fundamental rights. A legal reform could be reconsidered in the future as knowledge improves, but a speculative future possibility provides no present authorization to exercise judicial coercion.

The outcome of this section is consequently bounded. An autonomous artificial adjudicator is conceptually describable as a proposed legally constituted office, yet existing source-specific rules place significant limits on the substitution of machines for judges. The lawfulness of any future institutional design would depend on its constitutive legal order, the protections of affected parties, and the authorized institutions that can review and enforce decisions. Computational intelligence may be an important input to the design and evaluation of these arrangements. The source-constrained analysis preserves a separate question: whether a society, acting through legitimate procedures and within applicable legal limits, should ever create such an office. Sections 9–14 will extend the inquiry to heterogeneous party participation, evidential contestation, sanctioning, plural jurisdictions, institutional power, and research safeguards without prejudging the answer.

9 Procedural Relations with Heterogeneous Legal Subjects

The participation of a legally affected subject in adjudication is constituted through several institutional relations: the recognition of a relevant position, the authority to initiate or join proceedings, the means by which information and claims can be communicated, the status of a representative, and the legal consequences of a decision. This section develops a differentiated account of those relations for disputes involving persons with distinct communication needs, children, organizations, legally recognized natural entities, and hypothetical artificial or extraterrestrial parties. Its objective is to examine the interface through which a subject becomes procedurally present without presuming that all recognized positions carry identical rights of audience or forms of agency. The method combines source-specific interpretation, comparative institutional analysis, and a limited Generative Relational (GR) reconstruction. Human rights already protected by treaty remain governing constraints within their fields of application; proposals concerning presently unrecognized subjects are explicitly prospective.

A central thesis of the section is that *procedural voice* designates a family of legally situated relations, rather than a sensory or computational capacity abstracted from a legal order. An entity might communicate extensively yet lack standing to sue; a represented legal person might exercise recognized legal positions without producing communicative outputs by itself; and a human rights-holder might require communication support while retaining equal legal agency. Legal participation therefore requires an

account of who is affected, which procedures are available, how an account is presented, and who may contest its exclusion. The authority to judge, already analyzed in Section 2, is relationally conditioned by the legal capacity of parties to appear, respond, and obtain appropriate review. The operative standards remain those of the legal sources applicable to the particular forum.

9.1 Procedural Position, Standing, and Forms of Voice

Procedural position is a legally recognized location within a proceeding: claimant, defendant, accused person, victim, witness, intervener, representative, applicant for review, or another status provided by the governing law. The assignment of such a position may affect notice, disclosure, evidential burdens, admissible submissions, oral participation, and remedies. These consequences vary by procedural system and subject matter. For example, Article 14 of the International Covenant on Civil and Political Rights (ICCPR) gives specified fair-trial protections in its civil and criminal domains, and Article 6 of the European Convention on Human Rights (ECHR) governs the determination of civil rights and obligations or criminal charges within the Convention's scope [47, 6]. The source of a procedural guarantee must therefore be identified before a general theory treats that guarantee as legally operative.

Three relations merit particular separation. *Being affected* is a factual and legal characterization of how a proceeding might change someone's interests or positions. *Having standing* concerns the source-specific entitlement to initiate or participate in a defined procedure. *Being heard* concerns an opportunity to present views, evidence, or arguments according to the applicable process. An affected individual may be consulted without becoming a party; an organization may litigate where statute recognizes its claim despite the absence of an individually owned environmental interest; and a criminal defendant may enjoy robust hearing rights because of the legal characterization of the charge. The same vocabulary of "voice" can obscure those differences unless its referent is specified.

Representation forms a fourth relation. A lawyer's professional advocacy, a child's participation through a representative, assistance given to a person exercising legal capacity, and an office constituted to speak for a statutory legal person arise from different authorities. Each requires an inquiry into who appoints the representative, the extent of the mandate, the represented subject's opportunity to direct or challenge it where applicable, conflicts of interest, and the effects of acts purportedly undertaken on that subject's behalf. Thus, while the procedure may involve a single document bearing a representative's signature, the underlying juridical act may require several independent conditions of validity. Paper XIII's separation of protected interests, legal capacity, procedural standing and responsibility supplies an analytical background [34]; the present paper asks how adjudicative institutions organize those positions in operation.

Institutional design has distributive consequences. Rules requiring legal representation can facilitate knowledgeable advocacy while increasing dependence on professionals; permissive intervention procedures can broaden public oversight yet create additional demands on courts; technical interfaces can make submissions more convenient while excluding persons who cannot use the designated format. Whether a burden is permissible depends on its legal basis, justification, actual effects, and available alternatives. The GR perspective treats these dependencies as part of the object of adjudicative governance, while the applicable law determines which dependencies are legally acceptable or require correction.

9.2 Disability Equality, Legal Capacity, and Procedural Accommodation

The Convention on the Rights of Persons with Disabilities (CRPD) establishes a particularly important set of existing rights. Article 13 obliges States Parties to ensure effective access to justice for persons with disabilities on an equal basis with others, including through procedural and age-appropriate accommodations facilitating their effective role as direct and indirect participants, including witnesses; it also calls for appropriate training of personnel working in the administration of justice [51]. Article 12 separately requires recognition of legal capacity on an equal basis and access to support that persons with disabilities may require in exercising that capacity. The CRPD Committee's General Comment No. 1 interprets legal standing and legal agency as dimensions of legal capacity, emphasizes will and preferences,

and criticizes substitute decision-making regimes that displace them [3]. The Committee’s interpretation and the Convention text must be distinguished as separate kinds of legal authority.

These obligations have direct implications for the vocabulary of heterogeneity. Different modes of communication, cognition, movement, and sensory access are characteristics relevant to the provision of accommodations; they do not establish a presumptive diminution of personhood or legal agency. A sign-language interpretation service, a supported means of giving instructions, alternative document formats, a modified hearing environment, or additional time to respond can contribute to effective participation without relocating authorship of the person’s will to an intermediary. The procedural task is to make a legally protected position exercisable through appropriate support. Assigning the individual’s substantive choice to another actor merely because ordinary courtroom communication is difficult would raise a separate and potentially serious question under Article 12.

Participation is also temporally extended. An individual may need assistance to receive notice, consult counsel, understand and challenge evidence, communicate during hearings, review reasons, and pursue remedies. If an accommodation is provided at the final hearing only, earlier inaccessible disclosure or an unusable appeals interface may have already impeded the exercise of rights. In an AI-assisted court, the ability to enter text in a standard interface is a narrow indicator of system usability; it supplies limited evidence concerning whether the full procedural relation is accessible. A party may use a human supporter or an accessible technological tool, but the legal authority governing the proceeding continues to determine whether the resulting participation satisfies applicable safeguards.

An especially important counterexample concerns the meaning of *human representation*. Human assistance may serve a person’s own legally protected decision-making. It can also become a channel for filtering or replacing that person’s expressed wishes. The two arrangements have materially different consequences even if each is described administratively as a support service. A proper inquiry records the source of the representative’s or supporter’s authority, evidence of the person’s will and preferences, communication alternatives explored, the mechanism for raising a complaint about undue influence, and the possibility of independent review. This scrutiny reflects the CRPD Committee’s interpretive emphasis on support and safeguards [3]. No speculative analogy with artificial intelligence is needed to establish the independently applicable human-rights obligations.

9.3 Children’s Participation and Legally Mediated Expression

The Convention on the Rights of the Child (CRC) provides a distinct normative and procedural setting. Article 12 recognizes the right of a child capable of forming views to express those views freely in matters affecting the child and requires that the views receive due weight according to age and maturity. For judicial and administrative proceedings affecting the child, it provides an opportunity to be heard directly or through a representative or appropriate body, in a manner consistent with national procedural rules [50]. The Convention’s formulation combines the child’s status as a rights-holder with procedurally specified modes of expression. The legal analysis must preserve both the possibility of direct participation and the functions of appropriate representation.

A representative’s involvement cannot be treated as evidence that the child’s own account has been obtained. A legal guardian, appointed advocate, parent, and professional expert might supply different statements about the same underlying event. Those statements have different provenance and institutional purposes. Some may report the child’s views, others may express the adult’s assessment of interests, and others may explain developmental or practical circumstances. A tribunal should distinguish those contributions within the controlling procedure, including when the child declines or is unable to express a view. This is an analytical requirement proposed here for source-sensitive reasoning; the particular obligations of a court depend on applicable law and the facts of the case.

The distinction between *opportunity* and *extraction* matters. Creating a safe and accessible route to express views does not warrant compelling a child to provide testimony whenever adults consider testimony useful. A hearing may need privacy protections, trauma-sensitive procedures, interpretation, assistance from qualified professionals, or limits on repetitive questioning. The appropriate arrangement

differs between, for example, a family proceeding, a child-protection determination, and a criminal case involving a child. The CRC provides a treaty framework; procedural entitlements, criminal protections, evidentiary restrictions, and remedies must be specified through the relevant additional law rather than mechanically generalized across those domains [50].

A heterogeneous-subject framework may learn from the analytical separation between participant, speaker, representative, and tribunal. It cannot legitimately infer that children occupy an intermediate place on an alleged continuum between humans and speculative artificial subjects. The CRC operates from the child's human-rights status and the particular protective obligations associated with childhood. Any hypothetical nonhuman procedural regime would require its own justification and constitutive sources. The comparison is methodological: it shows that recognized rights and procedurally mediated expression can coexist, and that a legal process may recognize several channels through which information about the same subject enters the record.

9.4 Statutory Persons, Collective Advocacy, and Authorized Representatives

Institutions also authorize participation by subjects that cannot themselves speak in an ordinary courtroom sense. New Zealand's Te Awa Tupua (Whanganui River Claims Settlement) Act 2017 declares Te Awa Tupua a legal person in section 14 and establishes Te Pou Tupua as the human face that acts in the name of Te Awa Tupua under sections 18–20 [42]. The statute allocates legally recognizable powers and duties through specific offices and a historically situated settlement. Its juridical design is meaningful precisely because recognition, representative mandate, and subject matter are specified. A legal personality declaration should not be interpreted as unrestricted permission for every form of litigation, nor should the river's statutory position be reduced to a generic environmental metaphor.

The relationship between Te Awa Tupua and Te Pou Tupua is consequently neither equivalent to an individual litigant instructing counsel nor interchangeable with an expert's testimony about ecological conditions. Te Pou Tupua has a statutory mandate to act and speak on behalf of a designated legal person. Ecologists, local communities, public authorities and other participants may provide evidence or articulate interests without thereby acquiring that particular mandate. Possible disputes over whose evidence is accepted, how the statutory purpose is interpreted, or whether the office is acting within its powers require examination under the law establishing and governing the framework. Legal representation identifies a legally structured authority relationship; it does not guarantee that all relevant ecological, cultural and historical perspectives have already been adequately considered.

Public-interest litigation offers a different structure. Article 11 of Directive 2011/92/EU, within the directive's environmental-impact-assessment field, requires Member States to provide access to review procedures for members of the public concerned meeting specified conditions. It treats a qualifying environmental non-governmental organization's interest as sufficient for the relevant standing requirement and recognizes a corresponding route where impairment of a right is used as a condition of review [25]. Such NGO standing depends on the directive's subject matter and national implementation. It does not itself constitute a represented ecosystem as a legal person, and an NGO appearing on an environmental issue need not purport to speak as a river's statutory organ.

These two arrangements reveal a difference frequently concealed by expressions such as "the environment has a voice." One arrangement identifies an entity as a legal person and constitutes a specific office for its representation; the other defines conditions under which an organization may seek review of decisions affecting an environmental subject matter. Both can increase opportunities for challenge, yet they allocate competence, duties and procedural remedies differently. An adequate comparative account must track the source of standing, the object of representation or public-interest review, the scope of authorized acts, the forum's powers, and possibilities for other affected persons to participate. The legal interests of Indigenous communities also require their own source-specific consideration; a statutory natural-entity framework should never erase the distinct rights, histories, and institutional positions of those communities.

9.5 Communication Interfaces and Hypothetical Nonhuman Parties

Communication between a party and a tribunal involves translation across practical interfaces: language, technical formats, human representation, professional expertise, institutional records, and the procedures by which assertions are accepted or challenged. For a recognized human party, the requirement is to determine which safeguards the governing legal system makes applicable and to provide them in an effective form. For a legal organization or statutory person, the inquiry focuses additionally on the chain of authority linking the represented subject and the person appearing before the tribunal. A court's decision may be materially influenced by intermediaries while the legality of those intermediaries' acts remains open to examination. Section 4 addresses the epistemic side of this relation, and Section 7 its institutional responsibility structure.

An artificial system that generates apparently sophisticated legal submissions presents a distinct question. The capacity to produce a persuasive argument is evidence of communicative performance within a particular setting, not independent evidence of legal standing, personhood, or the right to appoint counsel. In existing AI-assisted proceedings, communications may originate from a lawyer, litigant, corporation, administrative body, or other legally authorized actor using the system as a tool. A tribunal can attribute the submission to that actor according to applicable law while separately examining the reliability, provenance and permissible use of the output. Recognizing a future artificial legal subject or party would require positive legal changes and a defensible specification of whether its apparent preferences, legally relevant interests, representative arrangements, and responsibility can be identified. The EU AI Act's regulation of certain judicial assistance systems is a regulatory regime for technology and related actors; it supplies no general grant of standing to the systems themselves [31].

Hypothetical encounters with extraterrestrial subjects intensify epistemic uncertainty. Communication might occur through a human interpreter, an AI translation intermediary, delayed signals, or representations supplied by a third party. Even when the resulting exchange appears coherent, uncertainty may persist concerning the identity of the speaker, whether the translator modifies the message, whether the entity authorizes the communication, and whether the expressed position is stable across contexts. The analytical obligation is to separate such uncertainty from any independently existing duty to protect human participants, and from the legal question whether a relevant legal order has constituted a procedure concerning the other subject. A research protocol might document competing interpretations, reversible decisions and independent expert challenges. Such proposals do not establish the existence of extraterrestrial legal subjects or authorize actual adjudication over them.

The modes of translation can also shape substantive outcomes. The selection of categories, standard form fields, deadlines, mandatory identities and data formats may privilege claims that fit administrative expectations. A system designed for ordinary human text may register silence where a different communication method is available; another system may mistake a model-generated explanation for an authentic statement of a legally represented entity. These possibilities motivate traceable records of how procedural claims move between communicative modes and legal authorities. They also require recognition that confidentiality, protection from coercion, and competent interpretation can justify restrictions on full technical transparency in particular cases. Procedural access should be evaluated as a lawful and contestable relationship, with due regard to other participants' rights, rather than as a demand that every internal computation be disclosed in every proceeding.

9.6 A Source-Indexed Procedural Participation Record

The preceding distinctions motivate a limited documentary representation of participation that connects with the authority and reason records of Sections 2 and 3. Let a *case* c denote a specified proceeding before a forum F_c ; let S_c denote the asserted affected subject, P_c the procedural position claimed for that subject, and L_c the applicable legal sources identified by the analyst. Let V_c denote channels for communication or expression, including documented accommodations, and R_c the representative or supporter and the asserted source of that actor's authority, if any. Let E_c be evidence concerning identity, authorization and participation; G_c the operative safeguards and access restrictions; Q_c the available challenge

or review procedures; and U_c a record of material uncertainty. Equation 7 defines the analytical record.

$$\mathcal{P}(c) = (F_c, S_c, P_c, L_c, V_c, R_c, E_c, G_c, Q_c, U_c). \quad (7)$$

The ten entries in Equation 7 are *typed fields* in a research dossier, rather than independent or commensurable numerical variables. The forum and legal sources determine the admissible procedural positions; the subject is distinguished from whoever speaks on its behalf; communicative channels are distinguished from evidence that a communication was validly attributed; and remedies are distinguished from the fact that a party has attempted to obtain them. A blank entry need not imply the absence of a right: it may indicate that the relevant authority or evidence has not yet been identified. Conversely, the presence of a detailed record of model-generated statements does not supply a missing juridical grant of standing. The structure therefore has an intentionally modest role: it exposes which links in an asserted procedural participation claim require legal or evidential justification.

The record supports comparisons and transitions without producing a numerical rank of legitimacy. Consider a party whose submission reaches a court through an interpreter. The asserted legal position may be stable while the relevant uncertainty concerns accurate translation; a tribunal may address the uncertainty through verification, an alternative interpreter, a recorded objection, or review. Consider an organization alleging a right to intervene. Extensive technical expertise might address its evidential contribution, yet the source of legal standing may remain unresolved. A statutory representative of a natural entity presents a further configuration: the representative's formal appointment may be clear while the proposed claim is outside the office's delegated remit. Treating these cases as distinct failure or investigation modes avoids attributing juridical meaning to a generalized measure of "participation quality."

The dossier is a conceptual aid, not a new rule of admissibility, capacity, standing or procedural fairness. It requires interpretation of applicable law by competent legal actors and appropriate protection of sensitive or privileged material. In research involving prospective nonhuman subjects, the analyst should mark the relevant fields as *hypothetical* or *unestablished* and avoid using a filled technical interface as evidence of recognized legal subjecthood. The requirements for any deployment of such a dossier would include source maintenance, restrictions on access, handling of contradictory evidence, and explicit processes for affected participants to correct inaccuracies. These proposed practices operationalize traceability while leaving procedural validity for the competent institution to decide.

The availability of a communication channel should be tested separately from an institution's authority to attribute legal effect to the resulting submission. A person with a disability may possess full legal capacity and established rights of access to justice while encountering an inaccessible filing interface; the defect then concerns implementation of existing protections, not a speculative question about personhood. A statutory representative of a natural entity may be permitted to speak within a legally defined remit while lacking authority to make a different kind of concession. An artificial system may generate coherent pleadings in a dispute, while the applicable forum recognizes the legal interests of the human or organizational entities deploying it rather than the system itself. The documentary account should record whose legal position is involved, who communicated, under which authorization, and which procedural consequence is claimed. This differentiation avoids converting linguistic performance into legal standing or treating human accessibility failures as hypothetical future issues.

9.7 Comparative Configurations, Counterexamples, and GR Reality Levels

Table 8 compares six configurations to test the usefulness and limits of the documentary record. The comparison is organized by the source of the procedural position, the authorized channel of participation, and the contested question that remains. The cases are selected for institutional diversity; they are neither equivalent moral categories nor points on a scale of legal or cognitive development.

The configurations yield several counterexamples. A person with disabilities who communicates through a supporter may be fully entitled to direct the exercise of legal capacity, while a fluent AI-generated pleading might have no separately recognized filer. A statutory legal person represented by an

Table 8: Procedural configurations, juridical sources and questions requiring separate assessment.

Configuration	Governing basis	Participation channel	Principal question to verify
Person with disability	CRPD Arts. 12–13 and applicable procedural law	Direct participation with appropriate support and accommodations	Effective access and respect for legal agency and preferences
Child affected by a proceeding	CRC Art. 12 and national procedure	Direct hearing or authorized representative or appropriate body	Whether the opportunity to express views and their due weight are secured
Te Awa Tupua	2017 New Zealand Act and applicable forum law	Statutory Te Pou Tupua office	Scope of mandate, claim and procedural authority
Environmental NGO	EIA Directive Art. 11 in its field and national law	Qualified organizational review application	Compliance with subject-matter and standing conditions
AI-generated court submission	Applicable rules governing submitting human or organization	Legally responsible filer using an AI system	Attribution, provenance and verification of the submitted claim
Hypothetical extraterrestrial participant	As-yet unidentified constitutive legal source	Proposed interpreter or representative	Legal position, identity, authorization and reliable communication remain open

office may possess recognizable legal positions without manifesting the kind of speech that conventional human hearings presuppose. An environmental NGO may receive standing by satisfying statutory conditions without being the representative organ of a river. A child may have a right to be heard without acquiring every procedural power of a civil litigant. Each counterexample defeats a simple inference from communicative fluency to legal status, or from legal status to identical procedural incidents.

A further adverse case arises where procedural openness itself conflicts with other protected interests. A tribunal may have duties concerning safety, confidentiality, protected evidence, child welfare, and the rights of other parties. These duties can constrain public disclosure or methods of examining evidence while procedural fairness requires an effective, source-compliant opportunity to contest consequential claims. Whether a given restriction is permissible depends on the legal framework and the actual alternative procedures provided. Within the present analysis, transparency and participation are institutionally interdependent goals whose legal content must be established in context; neither operates as an abstract maxim that settles every procedural dispute.

The three GR reality levels clarify the scope of these observations. At the level of *ontological reality*, ultimate claims about consciousness, intrinsic identity and another being's subjective access remain suspended. A communication record cannot establish another subject's first-person experience; the absence of conventional communication cannot establish the absence of relevant moral interests. At the level of *relational reality*, procedural positions emerge and persist through historically constituted interactions among legal sources, represented subjects, institutional offices, professional actors, technologies and means of contestation. The relations among these structures can change over time: a legal reform can reallocate standing, a new interpretation can change the accepted form of a submission, and a technical intermediary can alter which arguments reach judicial attention. At the level of *manifestation reality*, these relations become accessible through pleadings, appointment records, accessible communications, translated statements, hearing transcripts, decisions and review outcomes. Their evidentiary significance depends on the legal and institutional process that produces and interprets them.

This analysis suggests a research obligation for heterogeneous adjudication: every proposed participation arrangement should state whose legally relevant position is affected, which law establishes the claimed participation, through what authorized channel the subject enters the proceeding, and how erroneous exclusion or attribution may be challenged. For existing human rights-holders this inquiry should begin with their already binding protections; for statutory legal entities it should begin with the enactment and governing procedure; for speculative artificial and extraterrestrial subjects it should begin with explicit recognition of the missing legal and evidential foundations. A procedurally sophisticated interface can improve accessibility, but its political and legal value ultimately depends on the relations of accountability and contestation that sustain it. The next section examines evidential disclosure, explainability and adversarial challenge as a distinct and closely coupled dimension of that institutional structure.

10 Evidential Access, Explainability, and Adversarial Contestation

Adjudicative authority operates through institutions that select, receive, authenticate, interpret, and sometimes restrict information. The conditions under which a party may inspect or challenge that information are therefore integral to the exercise of judicial power. This section examines three closely related yet juridically distinct questions: which evidential materials may be obtained; what an institution or technical provider must explain about consequential information processing; and how an affected participant may contest the evidence and reasons on which a decision relies. The inquiry combines legal-source interpretation, comparison of procedural arrangements, and a limited Generative Relational (GR) reconstruction. It proceeds through the constitution of evidential objects, legal disclosure conditions, technical explanation, adversarial testing, a documentary model of challenge, and difficult comparative cases. The primary legal examples are European human-rights adjudication, United States federal civil procedure, and European data-protection law. Their requirements remain source-specific; proposals for artificial or extraterrestrial subjects are explicitly prospective.

The importance of these distinctions increases when judicial records incorporate information generated through complex or distributed technical processes. An algorithmic score may be produced by a vendor, supplied to a party, summarized in a report, interpreted by an expert, and eventually referred to by a judge. Each transfer can change what is accessible and what is contestable. A party may know the score without knowing which personal data produced it; a judge may have a technical report without receiving its training or validation records; and a provider may hold relevant material subject to legitimate confidentiality restrictions. The practical power to make an evidential proposition influential can thus be dispersed across actors whose legal roles are different. Sections 4, 6, and 9 respectively examined epistemic dependency, AI assistance, and the status of procedural participants. The present inquiry focuses on the legal and institutional routes by which evidential claims can be investigated and corrected.

10.1 Evidential Objects, Assertions, and Institutional Dependence

A useful starting point is to distinguish the *material* submitted or sought, the *proposition* for which it is offered, and the *inference* that the decision-maker is invited to draw. A digitally signed file may be authentic as a particular file and still contain an inaccurate factual assertion. A model output may faithfully reproduce the result of a specified computation and still be unreliable for a contested prediction. A witness may accurately report receiving a message without establishing that its named sender authored it. These distinctions matter because evidence can pass one legal or technical check while leaving other material questions open. The adjudicator's eventual reasons must identify which inferential steps are accepted under the applicable standards, and an affected participant's objection may target a different step from the one originally tested.

Consider a technical report used in a dispute about eligibility for benefits. Its raw inputs might include administrative records, historical labels, observations or estimates; a preprocessing system may derive features; a predictive model may produce a classification; a staff member may interpret that classification; and the court may review an administrative decision that relied upon it. Evidential access can concern any of these stages. The meaning of access depends on what the requester is legally entitled to seek and what specific issue the material bears upon. The mere existence of a causal or computational dependency does not make every upstream record discoverable. Conversely, a dispute that appears to concern a single output may require scrutiny of an upstream decision to exclude relevant data or apply an unvalidated inference. A relational analysis investigates the situated dependence among records, experts, institutions, and procedural permissions.

Evidential provenance is a particularly important dimension of this dependence. Relevant questions include who collected the underlying data, whether consent or another legal ground governed processing where applicable, how the data were changed, which software or model version was used, what human interventions occurred, and what records of those interventions remain. Some of these matters concern admissibility; others concern weight, reliability, fairness, or the substantive legality of processing. Their relevance varies with the governing proceeding. The analyst should therefore begin with a disputed legal

or factual proposition and trace only the evidential dependencies that can reasonably affect it, subject to source-specific limits.

For heterogeneous subjects, the available forms of evidence can also differ. A person using supported communication may offer an accessible account that requires interpretation or translation; an organization may act through authorized records and officeholders; the statutory representative of a natural entity may introduce ecological evidence within the scope of a legally constituted office; a proposed artificial subject might produce detailed computational logs without possessing recognized procedural standing. The question of *who is authorized to assert or challenge evidence* belongs to the procedural framework in Section 9. The present section asks which documents, observations, outputs, and transformations could justifiably bear on that participant's case, and through what legally available procedures they may be investigated.

10.2 Authentication, Reliability, and Digital Provenance

Authentication is one method through which legal processes manage uncertainty about evidential identity. Under United States Federal Rule of Evidence 901, the proponent ordinarily supplies evidence sufficient to support a finding that an item is what the proponent claims it to be. Rule 902 provides specified categories of self-authenticating evidence, including certification routes for certain electronic records and copied data. The rules operate within United States federal evidence procedure and do not establish a transnational authentication standard. In particular, a certificate supporting an item's asserted origin or faithful copying should not be construed as a judicial finding that all propositions contained in that item are true [59].

The distinction becomes especially salient for generated and transformed material. A cryptographic hash can help document that a file has remained unchanged relative to a previously recorded value. Such integrity information establishes neither the accuracy of the underlying observations nor the legitimacy of the process by which the file was created. A machine-readable audit trail may reveal an invocation time, user credentials, model identifier, prompt, external retrieval record, and output; some systems may retain less information or none at all. Whether a log is complete, tamper-resistant, or produced by an actor with an interest in the dispute requires separate inquiry. An adversarial challenge may consequently concern both the integrity of the proffered record and the adequacy of the system that generated it.

Where statistical or machine-learning evidence is used, reliability questions extend to training data, population shift, class definitions, missingness, measurement error, choice of decision threshold, and calibration in the legally relevant population. A population-level performance summary may be probative of certain questions, yet a disputed individual outcome often requires context-specific analysis. The opposing party may contest the model's assigned task, the provenance of a particular input, or the inference drawn from the output even when the underlying computation is reproducible. The mere ability to replay a model does not show that its target concept corresponds to an applicable legal test. The preceding analysis of epistemic dependence in Section 4 supplies a complementary framework for these issues.

Technical provenance also has an allocation-of-power dimension. An institution may rely on records stored under a private provider's control, using proprietary interfaces and update schedules. A meaningful investigation may need records of version changes or error reports, while the provider may possess legitimate contractual, security, or intellectual-property interests. In some legal systems, procedural tools can mediate the resulting tension; in others, the claimant may have fewer investigative routes. A well-documented record should identify *which party controls which relevant material* rather than treating institutional possession, effective access, and legal entitlement as interchangeable. An assertion of authentication, however confident, remains narrower than a conclusion about the proper weight of the evidence.

10.3 Disclosure Duties, Protected Information, and Procedural Restrictions

Evidential disclosure concerns the conditions under which relevant information must be made available to a party or another authorized actor. Under Rule 26(b)(1) of the United States Federal Rules of Civil

Procedure, discovery generally concerns nonprivileged matter relevant to a party's claim or defense and proportional to the needs of the case. Rule 26(c) permits protective orders on specified grounds, while Rule 26(b)(5) addresses claims of privilege and protection for trial-preparation material. Such provisions exemplify a structured legal inquiry into relevance, necessity, burden, protected interests, and possible procedural management. Their operation depends on federal civil litigation and applicable judicial orders; they cannot be generalized to criminal disclosure or to the procedures of international courts [60].

European human-rights law provides another perspective. The European Court of Human Rights' guide to Article 6 in civil matters summarizes a jurisprudence in which adversarial proceedings ordinarily require an effective opportunity to know and comment on evidence put before a court. The guide emphasizes the significance of an opportunity to address the existence, content, and authenticity of the material, within an appropriate form and time. The guide itself is a synthesis of judgments rather than a source of new legislative obligations. Moreover, the rights protected by Article 6 must be assessed within the Convention's field of application and through the circumstances of a proceeding [22, 6].

Certain proceedings contain legitimate reasons for limiting disclosure. State security, personal privacy, trade secrets, professional secrecy, child protection, and the rights of third parties can each be relevant under an applicable legal source. Protection may be implemented through redaction, a confidentiality undertaking, restricted judicial access, independent expert review, a nonconfidential summary, or other procedures authorized in the relevant regime. These are possibilities for analysis, not universally sufficient remedies. Directive (EU) 2016/943, Article 9, for instance, addresses confidentiality of trade secrets during the particular legal proceedings within its scope; it does not provide a blanket entitlement to suppress any inconvenient evidence across all proceedings [27].

The Grand Chamber judgment in *Regner v. the Czech Republic* is instructive because the Court examined the fairness of review proceedings involving classified information unavailable to the applicant and his lawyer. The Court assessed the proceedings as a whole, including whether the restriction was sufficiently counterbalanced by procedural safeguards, and reached a finding of no violation on the case's specific facts. Its reasoning should neither be reduced to unrestricted acceptance of secret evidence nor transformed into a categorical disclosure rule. It illustrates why the adequacy of compensating procedures is a question of law and actual institutional practice, sensitive to the affected interests and the material's significance [20].

A further distinction concerns *public transparency* and *party access*. Rules governing what a court may consider, what an affected party may see, what a specialized reviewer may inspect, and what may be publicly disseminated can differ. In-camera scrutiny, for example, might permit an independent judge to evaluate a confidentiality claim while leaving an affected participant with less information to formulate a response. Whether that arrangement provides adequate fairness depends on the relevant legal safeguards and the substance of what remains contestable. Consequently, procedural restrictions should be described by their actual legal basis, affected information, responsible decision-maker, available alternatives, and means of review; treating opacity as either automatically legitimate or automatically unlawful would obscure the governing distinctions.

10.4 Computational Explanation and Legally Relevant Understanding

A computational explanation can serve several purposes: describing an algorithm's general operating principles, identifying the data and procedures used in a specific case, estimating feature influence, exhibiting an example with different inputs, or explaining how a technical recommendation entered an institutional decision. These outputs answer different questions. A local feature attribution may summarize a model's sensitivity without establishing why a court regarded the recommendation as legally persuasive. A plain-language description may be intelligible but inaccurate about the computation actually used. A complete code repository may be technically valuable while failing to identify the decisive factors in a particular administrative assessment. The legally important inquiry begins with the governing disclosure or reason-giving obligation and the dispute that the explanation is intended to illuminate.

The Court of Justice of the European Union’s judgment in *CK v Dun & Bradstreet Austria*, Case C-203/22, is relevant within its specific data-protection setting. Interpreting GDPR Article 15(1)(h) for covered automated decision-making, including profiling, the Court required intelligible information about the procedure and principles *actually applied* to the person’s data in producing a particular result. The judgment explained why simply communicating a complex algorithm or reciting every computational step can be insufficient to satisfy the requirement of meaningful information. Where third-party personal data or trade secrets are invoked, the controller must provide the allegedly protected information to the competent authority or court so that competing rights and interests can be balanced. The judgment does not establish a general right for all litigants to inspect all model weights, nor does its data-protection holding authorize courts to delegate judicial office to artificial systems [11].

The judgment should also be tested against a negative scope case: an AI-generated summary offered as one item in an ordinary civil trial is not, on that fact alone, a solely automated decision within the provisions interpreted by the Court. A request for the source materials or operation of that summary would have to be grounded in the procedural and data-protection rules actually applicable to the claimant and decision. Consequently, extending the judgment’s explanation standard to all court-assistance outputs would require an additional legal argument, rather than analogy alone [11].

The case helps distinguish *process explanation* from *decisional justification*. Process explanation concerns how input records and a technical method produced an output. Decisional justification concerns why the legally competent decision-maker accepted or rejected relevant facts and applied law to them. An account of a predictive system’s main parameters can improve a party’s ability to scrutinize the evidential claim, yet the legal decision may still depend on statutory interpretation, evidential burden, and the applicable standard of review. Conversely, a judicial statement that it considered the evidence can be substantively inadequate where the key basis of a decisive technical claim remains unexplained under the governing law. Judicial reasons and technical explanations are therefore coupled through use, influence, and contestation, while retaining distinct institutional sources and requirements.

A practical research distinction is between *explanation availability*, *explanation fidelity*, and *explanation usability*. Availability asks whether a person entitled under applicable law can obtain relevant information. Fidelity asks whether the account corresponds to the actual data, version and operations used. Usability asks whether the information can reasonably support the legal or factual challenge at issue. These dimensions should be assessed separately, with reasonable accommodations where governing rules require them. An intelligible description of a model’s general design may be useful for public awareness yet leave a critical factual discrepancy unresolved; a highly technical record may prove accurate but inaccessible to an unassisted participant. The needed form of explanation is determined by the person’s legal position and the disputed proposition, with recourse to experts or protected review procedures where law permits.

10.5 Adversarial Testing, Counterbalancing Safeguards, and Remedies

Adversarial contestation is a procedural relationship in which an affected participant may place a relevant legal or factual proposition in issue through an authorized channel and seek an institutionally consequential response. Its concrete form depends on the applicable proceeding. Contestation may involve questions to an expert, objections to authenticity, disclosure requests, disagreement with an inference, a request for judicial reasons, or review of an administrative or judicial determination. The ability to file a complaint says little by itself about whether the institution has a duty or practical capacity to examine the contested dependency. A research account therefore has to distinguish formal channels of objection, what the decision-maker can review, and which consequences a successful objection could produce.

Consider an AI-generated translation of a witness statement. The translation may be sufficiently intelligible for initial processing, while a disputed legal conclusion depends on a single technical term. Meaningful challenge may involve the original-language record, qualified interpretation, and an opportunity to correct a mistranslation. Full disclosure of the translation engine’s training corpus may have little bearing on that narrow dispute. Consider alternatively a proprietary system that determined which

documents were excluded from a tribunal’s search results. Access to only the documents returned may prevent scrutiny of a materially consequential omission; relevant logs or a reproducible search method could be more important than a broad exposition of model architecture. These cases illustrate why a challenge should be organized around the legally relevant inference and its practical dependencies.

Protected evidence presents a harder case. A party’s meaningful opportunity to respond may conflict with legitimate confidentiality or security obligations. Under some regimes, judicial review of withheld materials, appropriately qualified independent experts, restricted disclosure, or nonconfidential summaries can contribute to procedural safeguards; under other conditions such measures may be inadequate. *Regner* underscores the case-specific assessment of counterbalancing safeguards within Article 6 civil adjudication [20]. A comparative research scheme must make room both for a legally permitted restriction and for the possibility that the permitted restriction renders the remaining challenge ineffective in the circumstances. Institutional legitimacy cannot be inferred merely from the presence of a protective-order form, a human overseer, or an audit log.

Asymmetries of resources and technical knowledge also matter. A litigant may formally be permitted to request an expert examination yet lack funding, accessible documentation, or an effective opportunity to discover the model version used. The governing law may provide legal aid, court-appointed expertise, fee allocation or accommodations in defined circumstances; the existence and adequacy of such mechanisms must be established in each setting. A GR analysis accordingly tracks the relationship among evidential power, procedural access, material resources and institutional responsibility. It does not assume that every inequality is wrongful capture; the relevant question is whether the law’s safeguards and available procedures address the consequences of the particular dependence.

The relationship between a successful challenge and its remedy requires similar specificity. A court may exclude particular evidence, order more information, permit a renewed hearing, correct a record, set aside a decision, award relief, or remit an issue under applicable law. Some procedures provide little opportunity to re-open factual findings; others permit broader reconsideration. The analytically central distinction is between showing an irregularity, meeting the legal standard for relief, and obtaining an effective remedial order. These stages can remain separated even when the evidence of a technical error is strong. The questions of finality, appeal, and enforcement will be developed further in Sections 2 and the planned discussions of sanction ordering and inter-jurisdictional recognition.

An adversarial comparison sharpens the distinction between three forms of explanation. A court may receive a technically detailed account of a model’s architecture without obtaining a usable explanation of why a specific item of evidence was classified as decisive. A litigant may receive a concise account of the actual categories and operations responsible for a consequential automated profile while remaining unable to inspect protected source code. Finally, a full copy of a program may be disclosed, yet the party may lack the expertise or resources to test the legally material proposition. These differences matter when reading the CJEU’s interpretation of GDPR Article 15(1)(h) in *CK v Dun & Bradstreet Austria*: the judgment’s requirements concern meaningful information about covered automated decision-making under that provision and judicial or supervisory handling of claimed protected information; they do not announce a universal disclosure duty covering all code used in litigation [11]. Effective contestation depends upon the legal claim, the means of access, the competence of the reviewing institution, and the measures that the forum’s rules permit.

10.6 A Source-Indexed Evidential Contestation Record

The preceding analysis supports a focused documentary representation that complements the authority record of Section 2, the reason trace of Section 3, and the participation record of Section 9. The present record is indexed to a *contested proposition* q in proceeding c so that each element concerns a particular evidential issue rather than a whole legal system. Let $L_{c,q}$ denote the governing legal sources, $E_{c,q}$ the evidence and inferential dependencies used for the proposition, and $H_{c,q}$ the record of authentication, provenance and technical uncertainty. Let $A_{c,q}$ specify which relevant actors possess or control the evidence and the routes by which it may be requested; $X_{c,q}$ specify any asserted privilege, confidentiality

or other restriction and its legal source; and $K_{c,q}$ specify authorized counterbalancing procedures. Let $C_{c,q}$ denote the concrete form and status of contestation, $J_{c,q}$ the judicial treatment of the issue, $R_{c,q}$ the available remedies or review conditions, and $U_{c,q}$ remaining evidential or normative uncertainty. Equation 8 records these typed fields.

$$\mathcal{E}(c, q) = (L_{c,q}, E_{c,q}, H_{c,q}, A_{c,q}, X_{c,q}, K_{c,q}, C_{c,q}, J_{c,q}, R_{c,q}, U_{c,q}). \quad (8)$$

Equation 8 is a *research representation of documentary relations*, with entries interpreted under source-specific rules. The fields are neither commensurable scores nor a list of independently sufficient requirements for fair proceedings. Their purpose is to prevent one form of evidence from silently substituting for another. A record of reliable copying in $H_{c,q}$ cannot establish the correctness of the asserted inference in $E_{c,q}$; a disclosure restriction in $X_{c,q}$ cannot establish the adequacy of $K_{c,q}$; and a completed objection in $C_{c,q}$ cannot establish the availability or success of a remedy under $R_{c,q}$. A missing entry denotes a matter requiring further research, rather than a presumption that the corresponding right is absent. The analyst should state whether each entry is supported, disputed, legally inapplicable, or genuinely unknown.

The record allows investigators to compare distinct points of institutional dependence. In a dispute about an automated credit profile, relevant fields might concern which personal data and principles were actually used, the controller’s explanation, the claimed trade-secret restriction, the competent reviewing authority, and the data subject’s applicable GDPR remedy. In litigation involving electronic evidence, the issues may be identity of a digital exhibit, certification, the opponent’s opportunity to test a computational claim, and the court’s assessment of probative force. In a case with security-sensitive documents, the dispute might turn on the asserted confidentiality interest and the sufficiency of alternative review procedures. These comparisons isolate the actual controversy while resisting an imagined universal quantity called “transparency” or “contestability.”

A source-indexed dossier would itself create institutional obligations if deployed in a real adjudicative workflow. Records of party challenges may contain sensitive personal data, legal strategy, confidential reports, security information or information concerning a child. Any implementation would require clear access roles, retention rules, correction procedures, version histories, and auditability, grounded in the law that applies to that institution. Model-generated case summaries would require independent verification and careful distinction between a party’s allegation and a finding of fact. Within the present paper the scheme remains conceptual: it does not authorize disclosure, alter burdens of proof, determine admissibility, supply a new ground of appeal, or constitute a legal person.

10.7 Comparative Difficult Cases and Three GR Reality Levels

Table 9 compares six configurations. Its rows separate the material being contested, the legally situated route of inquiry, and the residual problem. It is designed to expose limits of translation across regimes and of treating computational opacity as the sole obstacle to procedural justice.

The comparison produces several counterexamples to simple claims about transparency. A party may access a model’s source code and still lack the input data needed to contest a particular prediction. Another party may receive an intelligible account of a credit profile and obtain a meaningful legal response without access to the complete algorithm. A certified record may remain factually inaccurate. A secrecy restriction may be lawful where the governing tribunal has adequate counterbalancing safeguards, while a nominally open proceeding can still be practically inaccessible to a person who cannot obtain required interpretation or technical assistance. Each case asks for a different specification of evidential material, legal position, and institutional response. Neither the volume of disclosed information nor the mere sophistication of an explanation settles procedural fairness.

Heterogeneous-subject scenarios sharpen the problem without eliminating existing legal distinctions. Consider an organization deploying an AI evidence-analysis system in litigation against a natural person. The organization and its officers occupy legal positions under existing law; the affected human claimant or defendant retains the protections applicable to that proceeding. The machine may generate

Table 9: Evidential contestation configurations and the distinct legal or institutional issues they raise.

Configuration	Contested evidential material	Possible source-governed avenue	Remaining question
US federal civil discovery	Relevant electronic records under another party's control	FRCP Rule 26 discovery, privilege assessment or protective order	Scope, proportionality and adequacy of authorized access
US federal digital exhibit	Authenticated electronic record or certified copy	Federal Rules of Evidence 901–902 in relevant proceedings	Whether record truth or inference survives substantive challenge
GDPR credit profiling	Information on data and procedures used for a particular score	GDPR Article 15(1)(h), as interpreted in <i>Dun & Bradstreet</i>	Meaningful explanation and lawful balancing of protected information
Civil proceedings with classified evidence	Security-restricted material relied upon by an authority	Applicable Article 6 safeguards and judicial review	Adequacy of counterbalancing procedures on the case's facts
AI-assisted judicial document review	Ranked, filtered or summarized court material	Applicable disclosure and fair-hearing rules; court-supervised verification	Access to excluded material, workflow provenance and relevant error
Hypothetical nonhuman litigant	Communication and evidence attributed to a proposed subject	Prospective recognition and authorized procedural design	Standing, attribution and relevant legal source presently unestablished

an evidential artifact or explanation, yet its technical expressiveness is not a source of judicial office or independent party standing. A legally recognized natural entity represented through statute presents a different configuration: evidential claims concerning ecological conditions may be advanced by its authorized representative, and the relevant form of contestation depends on the statutory mandate and the forum. A proposed extraterrestrial litigant raises still more basic questions about recognition, trustworthy communication, the attribution of purported statements, and the legitimate legal order. These questions remain research hypotheses until sources and procedures are independently constituted.

The three levels of GR reality delimit what the preceding observations establish. At the level of *ontological reality*, the framework suspends final claims about the intrinsic constitution, consciousness or experience of a subject, including a subject producing fluent technical output. Digital traces do not disclose another being's ultimate first-person state. At the level of *relational reality*, the legally relevant positions and evidential dependencies of parties, courts, experts, data custodians and systems develop through historically conditioned institutions, technologies, expectations and power relations. Constraints on disclosure can redirect these relations; the capacity to issue an authoritative judgment may depend materially on vendors or experts who hold no judicial office. At the level of *manifestation reality*, such relations become accessible through exhibits, disclosures, logs, transcripts, accessible explanations, objections, judicial reasons and remedial decisions. Those manifestations require interpretation under applicable law and may be incomplete, strategically framed or disputed.

A critical implication concerns the circulation of epistemic and juridical power. The capacity to control the production, classification, retention and release of data can alter which interpretations become available to adjudicators. Yet the power to disclose evidence is itself limited by legal responsibilities owed to parties and others. The appropriate response is an institutional inquiry into the coupling between technical dependence and lawful contestation: which relevant propositions can be tested, by whom, through which authority, with what protection of countervailing rights, and with what possibility of correcting error. In this form, evidential contestation contributes to adjudicative legitimacy as an accountable process with legally determinate conditions, rather than as an abstract requirement of maximal disclosure.

The limits of the section are substantial. The cases concern different procedural orders; neither the documentary model nor the comparison establishes uniform disclosure duties across civil, criminal, administrative or international adjudication. The empirical effectiveness of proposed technical explanations requires testing with affected participants, experts and actual institutional constraints. Further research should also examine errors introduced through translation, biometric or forensic evidence, and the exclusion of records never preserved. The next section turns to sanction ordering and enforcement authority, where evidential and interpretive decisions may authorize consequential coercive measures and where the distinction between lawful judgment and effective implementation becomes especially

consequential.

11 Sanction Ordering and Enforcement Authority

The institutional transition from adjudicative determination to the imposition and execution of a legally consequential measure is the object of this section. Its objective is to distinguish the authority to declare a breach, the authority to select an appropriate response, the authority to issue an enforceable order, and the public or other legally designated authority responsible for implementation. These functions are examined through a comparative legal analysis of international criminal justice, European Union administrative fines, State responsibility, and professional standards on the use of force, followed by a provisional Generative Relational (GR) reconstruction. The section develops a documentary account of enforcement chains while retaining the different legal bases, purposes, addressees, and remedies of the regimes considered. Its relevance to heterogeneous subjects arises where a technical system influences a sanction, an organization becomes the addressee of a measure, a representative acts on behalf of a legally recognized entity, or a future artificial subject is proposed as a possible bearer of legal consequences.

11.1 Juridical Determination, Sanction, Reparation, and Execution

A court may establish that conduct is legally attributable, find that a rule was breached, and specify a consequence. The scope of each of these acts depends on the law constituting the decision-maker's authority. The subsequent ability to translate a judgment into an alteration of liberty, property, legal status, access to an institution, or a continuing obligation depends on further institutional acts. An order directed at a natural person, an administrative fine addressed to a corporation, and a declaration requiring a State to make reparation therefore have differing sources of validity and forms of implementation. A shared descriptive vocabulary is useful only if it preserves those differences.

For analytical purposes, *determination* identifies findings or legal conclusions adopted by a competent authority; *ordering* creates or specifies a legally effective obligation or measure where the applicable law authorizes it; *enforcement* comprises the measures by which an authorized institution gives the order practical effect. Within a given regime, separate procedures may govern liability, sentence, appeals, collection, imprisonment, confiscation, restitution, or supervision. The word *sanction* is accordingly used in a narrow sense when it refers to punitive or administrative responses to specified wrongdoing. The broader expression *legal consequence* includes reparative and protective measures whose objectives and predicates may differ. The classifications are methodological and take their meaning from the applicable source rather than introducing a universal typology of remedies.

The Rome Statute supplies a useful illustration. Its Article 77 authorizes specified penalties against persons convicted of crimes within the Court's competence, and Article 78 addresses sentencing factors; Article 75 separately addresses reparations for victims. Articles 103–110 govern aspects of sentence enforcement, cooperation and review, including the involvement of States in carrying out sentences or enforcing fines and forfeiture orders. These provisions show the distinction between the Court's adjudicative act and a State's operational participation. Article 109 expressly protects the rights of bona fide third parties in the enforcement of fines and forfeiture. The Court's authority and that of the State of enforcement are related by treaty-defined arrangements rather than by identity of institutional office [36].

A second distinction concerns *remedy* and *punishment*. In the International Law Commission's Articles on Responsibility of States for Internationally Wrongful Acts, cessation, assurances of non-repetition when called for, restitution, compensation and satisfaction are situated within the secondary rules governing the consequences of State responsibility. The Articles also address countermeasures under specified conditions. They do not convert every instance of reparation into criminal punishment or supply domestic police with a general coercive mandate [38]. Treating restorative and punitive responses as interchangeable would obscure the identity of the obligated actor and the legally protected interest. It

could also misdirect adjudicative authority by permitting a decision-maker to substitute a remedy that the governing procedure does not authorize.

The practical distinction is clearest where a technical system participates in the decision. An automated calculation may estimate restitution, locate assets, predict future noncompliance, or rank remedial options. Those operations can change the informational environment of an authorized decision-maker. The legal effect still depends on who adopts the calculation, what rule permits its use, how contested facts are resolved, and which body may implement the result. The presence of a machine within the chain thus expands the required inquiry into epistemic and operational dependence while leaving the source of juridical authority to be identified separately.

11.2 Legality, Proportionality, and Individualization of Measures

The legitimacy of a sanctioning decision is partly conditioned by the laws governing the creation and selection of sanctions. Within the European Union Charter's scope, Article 49 establishes legality constraints concerning criminal offenses and penalties, protection against a heavier retroactive penalty, the benefit of a subsequent lighter penalty, and the requirement that penalties be proportionate to the criminal offense [30]. These guarantees provide an instructive boundary on judicial discretion, while their domain of application and the distinction between criminal and administrative measures remain legally significant. Proportionality is a source-specific legal standard requiring analysis of applicable objectives and circumstances; it is not a numerical balance that can be evaluated independently of a legal system.

Article 77 of the Rome Statute further illustrates how the legally available sanction is bounded by the constitutive instrument, while Article 78 requires attention to the gravity of the crime and the convicted person's individual circumstances. Forfeiture can interact with the claims of persons who were not convicted, prompting Article 77's and Article 109's protection of bona fide third-party rights. The institutional tasks include identifying the sanctioned person, verifying facts relevant to the authorized measure, distinguishing the person's property from the interests of others, and preserving review mechanisms where the Statute provides them [36]. A prediction generated by an AI risk assessment would constitute an evidential input, subject to examination under the applicable law; it could not independently supply an offense definition or an additional statutory punishment.

Administrative sanctions reveal a different arrangement. GDPR Article 83 requires supervisory authorities to ensure that administrative fines are effective, proportionate and dissuasive in individual cases. The enumerated considerations include nature, gravity and duration of the infringement; intentional or negligent character; mitigation; the degree of responsibility; cooperation; and other specified factors. Article 58 supplies a differentiated set of supervisory corrective powers, while Article 82 provides a compensation route for qualifying damage. The existence of several measures under one regulatory scheme does not establish that they have identical functions, prerequisites or beneficiaries [28].

The Court of Justice's judgment in *Deutsche Wohnen* further clarifies the corporate setting. In Case C-807/21 it held that a fine for a GDPR infringement may be imposed on a legal person as controller without requiring prior attribution to an identified natural person under a national procedural rule of that kind. The judgment also requires the infringement giving rise to an Article 83 fine to have been committed intentionally or negligently. The legal person remains subject to a particular Union-law regime; the ruling provides neither general strict liability for all organizational conduct nor an automatic attribution rule for every deployment of AI [10]. Its importance for the present inquiry lies in the possibility of organizational sanctionability without reducing the juridical addressee to a single human individual.

These examples suggest three complementary questions for sanction selection. First, which competent institution has authority to impose which type of measure on which legally recognized addressee? Second, which facts, fault requirements and mitigating or aggravating circumstances must be assessed under the applicable norm? Third, which procedural avenues protect the addressee and persons indirectly affected by the measure? The answers vary across regimes and require separate examination of the order, its legal predicate, and its implementation. An analytically coherent description should preserve disagreements over the gravity of the conduct, contested evidence, claims of necessity, and the

possibility of revising a sanction through authorized procedure.

11.3 Natural Persons, Corporate Addressees, and Technical Operators

Heterogeneous legal subjects are situated within sanctioning institutions through specific statuses and obligations. International criminal jurisdiction under the Rome Statute concerns natural persons; its penalty structure cannot be transferred directly to a corporation, a river represented by human office-holders, or an algorithmic system. In contrast, supervisory fines under the GDPR may address legal persons according to the regulation's conditions, and the obligation to pay or comply with a corrective order may persist through organizational procedures. These differences follow from legal sources and institutional design rather than any general hierarchy of moral worth or intelligence [36, 28, 10].

Consider an organization that develops a system for assessing the probability of violation of a regulatory duty. The organization could exercise contractual and technical control over model development while another organization determines why and how the system is used. A regulator may investigate the lawfully identifiable controller or other regulated actor, subject to the relevant definition and evidence. Engineers, managers, vendors and deploying institutions may have differentiated obligations. A model's role in producing an erroneous recommendation does not resolve the question of which human or legal person satisfies a statutory element of liability. Conversely, a formal allocation of responsibility to one institution does not establish that the institution possesses effective technical control over the underlying process. The legal inquiry and the causal inquiry are linked but proceed according to distinct criteria.

A potential risk appears when technological proficiency is used to argue for automatic autonomous liability. The suggestion that an advanced AI should be made the sole sanctioned actor because it generated the decisive operation could be attractive to organizations wishing to reduce exposure. Such a conclusion would require a valid regime conferring the relevant status and imposing applicable obligations. It would also require consideration of whether organizational duties remain independently applicable, whether sanctions can realistically affect the alleged addressee, whether evidence is available for determining fault, and who controls the enforcement apparatus. Assigning an obligation to an entity with no independently protected resources or institutional ability to comply could render a sanction merely symbolic, while the actual capacity to correct harmful practices remains elsewhere.

A different risk concerns excessive consolidation. When a legal person is the sanctioned addressee, its personnel, clients, workers, creditors and other associated persons may experience material consequences. This does not establish that a corporate fine is necessarily impermissible, nor does it transform each affected person into a legally sanctioned defendant. It requires analysis of applicable rules on proportionality, third-party rights, insolvency, protected interests and remedies. Depending on the legal system and type of proceeding, some such effects may be legally relevant to sanction design and others may be consequences to be addressed through distinct policies. The researcher should identify the precise rule rather than assert an undifferentiated duty to eliminate every indirect burden.

For a natural entity constituted as a legal person under a particular statute, its representatives may seek judicial relief or discharge assigned institutional duties. A conflict over compliance could involve persons and organizations legally responsible for acts affecting that entity. The fact of natural-entity personhood does not itself establish that incarceration, criminal conviction, or corporate administrative-fine procedures are applicable to the entity. The structure of a proposed enforcement order would require analysis of its particular enabling statute and forum. Likewise, a hypothetical extraterrestrial participant cannot be placed within an existing sanction regime through analogy alone: recognition of status, jurisdiction, communication, procedural capacity and applicable obligations must be independently examined.

11.4 Enforcement Chains, Coercive Means, and Reviewability

An enforceable judicial order creates a further relation between the institution that issued it and an actor charged with implementation. Implementation may consist of payment collection, a corrective administrative measure, an obligation to provide information, the transfer of property, custody, regulated service

restrictions or other steps. The availability of particular means is constrained by the governing legal order. An actor may have a role in implementing the judgment while remaining prohibited from changing the judicial measure, imposing a new sanction, or using an unauthorized coercive technique. A formal authorization to use one means therefore offers no general permission to use all technically available means.

The Rome Statute's enforcement provisions are exemplary because they distribute authority across the Court and States. Article 103 addresses the role of States in enforcing prison sentences, while Article 110 reserves specified sentence-reduction decisions to the Court. Article 109 regulates the execution of fines and forfeiture orders by States Parties according to their national-law procedures, with express third-party safeguards. Enforcement effectiveness depends materially on States' cooperation, their domestic institutions, available resources and legal restrictions. An internationally authoritative judgment may therefore coexist with an implementation pathway that is delayed, contested or unavailable [36].

Where physical force becomes relevant, another layer of rules governs. The United Nations Basic Principles on the Use of Force and Firearms by Law Enforcement Officials call for non-violent means as far as possible, limits on the circumstances in which force may be used, restraint and proportionality, minimization of injury, medical assistance and reporting. These principles are professional and normative standards to be considered within the framework of national law and practice; they are not themselves a free-standing statutory authorization to use force. Their proportionality inquiry concerns the relationship between enforcement action and its immediate legitimate objective, which is distinct from the proportionality of a punishment selected by a sentencing body [13]. A lawful sentence and a lawful mode of implementing it accordingly remain independently contestable.

A technical provider might operate a database for asset identification or a system that automatically generates notices of noncompliance. A more intrusive hypothetical system could restrict access to money, mobility or public services according to a digital order. Such infrastructures can be effective and rapid while creating risks of mistaken identity, erroneous automated matching, inaccessible contestation or disproportionately broad effects. An adequate legal assessment would specify who authorizes the technological operation, whether the person affected received the legally required notice, which decisions remain open to correction, and which institution can suspend implementation. Technical reversibility alone is insufficient: returning access to an account after an unlawful freeze may leave independently compensable losses, and some harms cannot be fully undone.

The same separation helps with emergency protective orders. Depending on the applicable legal system, urgent action may be permitted under special rules with subsequent hearing, judicial supervision or temporal limits. It cannot be described as a general exception to legality merely because delay has costs. Documentary scrutiny should record the triggering condition, competent official, degree of intrusion, duration, notice requirements and authorized review. A later judicial confirmation also raises a question about effects already caused and about whether a remedy is available for an erroneous interim measure. Enforcement thus has its own chronology and remedial requirements in addition to the decision-making events addressed earlier in the paper.

11.5 Collateral Interests, Repair, and Reassessment

The consequences of enforcement can extend beyond the named addressee. Property orders may affect beneficial owners, secured creditors or innocent co-owners; restrictions on organizational activity may affect dependent workers and service users; data-related enforcement may affect people whose records have been combined or misattributed. In some circumstances, legally protected third-party interests generate obligations during the order's execution. In others, the relevant harm may be a policy problem without an established legal remedy under the regime considered. Careful analysis requires separate records of juridical standing, concrete affected interests, causal pathways and available legal responses.

The Rome Statute's protection of bona fide third parties in the context of forfeiture and its framework for reparations supplies a source-specific illustration. Reparation to victims under Article 75 and the protection of innocent third-party property under Articles 77 and 109 serve distinguishable functions,

although both may affect how legal consequences are ordered and administered [36]. The ILC Articles on State responsibility provide a second comparison: cessation, restitution, compensation and satisfaction are differentiated forms of response to the relevant wrongful act, and the availability of restitution is subject to the conditions specified by Article 35. The ILC text is an important statement of secondary rules but requires attention to applicable obligations and its legal status; it is not an interchangeable catalogue of judicial punishments [38].

The choice of an enforcement method may generate costs that appear only after its authorization. A corporation may reorganize to comply with a regulatory measure; a seizure may disrupt a dependent family; a service restriction may affect an uninvolved disabled person requiring accommodation. Such effects should be considered where an applicable proportionality or rights-protection rule makes them relevant. Other effects may reveal shortcomings in existing law and justify future institutional study. The analytical error would be to infer that the identification of an indirect cost automatically defeats a valid judgment or, conversely, that a valid judgment renders every implementation cost legally irrelevant.

Reassessment is equally source-dependent. A judicial appeal, sentence-reduction procedure, supervisory authority review, claim for compensation, petition for correction or other route may become available under the applicable system. The Rome Statute’s Article 110 illustrates an explicitly structured review of sentence reduction. The GDPR’s differentiated remedies likewise caution against presuming that compensation, fines and corrective orders are interchangeable or subject to one universal review route [36, 28]. A research design should distinguish review of factual findings, review of sanction selection, review of implementing measures, and relief for harm occurring during implementation. Their timing, standing and evidentiary requirements may differ.

For heterogeneous and technologically mediated settings, institutional correction has an additional operational component. If a harmful restriction was produced through an automated implementation pipeline, setting aside the underlying decision may not automatically retract distributed instructions, undo notifications, restore privileges or remove erroneous records. A court order and a technical remediation plan must therefore be related through documented implementing authority. This observation is a proposal concerning institutional design rather than an established universal duty. Empirical inquiry would be needed to determine which correction procedures are available, timely and effective in particular courts and infrastructures.

11.6 Source-Indexed Order-to-Enforcement Record

A formal representation can assist the comparison without creating new enforcement powers. For a jurisdictionally specified matter c and candidate measure m , let $L_{c,m}$ denote sources constituting competence and permissible consequences; $D_{c,m}$ the adopted findings and legal predicates; $T_{c,m}$ the legally identified addressee; $M_{c,m}$ the type and scope of the measure; $A_{c,m}$ the institution authorized to issue the order; $I_{c,m}$ the separate implementing authorities and channels; $P_{c,m}$ source-governed safeguards including proportionality and third-party rights; $E_{c,m}$ evidence, notice and an auditable implementation history; $R_{c,m}$ authorized mechanisms for review, suspension and correction; and $U_{c,m}$ unresolved doctrinal, empirical or normative questions. The documentary record is stated in Equation 9.

$$\mathcal{S}(c, m) = (L_{c,m}, D_{c,m}, T_{c,m}, M_{c,m}, A_{c,m}, I_{c,m}, P_{c,m}, E_{c,m}, R_{c,m}, U_{c,m}). \quad (9)$$

Equation 9 is a *typed documentary representation*. Each entry identifies a question to be answered under the applicable law, and no common numerical scale is implied. The record deliberately preserves the distinction between a source governing criminal sentencing and one governing administrative fines, reparations or coercive execution. Its value is diagnostic: it can reveal when a decision has a legally determined addressee but the record of authorized implementation is unclear, when a technically feasible measure lacks a source of legal competence, or when the evidential basis for a sanction is confused with evidence of its successful execution.

The record extends the authority, reasons, expertise, hybrid workflow and evidential-contestation records developed in Sections 2, 3, 4, 7 and 10. It does not duplicate their functions. Earlier records

Table 10: Sanction and enforcement configurations with differentiated legal bases, actors and contestation questions.

Configuration	Measure and source	Implementation relation	Principal contested issue
ICC convicted natural person	Sentence or forfeiture under Rome Statute Articles 77–78	State enforcement under statutory and treaty conditions	Individualization, review and bona fide third-party rights
EU organization as controller	GDPR Article 83 administrative fine	Supervisory authority and applicable national collection procedures	Intentional or negligent infringement, proportionality and judicial remedy
State internationally responsible for breach	Cessation or reparation under applicable international law	State compliance and legally available international responses	Primary obligation, forms of reparation and lawful countermeasures
Human enforcement using force	Authorized domestic enforcement subject to applicable safeguards	Officers implementing an order or lawful duty	Necessity, proportionality of force, injury and reporting
AI-supported asset restriction	Existing legal order assisted by digital identification and action	Officials and technology providers with separated responsibilities	False matching, lawful authority, suspension and reversal
Hypothetical artificial defendant	Proposed sanction addressed to an artificial subject	Prospective institution and technically possible remedy	Jurisdiction, legal status, retained human duties and enforceability

focus on the sources and proceedings enabling an authorized conclusion; the additional $I_{c,m}$ and $R_{c,m}$ fields attend to actors and reversibility after an order has been issued. The terms $A_{c,m}$ and $I_{c,m}$ can name different institutions even where a single public body performs both functions under a particular system. The distinction should be maintained at the level of legal function while allowing empirical overlap in staffing or organization.

To prevent documentary completeness from being mistaken for lawful implementation, each field should be accompanied in a practical study by a status such as supported, contested, legally inapplicable or unknown, together with its evidence and temporal scope. A field marked “supported” reflects the analyst’s documented position and remains revisable; it does not confer authority. An unknown legal basis for a proposed autonomous sanction should lead to investigation or a clearly identified inability to proceed, according to governing law, rather than to an assumption that coercion is permitted. Records concerning vulnerable persons and sensitive enforcement operations would also require rules on confidentiality, retention, correction and authorized access. This representation therefore remains an analytical proposal until a specific legal institution adopts and validates suitable procedures.

A final implementation counterexample concerns the temporal separation of lawful ordering from lawful execution. Suppose a court orders a proportionate monetary remedy, but a downstream automated execution system identifies an account belonging to an uninvolved third person. The order’s legal basis does not validate this operational error; the applicable enforcement procedures determine suspension, correction, third-party protection and remedial authority. Conversely, a technically correct execution of an order whose legal effect has been stayed may lack current authorization despite exact identification of the intended addressee. In the record described by Equation 9, the time and conditions of enforceability should therefore travel with the legal source and implementing instruction. Authentication of a command is evidence that it was issued, whereas an account of lawful execution also requires the current authorization and affected-subject safeguards to be examined.

11.7 Comparative Enforcement Configurations and Three GR Reality Levels

Table 10 compares six arrangements. Its purpose is to make visible the distinct points at which legal authority, technical execution and protection of others may diverge. Each row concerns an identifiable order or proposal rather than a universal sanctionability score.

The comparison cautions against several apparently plausible generalizations. A fine against a legal person need not require identification of a single employee whose conduct directly constitutes every material element, as *Deutsche Wohnen* illustrates within GDPR Article 83; the rule nevertheless retains a fault-related condition in that setting [10]. A sentence imposed by a competent court does not determine which physical means may be used by an officer; applicable enforcement law and relevant safeguards

remain independently engaged. A declaration that a State owes reparation cannot simply be assimilated to imprisonment or a domestic administrative penalty. A proposed artificial defendant might be technically responsive to resource restrictions, but responsiveness alone supplies neither legal subjecthood nor an authorized punishment. These cases call for source-specific examination of functions and authority.

The three GR reality levels help specify the reach of the argument. At the level of *ontological reality*, the ultimate status and experience of humans, animals, artificial systems and conjectural extraterrestrial beings remain analytically suspended; nothing about the reversibility of an automated restriction proves or disproves subjective suffering. At the level of *relational reality*, legal subjects, courts, enforcement agencies, firms, technical providers and representatives participate in historically constituted structures of powers, expectations, obligations and material dependence. An enforceable measure modifies this relational structure by altering available actions and institutional resources. At the level of *manifestation reality*, orders, records, payment demands, custody logs, asset registers, model outputs, appeals and corrective notices provide accessible but sometimes incomplete indications of those relations. The three levels serve as a disciplined description of interpretive access rather than an alternative source of legal validity.

This distinction sharpens the relation between *formal authority* and *effective power*. The institution with lawful sanctioning competence may depend on another actor for identification, money collection, custody, the restriction of digital access, or technical restoration. Those implementing actors may in turn depend on vendors who exercise practical control without holding judicial office. Conversely, an official may possess extensive coercive capacities while lacking lawful authority in the particular case. Investigating these relations can reveal opportunities for correction, unrecognized barriers to participation, and points at which legal accountability has become dependent on technical infrastructure. It also creates a basis for asking who bears the costs of maintaining remedies and safeguards when enforcement systems change over time.

A further normative question concerns *generativity* after sanction. A punishment or coercive intervention may be legally justified under a governing regime yet constrain relationships that would otherwise support care, livelihood or institutional participation. The GR perspective invites examination of those downstream effects without converting generativity into a superior legal rule overriding established human rights or legal obligations. Where rehabilitation, prevention, deterrence, restoration or public protection is an authorized aim, the analyst can investigate how a measure interacts with those purposes and which harms remain avoidable or remediable under applicable law. Proposals to revise institutions should be evaluated by affected persons and competent authorities, with attention to evidence of efficacy and competing rights.

The section's limits follow from the specificity of its examples. International criminal punishment, EU administrative fines, State responsibility and domestic law-enforcement standards occupy different legal domains, and the formal record does not unify them into a single positive-law enforcement regime. The legal effect of an order and the relevance of collateral harms require separate jurisdictional analysis. Empirical claims concerning AI-supported enforcement, error rates, technical reversal and institutional costs remain open to investigation. The next section considers jurisdiction, institutional plurality and recognition of decisions, where an order deemed binding in one legal setting may encounter a different law of authority, recognition or execution in another.

12 Jurisdiction, Institutional Plurality, and Recognition of Decisions

The legal circulation of an adjudicative decision presents a distinct question from the authority to produce it. A tribunal may have competence over the dispute and issue a binding determination within its originating legal order while the decision's recognition, procedural use, or coercive implementation elsewhere remains dependent on additional legal sources. This section examines those relationships through a comparative and source-indexed method. It first differentiates jurisdiction, decisional effects, recognition and execution; then studies civil judgments, arbitral awards and international judicial decisions; considers Indigenous legal institutions and statutory natural-entity representation; identifies difficulties

of juridical translation for heterogeneous subjects; and develops a documentary reconstruction tested against comparative cases. The resulting analysis is a framework for locating legal questions and institutional dependencies, with its validity and empirical adequacy remaining open to jurisdiction-specific assessment.

A useful methodological distinction concerns the *object* being transmitted. A party may seek recognition of an adjudicator's authority, recognition of a procedural determination, legal effect for a status classification, recognition of a monetary judgment, enforcement of a coercive order, or acceptance of a technical record as evidence. Each request has its own legal conditions. An authenticated judgment is an important document for recognition proceedings; authentication alone does not establish that the receiving authority has competence to act on it or that the relief falls within the available recognition regime. The problem becomes particularly acute when the origin and receiving systems classify the relevant participant differently, or when the decision depends on a representation mechanism whose authority is territorial, institutional, or purpose-specific. Distinguishing these objects is necessary for the subsequent analysis of heterogeneous subjects.

12.1 Jurisdictional Competence and the Reach of Judgments

Jurisdiction is constituted through applicable legal rules and may have several dimensions. Subject-matter competence concerns the kind of dispute an adjudicative body is empowered to hear; personal jurisdiction concerns the persons or legal relationships subject to that body's authority; territorial connections locate the dispute or its effects; temporal conditions determine when the authority can be exercised; and functional competence concerns which decisions a particular court or institution may issue. These dimensions have different doctrinal formulations across legal orders. In some settings a party's valid consent supplies a recognized jurisdictional connection, whereas in others exclusive jurisdiction, mandatory statutory conditions or the character of a public-law power restrict the relevance of consent. The list is an analytical classification of questions, not a general law applicable to all tribunals.

The International Court of Justice illustrates the institutional specificity of adjudication. Under its Statute, only States may be parties in contentious cases, the jurisdictional basis must be examined under the relevant provisions, and Article 59 confines the binding force of a decision to the parties and the particular case [46]. Article 94 of the United Nations Charter establishes a commitment by UN Members to comply with decisions in cases to which they are parties. If a party fails to perform obligations under a judgment, the other party may seek recourse to the Security Council, which retains discretion concerning recommendations or measures [45]. The relation between binding force and compliance is therefore institutional and specific. Article 94 provides neither an ordinary private collection procedure nor a general authorization for a court, technical system or third State to execute the judgment by self-help.

Domestic judgments likewise may depend on multiple procedural conditions, including finality or immediate enforceability, the identity of the parties, the scope of relief and avenues for suspension. A domestic judgment's effects may extend beyond the particular dispute through doctrines of precedent or procedural preclusion, but those effects require the applicable legal sources and should be distinguished from the obligation imposed on its addressee. For purposes of comparative inquiry, the analysis should document which actor is bound by which component of a decision, which official record identifies that component, and what counts as successful compliance. A declaration, an injunction and a monetary award may have different enforcement pathways even within one system.

The legal person who is the subject of litigation should also be separated from the authority determining its status. A corporation may be constituted under the law of one jurisdiction and litigate in another; a representative may act on behalf of a recognized natural entity under a specific statute; and a technical system may generate a decision-support record without itself holding procedural standing. The cross-border relevance of those facts varies with the receiving law. In the present research programme, the legal position of an artificial or conjectural extraterrestrial subject is therefore a hypothesis requiring identifiable legal sources. A proposed adjudicator's technical ability to resolve a dispute supplies evidence about possible performance, while a valid conferral of jurisdiction remains a separate legal

question.

12.2 Civil Judgment Recognition under European and Hague Regimes

Regulation (EU) No 1215/2012, commonly called Brussels I bis, provides a relatively integrated arrangement concerning jurisdiction and the circulation of judgments in civil and commercial matters among participating EU Member States. Article 36 provides for recognition without a special procedure, and Article 39 addresses enforceability in another Member State of a judgment enforceable in the Member State of origin. Article 45 nevertheless specifies grounds on which recognition is to be refused upon the application of an interested party, including a manifest public-policy conflict, certain failures of service in default proceedings, and specified irreconcilable judgments. The regulation also limits review of the substance of the foreign decision, while its material exclusions include arbitration and certain status matters [26]. The relatively streamlined circulation of qualifying judgments is thus dependent on the subject matter, territorial framework, source-defined procedural requirements and grounds of refusal. Its existence should not be taken as evidence of a general recognition duty across all legal systems.

The 2019 Hague Judgments Convention provides another treaty framework for recognition and enforcement of foreign judgments in civil or commercial matters. Its Article 4 distinguishes recognition of a judgment having effect in the State of origin from enforcement of a judgment enforceable there, and ordinarily excludes substantive re-examination of the merits in the requested State. Article 5 supplies eligibility connections, Article 6 establishes an exclusive recognition basis for judgments concerning rights in rem in immovable property, and Article 7 identifies qualified refusal grounds, including certain notification defects, fraud, manifest public-policy incompatibility and conflicting judgments. Article 9 permits recognition or enforcement of a severable part under specified conditions [32]. Particular applications require verification that the Convention has effect between the relevant States at the legally significant time, together with declarations and any applicable alternative regimes. A citation to the Convention without such a check cannot prove that a specific foreign judgment is presently enforceable.

Exclusions and preliminary questions make the Hague arrangement especially instructive for heterogeneous-subject analysis. Article 2 excludes, among other matters, the status and legal capacity of natural persons and arbitration-related proceedings. Yet the occurrence of an excluded matter as a merely preliminary question does not necessarily remove the whole judgment from the Convention's scope; Article 8 addresses the effects of rulings on certain preliminary questions [32]. An analyst must therefore identify the object of the claim and the function of the contested status proposition in the reasoning. A damages judgment may involve an incidental issue of status while remaining legally distinct from an order establishing a general status. Equally, it would be mistaken to presume that the legal personhood of a nonhuman entity receives direct international recognition merely because one court has resolved a related private-law dispute.

Both regimes illustrate the importance of receiving-state safeguards. A defendant who received deficient notice, an affected third party holding conflicting rights, and a party seeking an effective remedy may occupy different positions. Public-policy grounds are structured exceptions within their own texts, not an unbounded invitation to reconstruct the foreign merits according to local preferences. Protection of parties in the receiving State and respect for the originating judgment are legally mediated interests. Where recognition is refused, the grounds and their evidential predicates should be stated with precision, rather than attributed to a generic disagreement between cultures or judicial traditions. Where only one component of a judgment circulates, partial recognition may preserve useful legal effects without claiming complete institutional equivalence.

12.3 Arbitral Awards and International Judicial Compliance

Arbitration supplies a contrasting institutional pathway. The New York Convention of 1958 addresses the recognition and enforcement of foreign and non-domestic arbitral awards according to its scope and treaty conditions. Article III concerns recognition and enforcement in the requested jurisdiction, Article IV specifies key documentary materials, and Article V enumerates grounds on which recognition or

enforcement may be refused, including certain problems of the arbitration agreement, notice, the opportunity to present a case, the scope of the submission, arbitrability and public policy [54]. Such requirements clarify the relationship between privately constituted dispute resolution and public enforcement institutions. The arbitral tribunal issues an award according to its applicable authority; the State's courts and enforcement institutions determine its local legal effects under the applicable recognition framework. Neither the parties' technical confidence in the award nor the existence of a signed document displaces the Convention's conditions.

The ICSID Convention illustrates a further differentiation. Its Article 53 establishes the binding character of a qualifying ICSID Convention award, subject to the remedies provided in the Convention. Article 54 addresses recognition of such awards and enforcement of their pecuniary obligations in Contracting States, while Article 55 preserves applicable domestic law concerning immunity from execution [35]. Recognition, enforcement of pecuniary obligations and the physical or legal attachment of State assets may thus involve separable steps. A creditor's ability to identify property does not conclusively establish that it may lawfully be seized. The Convention's distinctive regime also should not be collapsed into the New York Convention framework, which has its own scope, conditions and refusal grounds.

International judicial compliance has a different architecture. In a contentious case before the International Court of Justice, the judgment's legal force among parties arises under the Statute, and compliance is addressed through State obligations and the UN Charter rather than a generally applicable domestic award-enforcement process [46, 45]. A judgment identifying an international obligation may require further acts of domestic implementation, intergovernmental cooperation, or changes in official practice. The social reality of compliance may involve administrators, budgets and technical infrastructures, while the legal obligations arise through the relevant international sources. The presence of a technical interface capable of transferring assets or restricting conduct does not create an extra-Charter execution procedure.

These examples demonstrate that institutional plurality includes different *types* of decision. A court judgment, arbitral award and inter-State judgment each has distinctive constitutive law, addressees, avenues for challenge and methods of implementation. The phrase "recognition of decisions" can be useful for comparison only when these distinctions remain explicit. One cannot reliably infer from the success of commercial award enforcement that a hypothetical AI tribunal's determination would circulate on the same basis. A proposal to establish an autonomous artificial adjudicator must specify the legal order authorizing its office, the effect of its decisions within that order, the relevant international or domestic recognition route, and the safeguards available to affected persons. Each of those requirements remains open until grounded in applicable law.

12.4 Indigenous Institutions and Legally Plural Adjudication

Institutional plurality also appears within legal systems and across the relationships between State law and Indigenous legal traditions. The United Nations Declaration on the Rights of Indigenous Peoples recognizes, in Article 34, Indigenous peoples' entitlement to promote and maintain distinctive institutional structures and juridical systems or customs in accordance with international human-rights standards. Article 40 addresses access to just and fair procedures and effective remedies, with due consideration for the customs, traditions, rules and legal systems of the Indigenous peoples concerned [55]. The Declaration expresses important international normative commitments. It is not, by its own terms, a universal mechanism for registering and enforcing every Indigenous decision as a judgment of a foreign State. Particular legal effects remain dependent on relevant constitutional, legislative, treaty, judicial and Indigenous legal arrangements.

The Te Awa Tupua (Whanganui River Claims Settlement) Act 2017 supplies a concrete example of juridical recognition within a negotiated statutory settlement. Section 14 declares Te Awa Tupua a legal person with rights, powers, duties and liabilities, and requires these to be exercised or performed through Te Pou Tupua on the river's behalf and in its name. Other provisions specify functions and institutional relationships for that representative body [42]. The Act thereby constitutes a particular legal arrangement for a natural entity within New Zealand law. Recognition of a natural entity as a

legal person, authorization of its statutory representative, and recognition of a judgment concerning its interests are analytically distinct legal events. The New Zealand statute does not, solely by recognizing that entity, impose an equivalent legal-personhood classification on every other jurisdiction.

A further challenge is the translation of juridical descriptions. Indigenous legal concepts and institutions may carry meanings and relational obligations that resist straightforward equivalence with a civil-law corporation, a common-law trust or a public agency. A receiving State may possess rules concerning recognition of an order without having a corresponding category for the source institution's legal position. In some circumstances a narrow procedural interface, such as recognition of a representative's authority for a particular transaction, may be legally available while a broader status claim remains unresolved. That possibility should be tested under the receiving law, rather than presumed. Documentation also should retain Indigenous terminology and institutional provenance, with participation from relevant right-holders or representatives when an actual research or reform process is contemplated.

This difficulty cannot be reduced to a technical translation failure. A seemingly convenient conversion of one institution into another category may change who controls representation, whose knowledge is received as evidence, and who can challenge a resulting decision. A refusal to recognize may equally be grounded in a lawful jurisdictional restriction, a statutory exclusion, or insufficient evidence, and should not be described as discriminatory without a suitable normative and factual examination. The present argument calls for a differentiated inquiry into source-based legal consequences and the practical distribution of voice and power. It neither treats all forms of legal plurality as functionally interchangeable nor requires Indigenous law to conform to the conceptual architecture of the GR model.

12.5 Heterogeneous Subjects and Boundaries of Normative Translation

The recognition question can be clarified by considering the *legal position* asserted by each participant. A human individual may have an established right to be heard and represented under governing procedural law; a corporation may act through organs or agents specified by the law constituting it; a natural entity may act through a legislatively appointed body; an artificial system may be treated as a tool within a regulated workflow; and a hypothesized extraterrestrial participant may have no predetermined classification under existing State law. The differences in these examples concern sources of authority, evidence of status and access to remedies. They do not form a simple hierarchy of intrinsic worth or intelligence.

Consider a judgment concerning an artificial system represented as a separate defendant. The originating tribunal might have issued a reasoned order based on a locally adopted legal definition, or might have lacked authority to treat the system as an independent bearer of duties. A receiving court would need to consider the actual judgment, the legal basis of the proposed entity status, the relevant subject matter and any applicable treaty or domestic recognition rule. If the claim concerns a contract, the legal positions of the contracting parties and the source of any representative authority may be decisive. If it concerns penalties or coercive restrictions, the framework for foreign civil judgments could be inapplicable from the outset. The formulation of a hypothetical autonomous AI tribunal as an "arbitral body" would similarly be insufficient unless requirements concerning the agreement, tribunal constitution, fairness and the award itself were satisfied under the governing arbitration law.

The analysis should distinguish three possible outcomes: recognition of an identified legal effect, legally justified refusal or deferral, and residual uncertainty requiring further source identification. A partial outcome may be particularly important. A receiving jurisdiction might recognize a monetary obligation without accepting the issuing forum's general classification of the defendant; conversely, it might acknowledge the legal personality of an organization for a limited procedural purpose without authorizing execution against particular assets. The Hague Convention's treatment of severability and preliminary questions provides concrete examples of legal mechanisms that can preserve distinctions among components of a judgment, within the Convention's actual field of application [32]. Such examples suggest a research direction; they do not create a free-standing power to sever and enforce every foreign determination.

Recognition also depends on time. Jurisdictional rules, treaties, reservations or declarations, domes-

tic judgments and recognition statutes may change between the originating proceedings and the later request. For the 2019 Hague Convention, Article 16 makes the Convention’s effect between the States when proceedings were instituted relevant to its application [32]. The correct temporal inquiry is therefore not exhausted by the present date, the judgment date or a generic statement that a convention has entered into force. For a future artificial or extraterrestrial party, a proposed legal reform would need to specify its temporal operation, treatment of pre-existing rights, review of earlier decisions, and responsibility for actions taken before recognition. Historic classifications may have created reliance interests or procedural harms that need separate consideration, under legally established routes if any exist.

The relationship between normative translation and justice is consequently conditional. Successful recognition can support continuity of remedies, reliance and the possibility of cooperative legal relations. It may also expose affected individuals to coercive measures or give force to determinations reached under materially different procedural protections. Refusal may preserve a specific right or reflect a restrictive institutional boundary; it may also create obstacles to redress. A sound comparison requires attention to legal sources, participation, evidence, material consequences and available correction. Within the GR inquiry, these relationships can be studied as historically evolving structures of recognition and practical dependence while leaving their normative legitimacy to independent argument and institutional assessment.

12.6 Source-Indexed Recognition and Enforcement Record

The documentary constructions in previous sections identify an adjudicator’s legal competence, the provenance of judicial reasons and evidence, the protection of participants, and the conditions of executing an authorized order. A supplementary representation is useful where a decision must cross an institutional boundary. The distinctive object is the *receiving authority’s legally conditioned response to a specified decision effect*. For a decision d , originating order o , receiving legal order r and relevant time t , let $L_{d,o,r,t}$ identify applicable treaty, statutory or other recognized legal sources; $J_{d,o,r,t}$ identify the issuing institution’s competence and character; $D_{d,o,r,t}$ identify the decision’s form, scope, legal effect and enforceability at origin; $C_{d,o,r,t}$ identify connection, eligibility and temporal conditions; $S_{d,o,r,t}$ identify pertinent parties, recognized statuses and representative powers; $P_{d,o,r,t}$ identify procedural safeguards and possible refusal grounds; $E_{d,o,r,t}$ identify documents, authentication and contested evidence; $I_{d,o,r,t}$ identify competent receiving and implementing institutions; $R_{d,o,r,t}$ identify legally available review, suspension, partial recognition and correction pathways; and $U_{d,o,r,t}$ record unresolved classifications or uncertainties. Equation 10 states the resulting typed record.

$$\mathcal{X}(d, o, r, t) = (L, J, D, C, S, P, E, I, R, U)_{d,o,r,t}. \quad (10)$$

Equation 10 is an *analytical dossier*, not an algorithm that grants recognition. Its components are legal and documentary questions whose answers depend on a source-specific interpretation. In a real proceeding, an explicit record of “not applicable,” “documented,” “contested” or “unverified” would accompany each component and the evidence supporting that assessment. The dossier would also need to identify whether recognition is requested for a whole decision, an independently severable part, a representative act or an ancillary record. The same judgment may require more than one dossier if enforcement is sought in several receiving jurisdictions or at different times. Such multiplicity is a property of the legal situation, not a defect to be removed by a universal equivalence rule.

The additional structure performs a task that the earlier order-to-enforcement record in Section 11 does not fully cover. The earlier record tracks an order’s consequence and its authorized implementation within an applicable regime. Here the initiating question is whether a receiving legal order will recognize the source decision as producing the requested legal effect at all. The origin tribunal’s competence may be relevant evidence, yet the requested State may be required to apply eligibility rules or barred from reviewing certain issues under the particular instrument. The model therefore distinguishes *the existence of a source claim* from *the receiving institution’s authority to act upon it*. This is also why documentary traceability, although valuable, should not be treated as a substitute for lawfully prescribed judicial

consideration.

As a worked illustrative inquiry, suppose a judgment issued in one State orders a corporate defendant to pay compensation to a natural person, while part of its reasoning depends on an automated contract-review tool. The record would first establish whether the parties, subject matter and originating judgment fall under Brussels I bis, the 2019 Hague Convention, another treaty or domestic law in the requested State. It would then identify which decision effects are requested, the documents required, the availability of refusal grounds, and which local authority can enforce a monetary award. The technical tool's records may assist a challenge to the judgment or its evidentiary basis, subject to the governing procedures; their presence does not independently disqualify or validate the judgment. A case involving a statutory river representative would add a source-governed question concerning the representative's legal authority. A purported "judgment" generated solely by an unconstituted autonomous system would require scrutiny of whether there was an issuing court or tribunal at all. These distinct inquiries expose why the dossier can organize institutional investigation without resolving it automatically.

A worked cross-order comparison illustrates the distinction between documentary continuity and juridical translation. Suppose a court in State A issues a reasoned civil money judgment against a company in a contractual dispute. The judge had used an AI research assistant to locate precedents, verified the consequential material, and adopted the final reasons under the source law of the forum. A creditor then seeks recognition in State B. At the originating stage, the investigator identifies the court's competence, the operative judgment, the parties and subject matter, the record of adoption, and any pending challenge. At the receiving stage, the investigator identifies whether Brussels I bis, the 2019 Hague Judgments Convention, domestic private international law, or another instrument actually governs the request, considering the States, dates, eligibility requirements and exclusions involved [26, 32]. The presence of reliable AI-assisted legal research in the origin record answers neither jurisdictional eligibility nor a receiving forum's available refusal grounds.

If the same parties had instead obtained an arbitral award, the relevant recognition question could arise under the New York Convention, subject to its own provisions, and would not be solved by describing the award as the equivalent of the hypothetical civil judgment [54]. If the originating instrument were an ICSID award, yet another treaty-specific recognition framework and a distinction concerning execution would require analysis [35]. The comparison does not assume that the invented States satisfy any particular treaty's conditions or that their domestic law supplies a given result. A failed or unsubstantiated claim of transnational recognition is a legally informative outcome. One cannot derive its success from the technical quality of the originating reasons, the formal completeness of a source record, or a generic assertion that adjudicative results should circulate.

12.7 Comparative Recognition Configurations and Three GR Reality Levels

Table 11 records six configurations to compare the sources governing decisional effects and the limits of their institutional circulation. The entries are schematic pathways; they do not assert that a particular dispute satisfies all conditions in a given jurisdiction.

Several counterexamples test the framework. First, an originating court may exercise jurisdiction under its own rules, while its judgment fails an eligibility connection in the receiving State under a specific treaty. Second, a claim invoking judicial independence might satisfy basic procedural safeguards yet fall outside the subject matter of the cited convention. Third, an ICSID award may be recognized as binding and its pecuniary obligations enforced under Article 54 while particular assets remain immune from execution under applicable law. Fourth, an arbitral award may involve extensive AI assistance without thereby becoming an award of an autonomous AI "court." Fifth, a receiving legal order may accept a statutory representative's authority for one transaction without adopting every element of the originating legal system's ontology. The counterexamples identify separate legal predicates and do not establish that recognition should always be granted or refused.

At the level of *ontological reality*, the ultimate nature of human agency, natural entities, machine intelligence and possible extraterrestrial subjectivity remains suspended. The legal circulation of a deci-

Table 11: Recognition and enforcement configurations differentiated by legal instrument, receiving authority and unresolved issue.

Originating decision	Possible receiving-law pathway	Institutional actors	Key boundary or contested question
Civil judgment between EU parties Non-EU civil or commercial judgment	Brussels I bis, where materially and territorially applicable 2019 Hague Convention where effective between relevant States, or applicable domestic law	Origin court, requested-State authority, enforcement officers Origin court, receiving court or competent authority	Default-service safeguards, refusal grounds, local execution Eligibility connections, temporal conditions, subject exclusions
Foreign arbitral award	New York Convention where applicable	Tribunal, competent recognizing court, local enforcement institution	Arbitration agreement, notice, arbitrability, public policy
ICSID Convention award	ICSID Articles 53–55 as applicable	ICSID tribunal, Contracting State institutions	Pecuniary obligations and sovereign immunity from execution
Inter-State ICJ judgment	ICJ Statute Article 59 and UN Charter Article 94	State parties, relevant public institutions, possibly Security Council	Binding force, compliance and discretionary collective response
Decision involving Te Awa Tupua or a hypothetical AI subject	Originating status law plus independently established receiving rules	Statutory representative or proposed participant, receiving authority	Subject classification, authorized representation, scope of recognition

sion cannot establish consciousness, dignity or intrinsic moral status by formal inference. At the level of *relational reality*, courts, arbitral bodies, States, Indigenous institutions, representatives and technical infrastructures participate in historically formed patterns of authority and cooperation. Recognition may reorganize those relations by enabling a remedy, altering resource control or requiring further institutional acts. At the level of *manifestation reality*, judgments, award copies, certificates, statutory delegations, translation records, enforcement orders, procedural notices and machine-generated evidence render aspects of these relations accessible while leaving possible gaps in factual and normative knowledge. These levels discipline the description of legal relations without replacing the positive law that constitutes their legal effects.

A source-indexed inquiry should therefore attend to two forms of institutional failure. The first is *juridical overreach*: authority or enforcement effects are claimed without a valid source, a relevant eligibility connection or proper safeguards. The second is *relational discontinuity*: a legally recognized claim exists but affected persons cannot in practice access the documentary, administrative or technical pathway required to pursue it. The latter may be a problem of resources, translation, procedural exclusion or asymmetric control over evidence. Determining whether it violates a legal duty requires an additional legal analysis; determining whether it warrants reform requires normative and empirical examination. In both cases, relations among institutions can themselves be the objects of research rather than mere background conditions for an abstract comparison of decisions.

The section's contribution is a differentiated account of the legal passage of adjudicative acts across plural orders, supported by a limited documentary representation. Its boundaries are equally significant. Treaties have jurisdictional, material and temporal fields of application; Indigenous juridical institutions must be interpreted in their particular legal and historical settings; and hypothetical artificial or extraterrestrial adjudicators presently require independent constitution before claims of international recognition can be evaluated. The next section turns to institutional power, technological dependence and historical transformation, particularly the actors who determine whether the documented routes of recognition are accessible, contestable and effective in practice.

13 Institutional Power, Dependence, and Historical Transformation

Adjudicative authority is constituted by legal sources and exercised through historically changing institutions. Appointment procedures, case allocation, budgets, administrative systems, expert communities, records, and technological providers can influence whether a judgment is reached independently, whether it is understood by those affected, and whether avenues of review remain accessible. This section inves-

tigates those relations as a distinct object of jurisprudential inquiry. Its method combines source-specific legal analysis, comparison of institutional dependencies, a limited documentary formalization, and a Generative Relational (GR) reconstruction. The first three subsections distinguish judicial office, organizational resources, and technical infrastructure; the fourth develops a careful account of institutional capture; the fifth examines changes through time; the sixth proposes a source-indexed dependence and transition record; and the seventh tests the construction against comparative cases and the three levels of GR reality.

The inquiry preserves two methodological separations. A legally constituted judge may depend on court personnel, public funding, technological systems, and external knowledge while retaining the authority to decide. Equally, the existence of dependence, even dependence on a powerful institution, provides neither a legal determination of impaired independence nor evidence of misconduct on its own. The legal issue requires examination of the governing law, the nature of the influence, safeguards, procedural effects, and available remedies. The empirical issue requires evidence about how the relevant institution actually operates. The normative issue concerns whether those arrangements adequately protect the persons, claims, and relations for whose sake adjudication is constituted. These questions are interrelated, and the present argument keeps their standards of assessment distinct.

13.1 Judicial Office, Appointment, and the Distribution of Institutional Authority

The legal authorization to adjudicate ordinarily concerns an office embedded in a wider constitutional, statutory, treaty, or agreed institutional structure. The individual officeholder is appointed through procedures governing qualifications, nomination, selection, tenure, discipline, removal, recusal, and competence. Institutional power may therefore influence adjudication before a particular dispute is heard. Control over appointments, promotions, court leadership, distribution of work, or continuation in office can change the conditions under which legal reasons are formulated and public power exercised. Because institutional designs differ, an analysis of the legitimacy of an appointment must begin with the applicable legal sources rather than with a single abstract model of the ideal court.

The Court of Justice of the European Union's judgment in *Commission v Poland* (C-619/18) illustrates this legal particularity. The Court held that Poland failed to fulfil obligations under Article 19(1) TEU through a combination of lowering the retirement age applicable to sitting Supreme Court judges and vesting discretion in the President of the Republic to extend their judicial activity. The specific configuration implicated guarantees of judicial independence and irremovability [9]. The judgment supports a source-specific critique of institutional arrangements that expose continuation in judicial office to undue discretionary control. It does not decide the constitutionality of every retirement rule or every form of executive involvement in appointments. The type, timing, intensity, and reviewability of official discretion remain pertinent distinctions.

The Grand Chamber of the European Court of Human Rights approached another appointment question in *Guðmundur Andri Ástráðsson v. Iceland*. The Court considered whether serious irregularities in the process of appointing a judge affected the applicant's right under Article 6(1) to a tribunal established by law. Its three-step examination considered a manifest breach of domestic law, the fundamental character of the breached rule, and effective domestic judicial review and redress, with attention to legal certainty and irremovability [21]. The doctrinal significance is the structured relationship between institutional history and the validity of an adjudicative arrangement. An appointment process can remain consequential after the individual officeholder begins to issue legal decisions. The necessary remedy nevertheless remains dependent on the Convention context and the actual findings.

Judicial tenure and appointment are only two dimensions of this structure. Allocation of cases, leadership powers, disciplinary mechanisms, and relationships between judges and prosecutorial or administrative bodies can also matter. The UN Basic Principles on the Independence of the Judiciary identify independence, impartial conduct, qualifications, security of tenure and institutional conditions as matters of public concern [49]. These principles are influential institutional standards, and their status should be distinguished from binding treaty provisions and judgments in their respective fields. The Venice Com-

mission's Rule of Law Checklist likewise offers an evaluative framework for examining institutions and safeguards, rather than a free-standing legal cause of action [16]. The convergence of these materials supports careful comparative inquiry into institutional arrangements while leaving concrete legal outcomes to their governing regimes.

For heterogeneous legal subjects, the appointment question acquires a further layer. A person recognized as a participant in proceedings may confront a court whose adjudicator depends on specialist information about that person's capacities. A natural entity with a statutory representative may encounter a decision-maker who misunderstands the legal source authorizing the representation. A conjectural artificial judge could be proposed as a technically capable officeholder, yet its qualification, appointment, continuity, independence, and removal would require an additional legal constitution. These circumstances link the institutional office to the epistemic and procedural concerns developed in Sections 4, 5, and 8. Technical skill can be relevant to institutional design; under existing systems, it does not establish an independent legal title to judicial office.

13.2 Administrative Resources, Case Allocation, and Practical Access

Adjudication is materially sustained. Courtrooms, interpretation, legal assistance, secure archives, transcripts, electronic filing, staff expertise, salaries, maintenance and physical accessibility all affect the capacity to hear disputes and explain decisions. Administrative arrangements may reduce delays, facilitate access for dispersed parties, and improve the reliability of judicial records. They may also distribute burdens unevenly. A litigant who can file documents only through an inaccessible system can be affected even when formal standing is secure; a judge with too little time to scrutinize expert evidence may experience different pressures from a judge with adequate research support. Resource conditions therefore merit study as components of adjudicative relationships, subject to separate legal analysis of the duties that govern each condition.

It would be analytically unsound to infer that all inequality of administrative resources proves unlawful discrimination, improper influence, or institutional capture. Courts differ in caseload, location, complexity, language requirements, fiscal context and institutional mandates. Scarcity is a constraint to be understood, and its distribution may sometimes be reasonable under a specified public justification. The question is whether a particular allocation is legally permitted, factually defensible, procedurally transparent where required, and open to meaningful correction when it affects protected rights. The UN Basic Principles treat the provision of adequate resources for judicial functions as a governmental duty of institutional support [49]; the operative consequences of an alleged deficiency must still be established within the governing legal order.

A useful empirical reference is the European Commission's *2026 EU Justice Scoreboard*, which provides an official route to comparative information on justice systems [14]. Such monitoring can assist investigation of institutional capacity and independence, but each indicator has its own definition, coverage, collection procedure and uncertainty. A survey of perceptions, an expenditure measure, an average disposition time and a formal rule on appointments describe distinct objects. None independently determines the fairness of a particular hearing. The present discussion therefore cites the existence and comparative purpose of the Scoreboard without inferring unverified country rankings or causal effects from its publication.

Case assignment illustrates the connection between lawful administration and practical influence. A legally prescribed assignment system may reduce strategic interference by separating selection of the adjudicator from the anticipated outcome of a case. Specialization, related-case management, urgent proceedings and recusals may nonetheless require discretion. Distinguishing a documented deviation from a defensible exception requires source-specific procedural rules, allocation records and evidence concerning decision-making authority. A formal power to assign cases does not necessarily translate into power to determine judgments; however, concentrated and unreviewable assignment discretion can become relevant to legal and empirical assessments of independence under the applicable law. The research object is the pathway by which a case reaches an adjudicator and the safeguards governing that

pathway.

Administrative resources also bear on heterogeneous representation. Procedural accommodations for people with disabilities, age-sensitive arrangements for children, and translation or assistance for parties unfamiliar with the legal system can affect whether an existing right to participate is exercisable. A corporation or statutory representative may have professional resources unavailable to an individual litigant. Technical assistance might help reduce some of these inequalities, although interfaces, costs, data restrictions and documentation requirements may create different barriers. The analysis should preserve the legally grounded rights of human participants while treating potential measures for speculative artificial or extraterrestrial parties as proposals requiring independent justification. Relationships between legal recognition and practical access can be assessed without ranking the underlying subjects by cognitive sophistication.

13.3 Technical Infrastructure, Provider Dependence, and Public Control

Court information systems have become part of the conditions under which evidence is submitted, legal materials are retrieved, cases are scheduled, and decisions are recorded or published. Generative artificial intelligence adds services for summarization, translation, document comparison, drafting and search. Providers may control model updates, interface design, data retention, logging, access permissions, security patches and the capacity to reproduce earlier outputs. The resulting institutional relationship differs from ordinary expert testimony: the provider's system may repeatedly mediate the flow of information across many cases, rather than delivering a discrete opinion in one proceeding. Long-term dependence can shape the practical options available to courts even where legal authority formally remains with judges.

The CEPEJ's *Guidelines on the Use of Generative Artificial Intelligence for Courts*, adopted in December 2025, address these conditions through recommendations concerning judicial independence, effective human oversight, public control over data and infrastructure, transparency, traceability, risk assessment and reversibility [19]. Their specific propositions should be read as CEPEJ guidance, with the underlying Convention and domestic requirements identified separately. The guidelines do not themselves confer authority on an artificial adjudicator, nor do they establish that all use of external infrastructure is unlawful. They nevertheless provide a verified basis for examining how procurement and deployment choices can affect the independence of court work.

Dependence may arise through several analytically different routes. *Operational dependence* exists when the system is necessary for filing, docketing or communication. *Informational dependence* arises when records or technical explanations needed for challenge are controlled by an external service. *Epistemic dependence* occurs when users cannot readily validate generated suggestions or the data sources behind them. *Temporal dependence* arises when changes in model version, interface policy, price, service availability, or contractual terms alter what a court can reproduce or access later. These are descriptive dimensions, and their empirical significance requires documentation. They connect directly to the epistemic-dependency construction of Section 4 and the proposition-indexed contestation record in Section 10.

A private provider's commercial interest is likewise distinct from proof that its product has distorted a judicial decision. Procurement can be lawful, useful and subject to adequate oversight. Concentration may increase switching costs or create a single point of failure without establishing improper influence. Conversely, a formally independent judiciary may have serious difficulties challenging the reliability of a tool if the relevant logs, versions, input records or contractual audit rights are unavailable. The legally consequential question is whether these limitations affect duties such as procedural fairness, confidentiality, data protection, explanation, or effective remedy in the applicable setting. An empirical audit should locate the contested technical act and its effects, rather than attributing every observed difficulty to the provider's motives.

The temporal character of technological dependence is especially important. A model used to assist decision drafting in one year may be updated or withdrawn before appeal. A vendor may change

logging policy while the court retains only the final document. Reproducibility therefore concerns not merely source code but a legally appropriate record of the material interaction, including the version used, relevant inputs, retrieval sources, review steps and outcome-specific validation. Preservation is constrained by confidentiality, privilege, security and data-protection law; demands for transparency cannot be treated as a universal permission to disclose sensitive material. Designing auditable but proportionate records is an institutional problem whose legal and technical aspects remain partially irreducible.

13.4 Institutional Capture Claims and Evidentiary Thresholds

Institutional capture is a serious explanatory allegation concerning the displacement or systematic distortion of an institution's authorized purposes by interests that exercise undue practical influence. In judicial settings, a claim may concern political appointments, threats to tenure, control of workloads, financial dependency, information monopolies, restricted legal assistance, or manipulation of technical processes. The term should be reserved for sufficiently specified propositions. At minimum, the analyst should identify the institution whose function is said to be distorted, the relevant actor or interest, the means of influence, the decision or institutional practice affected, the legal or normative standard, and the evidence connecting them. Unfavorable judgments, unequal expertise or controversial reforms can motivate inquiry without conclusively establishing capture.

Source-governed legal findings can ground parts of such analysis. The judicial-retirement scheme examined by the CJEU in C-619/18 and the appointment deficiencies examined by the ECtHR in *Ástráðsson* show that institutional arrangements are susceptible to legally cognizable scrutiny [9, 21]. Their holdings concern identified legal violations within specified jurisdictional frameworks; they should not be treated as findings of an all-purpose sociological theory of capture. A legal judgment on independence, a historical explanation of the incentives that produced an arrangement, and a broader normative assessment of institutional power may support one another but need separate arguments. This discipline also guards against an overly simple account in which every institutional dependence is presumed to be domination.

The research programme proposes differentiating *influence*, *dependency*, *vulnerability*, *interference*, and *capture*. Influence is a change in an actor's decisions or information environment that may be legitimate or problematic. Dependency concerns reliance on another actor, institution or resource. Vulnerability concerns an exposed pathway through which adverse effects could occur. Interference adds conduct that improperly affects, or risks affecting under governing standards, the protected institutional function. Capture is a stronger historical and structural claim, usually involving sustained distortion or control and therefore demanding evidence about repeated arrangements, incentives or outcomes. These terms are conceptual research categories. Positive law may adopt different tests and vocabulary, and the classification should follow those sources in any concrete case.

The distinction is particularly useful in evaluating AI-assisted courts. A technical recommendation may be persuasive because it correctly identifies a relevant legal authority; another may improperly shape the decision if judicial adoption bypasses required examination; a vendor might interfere with a court's data through unauthorized alterations. Only the actual source-based obligations and evidence determine which allegations are justified. Similarly, restrictions on information disclosure can protect genuine confidentiality interests while leaving access to challenge through suitably protected judicial procedures. A party's inability to inspect a proprietary model alone does not establish a breach; its consequences depend on the legal relevance of the protected material, the availability of substitute procedures, and the fairness of the proceedings as a whole.

The analyst should attend to asymmetric burdens of proof and access. An affected participant may suspect a systemic problem but lack the records necessary to establish it; the institution may claim compliance while relying on systems whose histories it cannot itself recover. A well-designed inquiry can identify lawful routes for independent assessment, disclosure requests, audit, review and preservation. These routes need their own authorities and safeguards. A model of institutional capture that leaves no possibility of disconfirmation would provide little analytic discipline; specifying rival causal explanations and evidence that could undermine a claim is part of the proposed method.

13.5 Historical Change, Reliance Interests, and Institutional Repair

Institutions develop through successive acts of legislation, appointment, administrative practice, contractual procurement and adjudication. A reform that alters one of these relations can leave other relations in place. Replacing a court's case-management system may not change the authority of its judges, yet it can alter access to records and procedural participation. Reforming appointment rules may strengthen future independence while leaving questions about judgments already delivered. A statute recognizing a new juridical participant may expand prospective procedural options while requiring separate treatment of earlier acts and reliance interests. Historical transformation therefore has a layered structure: legal titles, institutional practices, informational infrastructures and social expectations need not change at the same time.

The comparison of the Poland and Iceland judgments highlights a temporal legal issue. The CJEU considered legislative change affecting judges already in office; the ECtHR considered an appointment process whose deficiencies affected a later proceeding [9, 21]. Neither decision permits a blanket assumption that subsequent judgments are invalid whenever an institution experienced a defect. Applicable law determines whether and how a violation is established, which applicants have remedies, and the significance of finality and legal certainty. The GR reconstruction treats temporal sequence and feedback as objects of analysis without claiming that relational continuity overrides doctrines of preclusion, limitation, legitimate expectations, or other source-defined restrictions.

For technical systems, institutional repair may include restoring access to case records, correcting affected data, changing procurement terms, improving auditability, retraining personnel, replacing a model, or providing affected parties with legally available reconsideration. For appointment and administrative structures, reform may address future appointments, safeguards, recusal, review or resource allocation. The correct remedy is dependent on the violation, its causal relation to a concrete harm, legally available procedures, and the position of affected third parties. An ethically attractive institutional redesign does not itself determine retroactive liability, and a successful software replacement does not automatically repair past procedural disadvantage.

Historical inquiry should also include trajectories of institutional learning that do not arise from crises or wrongdoing. Courts may introduce more accessible communication, improve specialist knowledge, adopt secure documentation, or develop structured explanations through iterative changes. The same technical service can begin as a modest supplement and become embedded in daily practice. An apparently stable allocation of authority may thus coexist with increasing operational dependency, while a period of reform can alter legal and practical relations in different directions. The task is to trace transformations through records and the experiences of affected participants, rather than presuming that historical change is either progress or decay.

A proposed artificial judicial office offers a limiting case. If a future legislature sought to create a novel decision-making institution, it would need to address the scope and source of authority, continuity across technical versions, oversight, liability, procedural rights, transition from existing courts and treatment of earlier judgments. The speculative proposal does not authorize present deployment. Moreover, emerging claims concerning nonhuman subjects should not displace established procedural protections for human parties and institutional obligations of recognized actors. These boundary conditions are integral to historically responsible institutional design.

13.6 Source-Indexed Institutional Dependence and Transition Record

The previous constructions locate legal competence, reason-giving, evidence, participation, and the circulation of decisions. A complementary record is warranted when the object of inquiry is *the change over time of the relationships that sustain or constrain these functions*. Let I denote an identified adjudicative institution and $[t_0, t_1]$ an interval of legally and empirically relevant time. Let L contain the applicable sources concerning appointment, administration, technology, review and remedies; A list authorized officials and decision responsibilities; D identify material, informational and epistemic dependencies; C describe documented channels of potential influence and any alleged conflict of interest;

P index affected proceedings and participants; E preserve documentary evidence, disputed propositions and relevant access limitations; G identify safeguards and possibilities of independent contestation; T record institutionally significant changes during the interval; R identify available repair, withdrawal or review pathways; and U record unresolved factual, legal and normative questions. Equation 11 states the proposed dossier.

$$\mathcal{H}(I, [t_0, t_1]) = (L, A, D, C, P, E, G, T, R, U)_{I, [t_0, t_1]}. \quad (11)$$

Equation 11 is a typed documentary aid rather than a quantitative measure of influence, a causal estimator, or a legal test of institutional capture. It does not assign common numerical values to a judicial appointment, a vendor dependency, an accessibility deficiency and a statutory claim. For each component, a usable case record would identify the actor making the assertion, its source, the date and institutional scope of the evidence, rival explanations, limits on access and a status such as documented, contested, unverified or inapplicable. The same institution may require several overlapping records if separate dependencies change on different timescales. Any model that treats the temporal index as a sufficient explanation of change would be underdetermined: causal interpretation requires more than a sequence of observations.

The dossier adds a diachronic dimension absent from the static view of an adjudicative office in Section 2 and the per-proposition evidential challenge in Section 10. It allows a researcher to connect a provider migration, a change in appointment rules or a restriction on records to the proceedings in which the alteration might matter. Yet the legal determination of competence, an Article 6 claim, a contractual violation or a data-protection remedy still depends on its own authoritative legal sources. The present formalization is intended to make that dependence visible and auditable. A legal scholar may use it to organize archival reconstruction, while an empirical investigator must supplement it with methods suited to the claim, such as process tracing, comparative institutional records, interviews, performance testing or carefully bounded statistical analysis.

Consider a hypothetical court that adopts a commercial system for legal research and document summarization. During year one, judges retain access to source documents and independent search tools. During year two, a revised procurement arrangement limits access to historical logs and version information, while generated summaries become the default interface for clerks. The dossier would identify the applicable procedural and procurement rules; the relevant institutional and provider responsibilities; evidence of the workflow change; the affected classes of proceedings; confidentiality constraints; and the routes for requesting records, correcting errors or changing providers. It would distinguish a possible risk of informational lock-in from proof that judicial decisions were in fact influenced improperly. An evidential claim about a particular appeal would require a separate proceeding-specific record. The same scenario illustrates a practical problem for institutional repair: restoring an independent search function may resolve future dependency while leaving historical logging gaps unresolved.

A procurement counterexample is useful for calibrating claims about institutional capture. Dependence on a single vendor may constitute an operational vulnerability, especially where the provider alone can reconstruct a model version or restore evidence after an incident. Yet a publicly accountable procurement arrangement with independently testable records, functioning substitution rights, and effective judicial control may satisfy the relevant institutional safeguards despite that dependence. A documented instance of unauthorized alteration or pressure on judicial outcomes, by contrast, would supply evidence of a different and more serious relation. Researchers should distinguish *structural exposure*, *demonstrated interference*, and *a legally established violation* and state which inference the available evidence supports. The same categories should be applied symmetrically to human administrative gatekeeping and technically mediated control.

13.7 Comparative Institutional Configurations and Three GR Reality Levels

Table 12 compares six configurations in which adjudicative authority and effective control may diverge or co-evolve. Each entry identifies an investigable relationship and its relevant qualification. A legal

Table 12: Institutional power and historical dependence configurations: legal sources, practical mechanisms and unresolved questions.

Institutional configuration	Legal or institutional reference	Relevant dependence or transition	Necessary inquiry or qualification
Change to judicial tenure	CJEU C-619/18; Article 19(1) TEU	Discretion over continuation in judicial office	Source-specific breach, scope of remedy and legal history
Irregular judicial appointment	ECtHR <i>Ástráðsson</i> ; ECHR Article 6	Defective appointment process affects later proceedings	Fundamental procedural defect and effective domestic review
Resource-constrained court	Domestic administration; UN Basic Principles	Staffing, translation, case assignment and access	Evidence of specific duties, burdens and procedural effects
AI-supported court infrastructure	CEPEJ 2025 guidance and applicable domestic law	Vendor access, updates, provenance and confidentiality	Auditability, valid procurement, lawful oversight, withdrawal
Specialized court or Indigenous juridical institution	Its own constitutional, statutory or recognized juridical sources	Professional and interpretive dependencies across systems	Institutional authority, status recognition and legal plurality
Prospective artificial judicial office	Hypothetical constituting legislation	Version continuity, appointments, control, review, liability	Valid legal constitution and safeguards still to be established

remedy is available only where the applicable legal order provides it. The table includes documented legal examples alongside hypothetical designs without presenting the latter as current legal permissions.

Two counterexamples discipline the comparative analysis. First, a court using an external technology supplier may remain independent under all applicable standards if judicial decisions are controlled by competent officeholders, procurement is lawful, relevant records can be appropriately reviewed, and remedies are effective. The mere fact of a vendor contract cannot support a capture finding. Second, an institution might own its entire computational infrastructure and still exhibit serious problems through defective appointments, biased case assignment or inaccessible procedures. Public technical ownership is one possible safeguard under specified institutional conditions; it is neither a general guarantee of legal legitimacy nor a substitute for fair-hearing duties. The CEPEJ’s public-control recommendations and judicial safeguards are valuable precisely because these conditions are multiple and their adequacy must be assessed in context [19].

Under GR’s first level, *ontological reality*, ultimate claims about the being, consciousness or intrinsic status of persons, artificial systems, and institutions remain suspended. Judicial independence cannot be inferred from an assumption about the essential nature of human judges or machines. The second level, *relational reality*, concerns historically constituted juridical and institutional beings: offices, duties, case-allocation practices, vendor relationships, records, remedies and patterns of dependence that may constrain or enable action. These relations can become durable and causally significant even when no single actor controls them in entirety. The third level, *manifestation reality*, concerns the accessible forms through which those structures are represented and contested: appointment decrees, budgets, procurement agreements, audit trails, case files, published decisions, accessibility reports and the testimony of participants. Manifestations provide evidence under appropriate methods, while omissions and asymmetrical access can limit what the researcher reasonably concludes.

The GR reconstruction consequently treats judicial power as a historically changing constellation of legal positions and effective capacities. Formal independence may coexist with material dependence; material resources may enable as well as constrain judicial autonomy; and reforms may shift the location of discretion without changing the identity of the legally authorized decision-maker. The reconstruction supports inquiries about coupling among institutional design, technical systems and the experience of affected subjects. It does not establish a universal theory of capture, infer legal violations from every institutional asymmetry, or authorize speculative artificial adjudication. Its contribution is a disciplined account of the conditions through which adjudicative authority remains practically exercisable and contestable over time. Section 12 examined the circulation of judgments across institutional boundaries; the present section identifies the historical dependencies that can shape the availability of those pathways. The remaining analysis will address the ethical limits and research obligations that follow from both inquiries.

14 Limits, Ethical Safeguards, and Research Obligations

The proposed jurisprudence of adjudicative and enforcement authority requires a separate account of its methodological limits and the ethical conditions of further inquiry. Legal competence, technical performance, institutional independence, and practical access to remedies have been analyzed through distinct sources and documentary records. These distinctions create obligations for researchers as well as institutions: a plausible formal description should be examined against the law governing the particular proceeding; a claim of technical reliability calls for evidence suited to its use; and a proposal that changes the distribution of judicial power requires attention to persons already entitled to procedural protection. This section specifies those obligations through a source-sensitive doctrinal analysis, an account of empirical validation, a comparison of ethical safeguards, and a limited formal research register. Its seven subsections address the boundaries of legal inference, the measurement problem, participation and affected interests, research design, withdrawal and repair, documentation of claims, and comparative cases considered through the three levels of Generative Relational (GR) reality.

The discussion distinguishes four propositions that may otherwise be compressed into an assertion that a system is “suitable for adjudication.” A computational system may perform a designated task well under test conditions; its use may be permissible for a defined institutional function; its deployment may satisfy the applicable procedural guarantees in a specified proceeding; and its broader social consequences may remain ethically contested. Evidence for one proposition contributes to inquiry about the others, subject to independently applicable standards. The research programme’s formal instruments organize these enquiries. They neither award legal competence nor establish a general ethical permission to experiment on persons who depend on courts. Existing protections of human participants, parties, witnesses and persons affected by enforcement supply constraints with authority independent of the present theoretical proposal.

14.1 Legal Sources, Constitutive Limits, and the Burden of Justification

Legal authority is historically and institutionally constituted. A judicial decision requires an identifiable source of competence, a properly constituted tribunal or other authorized decision-maker, a matter falling within its jurisdiction, and the procedures and legal effects provided by the relevant order. The ICJ Statute, domestic judicial systems, arbitration law and treaty-based recognition regimes exemplify different sources of adjudicative authority [46, 53, 32]. An abstract account of their shared functions may aid comparative jurisprudence, while the concrete existence of an office and the binding effect of its decisions remain matters of law. The ability to identify a common pattern of source, decision, review and execution therefore leaves room for divergent eligibility conditions, adjudicator qualifications, appeal structures and enforcement powers.

A heightened justificatory burden arises when a proposal would relocate authority from an established officeholder to a technical system or a newly proposed kind of office. The proponent should identify the positive legal source that would permit the relocation; any rules that reserve adjudication to human officeholders; the treatment of pending matters; the effects on constitutional or treaty rights; the responsible institution; and the route through which affected persons may seek a remedy. Article 47 of the EU Charter and Article 6 of the European Convention on Human Rights provide legal guarantees in their respective fields, including concerning the independence of tribunals and procedural fairness [29, 6]. They do not themselves enact a general rule for granting computational systems judicial office. Spain’s Instruction 2/2026 exemplifies a national framework that expressly confines judicial AI to assistance under effective human control and reserves judicial determination to judges and magistrates [5].

The EU AI Act’s treatment of certain judicial-support systems as high-risk applications is an additional source of regulatory inquiry. The regulation establishes obligations under specified classifications and phased commencement provisions; Annex III point 8(a) concerns certain assistance to judicial authorities, and the consolidated text reviewed in the paper schedules relevant high-risk requirements for 2 December 2027 [31]. Compliance with applicable product or deployment obligations would still leave questions concerning the court’s constitutional authority, the particular proceeding’s fairness, and judicial

responsibility. Conversely, a system used solely for permitted clerical tasks can be evaluated according to its real function rather than through an undifferentiated claim that every digital court operation is adjudication.

A comparative legal argument should also register failed translations. The admissibility of expert evidence under one legal order does not determine the permissible delegation of judgment under another. A contractual automated dispute-resolution service does not by its design acquire the legal standing of an arbitral tribunal or public court. A judgment's binding effect in its originating forum does not guarantee recognition abroad. These are familiar limits of legal plurality applied to emerging configurations of technical agency. A claim about a future artificial adjudicator is properly framed as a conditional institutional proposal until a competent legal order provides the relevant legal form and that form has been examined against superior norms, procedural guarantees, and available legal challenges.

14.2 Empirical Underdetermination and the Validation of Judicial Assistance

The empirical adequacy of judicial-support technologies depends on the task, setting, population, available evidence, and consequences of error. Accuracy on a curated set of legal questions may provide useful information about retrieval or classification; it does not characterize performance in a disputed evidentiary hearing with incomplete records, confidential submissions, adversarial behavior and contested interpretations. Even when a benchmark reproduces an earlier judicial disposition, agreement with the outcome alone cannot establish that the system considered authorized sources, respected the applicable standard of proof, or preserved a party's opportunity to present an argument. The choice of the benchmark itself is a source of normative and statistical assumptions. A useful evaluation therefore identifies its target function, reference decisions, data provenance, temporal range, legal-order coverage and failure modes.

The NIST AI Risk Management Framework 1.0 provides voluntary organizational guidance organized around the functions Govern, Map, Measure and Manage. Its iterative orientation can inform research design, including questions about affected contexts, limitations in measurement and ongoing institutional responsibility [40]. It is neither an accreditation of a judicial tool nor a substitute for the legal procedures through which courts are constituted. In a judicial setting, technical evaluation may reasonably include reproducibility of source citations, rates of fabricated authority, sensitivity to conflicting precedents, robustness under multilingual or inaccessible source material, treatment of missing evidence, and changes in output across model or database versions. Such indicators must be reported with their denominators, sampling methods, uncertainty, and foreseeable limits of generalization.

A separate causal problem arises where technological assistance is introduced into an existing court workflow. A reduction in average drafting time may coexist with changes in clerical verification work, differential burdens for represented and unrepresented litigants, loss of access to earlier records, or altered patterns of appeal. Observational associations between software deployment and institutional outcomes cannot, without further design assumptions, identify the contribution of the system alone. Process tracing, matched comparisons, interrupted time-series approaches, carefully bounded trials, and qualitative study of participants may each contribute, depending on what is ethically and legally permissible. Researchers should also attend to selective reporting, learning effects, provider-controlled testing environments and data retention constraints. Where robust causal inference is infeasible, a narrower descriptive conclusion may be more accurate and useful.

Empirical outcomes demand interpretation in light of the procedural interests at stake. A system that saves time while quietly omitting minority-language claims may impose distributional costs hidden by aggregate indicators. A drafting assistant that produces legally correct summaries could still jeopardize confidentiality if sensitive records are transmitted without authorization. Conversely, the existence of occasional, detectable technical errors does not alone establish that an institution has breached a legal duty; the assessment depends on the source of that duty, the institutional controls, and the effect on actual proceedings. The section therefore treats performance, reliability, legality, and ethical acceptability as mutually relevant but analytically distinct inquiries.

14.3 Affected-Subject Participation, Rights, and Ethical Restraint

The ethical assessment of judicial technology should include people whose participation, safety, standing, privacy or opportunities for remedy may be affected. The persons at issue occupy unequal institutional positions: a judge may commission technical advice, a litigant may have little choice about the court's infrastructure, a witness may be subject to compulsory process, and an interpreter may carry the burden of correcting algorithmic mistranslation. Equitable consultation consequently concerns both the content of technological choices and the conditions under which participants can express objections. Consultation is meaningful only when access is practical, the information provided is adequate, and institutional actors identify which aspects of a proposed intervention remain open to revision.

Existing law establishes particular participation duties. The Convention on the Rights of Persons with Disabilities provides guarantees of equal access to justice, including procedural accommodations, and the CRPD Committee's General Comment No. 7 explains participation through representative organizations in implementing and monitoring the Convention [51, 4]. Those obligations and interpretations cannot be reduced to a generic recommendation to collect user feedback from a convenient sample. They concern persons with disabilities as holders of established rights, including a right to influence relevant decisions through the channels specified by the Convention. Their exact application to judicial procurement or research must be assessed according to the implicated rights, institutions and competent legal order. The Convention on the Rights of the Child separately protects children's opportunities to be heard in matters affecting them, in forms attentive to age and maturity [50]. A child's participation, supported decision-making and the procedural role of a guardian require careful legal differentiation.

For nonhuman and hypothetical subjects, the analysis must resist a different kind of conflation. Te Awa Tupua has statutory legal personality and prescribed representative institutions under New Zealand law, which generates questions about appropriate institutional engagement within that law [42]. A non-human animal may receive legal protection under the laws applicable to its case without having every procedural capacity of a natural person. Artificial and extraterrestrial persons pose unresolved legal and epistemic questions. A protocol that presumes they have no potentially relevant interests, or alternatively presumes established human-equivalent legal capacity, would prejudge the very questions under investigation. Research may record competing hypotheses, presently recognized duties of existing institutions, and the type of authority that could validly change the relevant legal classification.

The UNESCO Recommendation on the Ethics of Artificial Intelligence emphasizes human oversight, impact assessment, accountability and participatory governance. Its recommendations are an important ethical resource, and they retain their nonbinding normative status [44]. Within the present proposal, participation is therefore treated as one part of a layered safeguard: source-governed procedural rights where they exist; research ethics for the proposed study; and broader deliberation concerning institutional design. A public consultation cannot waive a party's right to an independent tribunal. A scientifically persuasive ethical argument cannot on its own make an experimental sanction lawful. The normative value of consultation is real, while its power to change particular legal positions remains source-limited.

14.4 Research Designs, Monitoring, and Institutional Responsibilities

The study of AI-supported adjudication requires attention to the point in a workflow at which a system is introduced. Retrospective evaluation using lawfully accessible, de-identified materials presents different legal and ethical questions from a shadow-mode system that produces recommendations unseen by judges, a drafting assistant whose text may influence reasons, and a live model whose output affects parties or triggers enforcement. Each configuration changes the set of persons exposed to error and the avenues for detecting it. Research protocols should therefore identify who designs the intervention, approves it, controls the data, validates performance, reviews failure reports, communicates with affected persons and can terminate a deployment.

A preliminary research programme may proceed through several distinguishable stages. Source and legal-scope mapping should precede technical demonstration. Offline evaluations can then examine limited questions such as citation accuracy, document classification, translation reliability and contestable

factual extraction. Shadow-mode research may be considered where the responsible institution has authority to conduct it, privacy and confidentiality conditions are met, and the simulation cannot affect individual decisions. A deployment that informs actual adjudication requires additional attention to judicial independence, disclosure, human assessment, and review. An arrangement that independently imposes legal consequences would raise a different constitutional question addressed in Section 8; progression through technical stages supplies no automatic authorization for it.

The Council of Europe’s Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law includes a risk and impact management framework, procedural safeguards and provision for consideration of restrictions, moratoria or bans in specified contexts. Its treaty application depends on the relevant entry-into-force and party conditions, which should be checked for any jurisdiction under study [7, 8]. The EU AI Act likewise specifies obligations for providers or deployers of qualifying high-risk systems, including risk management and, for identified deployers and uses, fundamental-rights impact assessment [31]. These instruments differ in status, institutional addressee, commencement and coverage. The UNESCO Recommendation and NIST AI RMF can inform complementary processes without turning their suggested methods into binding court rules [44, 40].

Research governance should be differentiated according to risk. For document retrieval, an appropriate safeguard might be verification against authentic sources and a provenance log. For translation of testimony, the protocol may require qualified language review, accommodation of affected participants and a procedure to correct the record. For systems generating proposed orders, researchers should examine whether a judge genuinely evaluates the reasoning, whether parties can identify material propositions introduced by the system, and whether records survive later appeal. For execution-related systems, failures can produce immediate loss of assets, liberty or access to essential services. Such contexts warrant particularly demanding legal and ethical scrutiny and may preclude experimentation altogether. The relevant requirement is a defensible, institution-specific research design, with defined authority and accountable persons at each step.

14.5 Suspension, Withdrawal, Repair, and the Limits of Experimental Permission

Responsible inquiry should specify conditions under which an intervention is paused, withdrawn, or confined to lower-risk tasks. The grounds may include a controlling legal prohibition, an unresolved jurisdictional defect, a credible threat to fair-hearing guarantees, inability to reproduce sources on which a decision would materially rely, significant data-security compromise, inaccessible opportunities for challenge, or evidence that harms fall systematically upon a group already facing procedural disadvantage. These concerns have different epistemic statuses. A proven statutory prohibition is a legal barrier within its scope; an unexplained discrepancy may justify temporary investigation; and a credible adverse-event report may warrant a precautionary halt while causation remains contested. Keeping these grounds separate reduces the risk that the label “safety” obscures the authority or reasons for a decision.

Stopping an experiment does not dispose of past effects. The institution should identify the decisions in which a system materially contributed, which records and software versions are needed for lawful review, who has power to correct them, and what compensation, restitution, rehearing or other relief is available under governing law. Sections 10 and 11 distinguished access to evidence from the authority to order or implement consequences. A withdrawal plan should preserve that division. Technical deletion of a recommendation cannot nullify a final judgment, and restoring a model checkpoint cannot reverse an unlawful seizure. Legal remedies are governed by the procedural and substantive regimes applicable to affected persons; an internal quality process is supplementary.

A difficult case is the system whose average accuracy improves while the remaining failures are concentrated in proceedings with particularly high stakes. An aggregate performance threshold may mask a small number of erroneous detention-related recommendations, sanctions based on misidentified persons, or systematically mistranslated evidence. An ethical research design should define foreseeable severe outcomes and the relevant denominators independently of average accuracy. Certain risks may

be unacceptable even when their estimated probability is low, especially where the affected person lacks an effective path to challenge or an adequate remedy after the event. The research programme offers a reason to inspect these asymmetries, while the legal determination of necessity, proportionality and permitted restriction must be made under the applicable sources.

An opposite counterexample also matters. A low-risk source-location assistant may have clearly bounded functionality, accurate logging, a lawful procurement basis and continuous professional verification. Requiring it to satisfy every condition imagined for autonomous coercive adjudication would obscure the source-specific proportionality of safeguards. The proposed research obligations are therefore graduated by function, scope, foreseeable consequence and actual institutional use. A refusal to deploy a particular high-risk application should remain compatible with carefully authorized research on methods for reducing error and improving access to justice. Ethical restraint can preserve future generative possibilities without turning speculative technical innovation into a license to expose parties to unconsented legal risk.

An integrated adverse-case protocol follows from the limits identified above. Before the results of a proposed judicial AI evaluation are used to justify institutional deployment, the investigator should attempt at least four challenges. First, vary the legally operative date or jurisdiction to test whether performance claims rest on a superseded or inapplicable source. Second, distinguish an accurate citation from a legally sound inference using cases with genuinely competing authorities. Third, examine whether a system that performs well on aggregate produces concentrated failures for particular affected populations or high-stakes procedural settings. Fourth, test whether the real institution can preserve, access, challenge, and correct the outputs within the time and resource limits of the relevant proceedings. The findings should be documented as research evidence and considered under the distinct applicable legal and ethical obligations. This proposed protocol does not itself grant permission to conduct live experiments in adjudication or alter any existing procedural protection.

Claim-to-source audit and adverse cases. A publication-stage assessment should record the exact legal proposition, its jurisdiction, temporal reach, authoritative provision or judgment paragraph, and the inference needed to reach the manuscript's claim. Directly stated legal duties should be distinguished from judicial interpretation, institutional guidance, empirical observation, and the author's proposed normative tests. When a claim depends on a consolidated instrument, the operative version and application date form part of the proposition itself. Negative controls are also necessary. A general confidentiality obligation cannot establish that a particular disclosure was unlawful; an AI system's documented use cannot prove that it changed a judge's reasons; and a competent judgment from one forum does not itself prove that another forum will recognize it. Each case should identify evidence which, if obtained, would revise the conclusion, and an alternative construction compatible with the observed documents.

Governance of contested findings. The research team may investigate failures, recommend institutional safeguards, or report a source discrepancy, subject to lawful access and confidentiality. Only the competent adjudicative or regulatory institution may exercise the specific procedural or enforcement powers supplied by the governing legal order. A disputed implementation should therefore be represented with both a technical account of what happened and an institutional account of who can correct it. When affected persons cannot safely participate in validation, an empirical gap should be documented; it supplies neither an ethical waiver nor a reason to disregard legally required accommodations or review. A prudent publication notice should identify unresolved material citations, limitations of evidence access, and the independent legal assessment still required before any policy application. These are research obligations proposed here, and their legal force depends on the source-specific rights and duties separately cited in the paper.

14.6 A Source-Indexed Register of Research Obligations and Suspension Grounds

The preceding discussion raises a documentary problem. Legal provenance, epistemic limitations, ethical commitments, and decision-specific safeguards have distinct sources; their interdependence can become difficult to trace across a multi-stage research programme. A limited register can assist researchers in specifying which propositions have been established, which remain contestable, and what would warrant revision or suspension. Let Q denote a proposed research or institutional intervention in adjudication, and $[t_0, t_1]$ its relevant assessment interval. Define L as the applicable legal sources and commencement conditions; K as the authorized institutions, roles and limits of competence; P as the persons and positions potentially affected; M as the methods, measurements, sampling assumptions and uncertainties; E as documentary and empirical evidence with provenance; C as channels of participation, challenge and independent scrutiny; G as safeguards and institutional oversight; S as explicit suspension, withdrawal or restriction grounds; R as legally available remedies and arrangements for preserving records; and U as unresolved interpretive, empirical, and normative questions. The source-indexed register is stated in Equation 12.

$$\mathcal{O}(Q, [t_0, t_1]) := (L, K, P, M, E, C, G, S, R, U)_{Q, [t_0, t_1]}. \quad (12)$$

Equation 12 is a typed record for research governance. It neither generates a single legitimacy score nor establishes a necessary-and-sufficient legal test for adjudication. Particular components may be inapplicable in a given setting, and their significance depends on the legal order and research function identified. Each entry should carry its source, author or responsible institution, temporal coverage, degree of verification, and relevant restrictions on access. In addition, the protocol should identify which actor possesses legal authority to make a suspension or deployment decision. A research team can recommend withdrawal based on a credible safety signal while lacking the legal competence to set aside a court's decision; the difference should remain explicit in the record.

The register is complementary to the authority record in Section 2, the epistemic-dependency graph in Section 4, the contestation record in Section 10, and the institutional history record in Section 13. Its distinctive function is to coordinate prospective research obligations across these records and to preserve the grounds on which investigators decide to proceed, revise, limit, or stop. Where an underlying legal provision supplies a mandatory condition, that condition is recorded as such. Where NIST or UNESCO provides voluntary guidance, its status remains visible. Where the researcher proposes an additional precaution, it is labeled as a recommendation. The separation is indispensable for reproducible legal scholarship and for fair communication with institutions considering a study.

Consider a hypothetical court pilot that uses an AI tool to identify possibly relevant precedents. An initial register might record its jurisdiction and procurement authorization, the human professional responsible for verification, the data sources covered, the evaluation set, and the languages represented. If an update causes frequent citation mismatches in one language, the research team should document the discrepancy, the affected proceedings, and the conditions for restricting use. When an erroneous source has already entered a filed decision, the available correction mechanism belongs to the competent legal order; the researcher can preserve technical evidence and notify the authorized actor. The example illustrates the register's evidentiary function without making the formal representation into a replacement for judicial discretion, procedural law or institutional accountability.

14.7 Comparative Research Configurations and Three GR Reality Levels

Table 13 compares six research configurations. Its purpose is to expose differences in legal source, foreseeable effect and the form of ethical scrutiny required. The entries are illustrative research positions rather than verified deployments, and their classification as lower- or higher-risk requires context-specific assessment. Existing safeguards for human litigants and witnesses retain priority within their applicable regimes. Hypothetical protections for artificial or extraterrestrial subjects remain theoretical questions unless a competent legal source establishes a relevant position.

Table 13: Research settings for adjudicative technologies: differentiated evidence, safeguards and suspension questions.

Research setting	Governing source or unresolved competence	Principal evidential inquiry	Safeguard or suspension question
Retrospective precedent retrieval	Court data-access and confidentiality rules	Authenticity, completeness and source coverage	Authorized access, reproducible citations and retention
Witness-language support	Applicable procedural and accommodation duties	Translation reliability and treatment of disputed meaning	Qualified review, participation and correction routes
AI-assisted draft reasons	Rules of judgment and independent judicial adoption	Verification of legal propositions and actual reviewer conduct	Contestability, judicial responsibility and pause for material errors
Automated execution of a court order	Enforcement competence and procedural protections	Identity, order validity, errors and third-party effects	Lawful authorization, safeguards and immediate review or suspension
Natural-entity legal proceedings	Specific constitutive statute and representation authority	Evidence of authorized representation and affected interests	Appropriate institutional voice and source-specific remedies
Proposed autonomous artificial tribunal	Prospective constitutive law, constitutional constraints	Office, appointment, continuity, procedure and affected persons	Withhold operational delegation pending lawful constitution and safeguards

The first GR level, ontological reality, remains suspended. Neither the existence of a compelling computational explanation nor a claim of machine consciousness resolves the ultimate being of the system, the human participant, or a future unfamiliar subject. The research question about whether a being might suffer, understand a proceeding or possess interests can be ethically important; present observations and legal classifications may leave it unresolved. The second level, relational reality, concerns the historically constituted relationships of courts, parties, sources, legal offices, data infrastructures, social vulnerabilities and authorized remedies. Their interactions can sustain adjudication or render participation practically ineffective. An obligation to preserve access to evidence, for example, becomes meaningful through those roles and their institutional realization. The third level, manifestation reality, concerns the records through which these relations are accessible: promulgated law, judgments, audit logs, appointment instruments, access requests, interviews, translations and the documentation of disputes. Gaps in manifestation constrain what can responsibly be inferred from an observed institutional process.

A GR analysis adds attention to dependencies that may persist when individual tasks or legal roles change: historical distributions of expertise, technical dependency, interpretation and institutional authority can reinforce one another. Yet it does not dissolve disciplinary tests. A doctrinal conclusion requires an appropriate legal source and method of interpretation. A causal claim requires an adequate empirical design. An ethical conclusion requires argument about affected positions, relevant values, and competing reasons. Future research should therefore investigate how these modes of inquiry interact while preserving the limits of each. Paper XIV supplies a preliminary vocabulary for locating authority and contestation; its proposed records should be revised when field evidence, conflicting law or stronger normative objections warrant it. The subsequent conclusion will consolidate that contribution and delimit the questions left to the social-contract and humanitarian-jurisprudence papers of this series.

15 Conclusion: Adjudicative Authority and Heterogeneous Legal Relations

The present study has examined adjudication as a legally constituted and institutionally mediated activity whose consequences extend beyond the moment in which a judgment is issued. Its objective has been to explain how juridical competence, interpretation, specialized knowledge, procedural participation, determination, and enforcement can be distinguished while their practical dependencies remain available for scrutiny. The inquiry has combined source-specific doctrinal comparison with a preliminary Generative Relational (GR) reconstruction. The concluding synthesis first consolidates the institutional account of

authority and the epistemic conditions of its exercise; it then considers procedural voice, enforcement, and the historical organization of judicial power; finally, it identifies the model's evidential limits and the distinct questions assigned to the subsequent papers on social contracts and humanitarian protection.

15.1 Constitution of Adjudicative Authority and Legal Reasons

A recurrent finding is the differentiation of the institution authorized to adjudicate, the officeholder empowered to act, the sources that govern the dispute, and the person whose acts or decisions acquire legal effects. Judicial competence is constituted within particular legal orders through rules of jurisdiction, appointment, procedure, and review. An institution may enjoy a recognized judicial identity while lacking competence over a particular dispute; conversely, an individual may possess substantial interpretive expertise without occupying the office authorized to render the operative judgment. The source-indexed authority record developed in Section 2 keeps these questions distinct and allows a researcher to register contested boundaries rather than silently resolving them by analytical stipulation.

Interpretation and reason-giving introduce a second distribution of positions. The contents of legal sources, the methods applicable to those sources, the evidential grounds of factual findings, and the reasons offered for a decision may be assessed together without being equated. Section 3 developed a trace of source interpretation, inference, adoption, and review. The trace is useful precisely because the normative force of a decision cannot be deduced from the apparent cogency of a generated explanation alone. The ICJ Statute's treatment of judgments and the UNCITRAL framework for arbitration illustrate different institutional sources and forms of decision-making; the relevant rights and obligations continue to depend on the particular instrument and legal order [46, 53]. The paper consequently proposes source-indexed documentation as an aid to doctrinal research and institutional accountability, without presenting such documentation as a sufficient condition of validity.

The distinction is equally important for adjudication involving subjects whose legal positions are under debate. Paper XIII separately considered the recognition and allocation of rights, obligations, responsibility, sanctionability, and procedural standing [34]. Paper XIV concerns the authority through which a competent institution determines, contests, and gives effect to such positions. A proposal concerning novel legal personality therefore has at least two independently demanding questions: which juridical positions the subject could hold, and which body may adjudicate disputes about those positions. The answer to the second question remains indexed to constitutive legal sources and the applicable protections of affected persons.

15.2 Epistemic Dependency and the Allocation of Judicial Functions

The comparative examination of expertise, technical assistance, and hybrid decision-making supports an institutional account of epistemic dependency. Adjudicators may need knowledge that cannot be reproduced in full during a proceeding. The legal significance of that dependence varies with the rules governing expert evidence, the extent of adversarial challenge, the consequences of uncertainty, and the judge's capacity to evaluate the work actually offered. The epistemic-dependency graph in Section 4 records contributions and provenance while retaining the irreducibility of an expert's disciplinary claim to the court's legal evaluation. Requirements governing expert reliability and the overriding duty owed by experts to the court vary across the systems compared, including US federal evidence rules and the civil procedure of England and Wales [57, 1].

Artificial assistance intensifies this dependence when sources, prompts, retrieval methods, training materials, or computational settings are opaque to those relying on the resulting output. Sections 6 and 7 distinguished assistance with source location, evidence organization, prediction, drafting, and procedural administration from the legally authorized adoption of reasons and outcomes. An identifiable human reviewer adds substantive protection only when institutional arrangements allow independent evaluation, correction, disagreement, and refusal. A formal sign-off can coexist with substantive dependence that leaves the reviewer unable to detect a material error. In such a case, the relevant inquiry concerns

the duties, capacities, evidence, and remedies of the actual workflow, including the responsibilities of providers and deploying institutions where applicable.

The prospective case of an autonomous artificial adjudicator therefore raises a constitutional and procedural research problem. Technological autonomy describes aspects of operation; adjudicative authority concerns legally conferred competence, authorized office, guarantees of independence and fairness, reason-giving, and access to review. Section 8 proposed a restricted screen for organizing claims about delegation. The screen may identify documented prohibitions or a need for further scrutiny, but it does not itself grant an office or generate a legal permission. Existing rules, including Spain's judicial AI Instruction 2/2026 within its field of application, and the specific regime of the EU AI Act must retain their separate force [5, 31]. In particular, regulatory classification of a judicial-support technology should not be read as conferring judicial office upon the technology.

The resulting division of labor is an analytical framework rather than a forecast of inevitable institutional development. Technological systems may improve some tasks, introduce novel dependencies in others, and produce uneven effects across jurisdictions, languages, litigants, and forms of evidence. The continued assignment of legal authority to existing courts remains a positive-law matter. Any future institutional proposal would require arguments about authorization, fairness, safeguards, accountable operation, and the persons actually affected. The existence of computational expertise contributes evidence to that analysis without independently settling it.

15.3 Procedural Participation, Contestation, and Review

The capacity of affected persons to participate in adjudication provides a further measure of the relationship between a legal position and its practical protection. Procedural standing, the opportunity to be heard, the authority of a representative, access to evidence, and the ability to obtain an effective remedy are related positions that arise under differing legal sources. Section 9 examined their variation across disability rights, children's participation, statutory natural-entity representation, environmental litigation, and explicitly hypothetical nonhuman configurations. Existing protections for persons with disabilities and children retain their independent legal bases; speculative analogies concerning artificial or extraterrestrial subjects carry no comparable presumption of enacted recognition [51, 3, 50, 42].

Judicial systems also distribute the means of challenging a disputed proposition. Documentary disclosure, scientific uncertainty, authentication, technical explanation, adversarial opportunity, and lawful protection of confidential information answer different questions. The proposition-indexed record in Section 10 makes this differentiation practically examinable. It identifies the contested proposition, the evidence invoked for it, the persons permitted to evaluate or challenge it, the restrictions on access, and the response available to the competent institution. The CJEU's interpretation of GDPR access to meaningful information about automated logic is informative within its own legal scope; it does not establish an undifferentiated global entitlement to receive an entire model or to compel unrestricted publication of protected data [11, 27].

Meaningful contestation is consequently a context-sensitive legal question. An adequate opportunity to contest might involve inspection of source materials, expert questioning, a court-appointed reviewer, controlled access, reasons sufficient to identify a decisive proposition, or other mechanisms authorized by applicable law. A demand for full public technical disclosure can sometimes conflict with privacy, security, or lawful confidentiality protections. Conversely, a formally announced right to challenge may provide little practical protection when the reasons or evidence needed to formulate the challenge remain wholly inaccessible. The paper's contribution is to make these tensions explicit and to locate the person or institution empowered to resolve them. It leaves determinations of sufficiency to the relevant legal framework and the circumstances of an actual proceeding.

15.4 Ordering, Enforcement, and Cross-Order Recognition

The authority to determine a claim remains distinguishable from the power to prescribe and implement a legal consequence. Section 11 separated juridical determination, sentencing or administrative sanction,

reparative ordering, and practical enforcement. Its comparative examples included the international criminal regime of the Rome Statute, administrative fines under the GDPR, and the consequences of State responsibility under the International Law Commission's articles. The regimes differ in addressee, applicable elements, competent institution, review and available relief; no single sanctionability test can be extracted from their juxtaposition [36, 28, 38].

Enforcement introduces its own chain of agency and risks. A judicial order may require a registry, enforcement agency, another State, or a technical provider to undertake additional acts. The identity of the implementing actor, the authority authorizing implementation, and the presence of safeguards against mistaken identity, disproportionate measures, or harm to third parties merit separate documentation. Automating part of execution may alter speed and observability, yet the legality of the underlying coercion and the remedies against its misuse remain determined by applicable sources. In a system with multiple institutional actors, a complete analysis should preserve the allocation of their legal duties rather than attributing every consequence to the most technically proximate agent.

The geographical and institutional circulation of decisions compounds these questions. Recognition, enforceability, and execution in a receiving legal order each depend on a particular legal basis and may be refused, restricted, or unavailable. Section 12 compared EU civil-judgment rules, the Hague Judgments Convention, international arbitration, ICSID arrangements, and international judicial compliance. Their subject-matter limits and refusal grounds preclude a general inference that the legal effects of one institution travel unchanged to another [26, 32, 54, 35]. Institutional plurality may also involve Indigenous legal orders, domestic statutory representation, and disputes for which no agreed transjurisdictional procedure exists. The appropriate legal conclusion in some cases is therefore one of absent competence, partial recognition, or unresolved choice of applicable rules. Such outcomes are analytically substantive: they preserve the limits that enable legal claims to be assessed responsibly.

15.5 Historical Power, Institutional Integrity, and Research Restraint

Adjudication is historically embedded in relationships among appointments, tenure, case allocation, funding, infrastructure, expert communities, information custodians, and providers of technical systems. Section 13 examined these relationships as conditions affecting the exercise of formal authority. Its treatment of European cases concerning judicial appointments identifies specific adjudicated legal defects; its examination of technological or administrative dependency identifies additional questions that require their own legal and empirical evidence [9, 21]. Institutional dependence can support public adjudication, including through financing, professional training, and secure information systems. An allegation of capture requires a more particular showing concerning relevant influence, legally protected independence or impartiality, and available evidence.

The historical dimension matters when technical systems are procured, updated, replaced, or integrated into procedural practice. Responsibility may become divided among entities that no longer control the same resources or preserve the same records. Judicial remedies can be compromised by the loss of documentation or by dependence on a provider whose decisions about access and maintenance are difficult to contest. The framework proposes recording legal sources, material dependencies, the periods in which they operated, changes in institutional control, and the available opportunities for challenge. It also recognizes that records of governance are themselves produced by actors with limited access and possible interests, and therefore require critical verification.

Section 14 supplied corresponding research obligations. Legal authorization, empirical accuracy, normative legitimacy, and ethical acceptability require distinct forms of justification. Retrospective source-retrieval studies, prospective advice tools, live judicial assistance, and hypothetical autonomous tribunals have substantially different stakes. Pilot testing must be situated within applicable legal powers, and risk-management recommendations should retain their status as recommendations unless a governing source makes a particular obligation binding [40, 44]. Credible material defects can warrant restriction, withdrawal, independent review, evidence preservation, or remediation according to the actors and procedures legally available. These measures are part of an accountable research design, even when a

Table 14: Documentary interfaces within a source-indexed account of adjudicative and enforcement authority.

Analytical interface	Primary juridical question	Evidence or record to examine	Boundary of the present claim
Competence and reason	Who can decide, by what sources and procedure?	Constitutive instruments, reasons, adoption and review	Cogent reasoning alone does not confer judicial office
Expertise and technical systems	Which contributions shape a determination?	Expert provenance, model outputs, verification and actual adoption	Technical capability does not independently establish legal authority
Participation and contestation	Who can be heard and challenge decisive material?	Standing rules, representation, access, restrictions and remedies	Protection and standing depend on applicable sources
Consequences and enforcement	Who may order and implement what measure?	Orders, enforcement permissions, accountability and third-party effects	Sanctions and reparations remain regime-specific
Recognition across legal orders	Which effects are admitted by a receiving institution?	Jurisdictional rules, recognition instruments and refusal grounds	Cross-order circulation can be partial or unavailable
Institutional history and research	Which dependencies and uncertainties shape legitimacy claims?	Appointments, infrastructure, audits, historical changes and safeguards	Capture and efficacy claims demand case-specific evidence

proposed technique offers attractive gains in speed or consistency.

15.6 Synthesis of Documentary Interfaces and Three GR Reality Levels

The paper’s formal constructions share a constrained documentary purpose. They locate relations among source, actor, function, evidence, decision and remedy without transforming those relations into a general numerical index of legitimacy. A canonical authority record provides the jurisdictional and institutional anchor; the subsidiary traces clarify legal reasoning, expert dependencies, procedural contestation, hybrid contributions, enforcement, cross-order recognition, and historical change. Their usefulness rests on preserving distinct analytical tasks, especially when an event is represented differently in different institutional records. Table 14 identifies the principal interfaces without adding a further formal object or a universal ordering among decision-making arrangements.

The three levels of GR reality provide a disciplined interpretation of these interfaces. At the first level, ontological reality remains suspended: the analysis does not claim to establish the ultimate nature of human consciousness, artificial experience, or other possible forms of subjectivity. At the second level, relational reality concerns historically constituted and causally consequential legal relations among institutions, decision-makers, litigants, knowledge communities, technologies, and enforcement bodies. Adjudicative legitimacy becomes a question about how such relations are normatively constituted and sustained within particular legal orders. At the third level, manifestation reality concerns promulgated norms, documented reasons, proceedings, technical logs, empirical evaluations, and accounts through which those relational structures become publicly or professionally accessible. Manifestations can be incomplete, disputed, or institutionally controlled; the conclusions inferable from them should reflect those limits.

A relational reconstruction adds an inquiry into mutual conditioning. Changes in evidential technology can affect professional judgment; changes in review procedures can alter the incentive to preserve records; changes in judicial independence can transform the influence of expert providers; and the design of enforcement can affect whether legal protection is experienced as practically available. These are possible mechanisms for future empirical or historical testing, not causal findings established merely by formal notation. The complementary modes of doctrinal, interpretive, normative, and empirical inquiry retain their independent evidential standards. Their coordination offers a way to investigate how legally recognized authority is exercised, reproduced, and occasionally transformed.

A single hypothetical case helps delimit the paper’s integrated contribution. Where a court uses an AI assistant to prepare legal research, issues an authorized order and receives a request for foreign recognition, the provenance of the software output, the court’s adoption of reasons, the party’s opportunity to contest decisive material, the order’s temporal enforceability, and the receiving forum’s competence

are connected but distinct investigations. The records developed here can expose an omitted link or an unsupported transition between these stages. They cannot convert adequate model performance into judicial authority, convert a source-specific right to information into universal disclosure, or convert a valid origin judgment into a universally enforceable instrument. The practical research gain is a clearer allocation of legal claims and empirical uncertainties across actors and time. The normative question of whether additional forms of artificial adjudicative authority should exist remains subject to separately justified institutional choices, effective affected-subject participation, and the protections established by applicable law.

The second integrated revision also provides a methodological limitation internal to the paper's formal apparatus. The source-indexed authority record remains the anchor for institution-specific questions, while reason, evidence, adoption, contestation, sanction and recognition records address different events and sources. Hybrid responsibility is reconstructed as a role-by-function comparison of those existing records, reducing the number of displayed formal constructions without removing the question of distributed duties. This economy is a reason to treat the formal vocabulary as provisional and extensible by demonstrated analytical need. An attractive schema with complete entries remains vulnerable to inapplicable law, unreliable records, deficient procedures and unobserved institutional influence; its documentary completeness cannot establish judicial legitimacy.

15.7 Research Boundaries and Continuing Jurisprudential Questions

The present contribution is preliminary in several respects. Its sources come from multiple jurisdictions and institutions whose doctrines are not equivalent; detailed application to any case would require source-version checks, procedural facts, and analysis by qualified persons familiar with the governing law. The documentary records have not been calibrated through systematic court observations or tested across representative datasets of judicial decisions and technical systems. The comparative cases identify difficult boundary conditions rather than exhaustive categories of legal orders or forms of subjecthood. The study accordingly offers a research vocabulary for examining authority and contestability, with neither a universal test of legitimate adjudication nor an independent basis for authorizing autonomous artificial judicial office.

These limits clarify the division of work across the concluding papers of the series. Paper XV, on social contract theory under heterogeneous-subject conditions, is assigned the prior and broader problem of membership, representation, mediation, and the historical constitution of shared normative orders. It may investigate how heterogeneous participants could negotiate or contest a common *nomos*, including circumstances of asymmetry, uncertain capacity, and partial recognition. The present paper contributes the narrower questions of legally constituted dispute resolution and enforcement within an identified order. It does not treat the availability of an adjudicator as proof that a legitimate social contract already exists.

Paper XVI, on jurisprudence of aid and humanitarian protection under heterogeneous-subject conditions, will address the sources and limits of duties to assist, permissions to intervene, the authority to provide protection, and institutional responsibility in contexts of suffering, vulnerability, emergency, and incomplete knowledge. Paper XIV contributes procedural and authority-sensitive questions that might arise when such obligations are disputed or enforced, including representation, proof, review, and collateral consequences. It does not derive humanitarian duties from the institutional power to adjudicate. Nor does it assume that uncertain evidence of nonhuman suffering can be transformed into an established legal interest without a source-specific normative and juridical argument.

An important continuing task is to study how legal institutions can remain answerable under changing distributions of intelligence, technical control, and material power. The growth of artificial analytical capacity may offer substantial support for legal inquiry while also concentrating access to evidence, infrastructure, and specialized expertise. Different legal orders will respond through their own constitutional arrangements, professional duties, public obligations, and historical practices. The role of this preliminary GR jurisprudence is to preserve a differentiated account of those relations and to identify the evidence and legal authority needed to evaluate them. Adjudication remains an institutional undertaking whose legal force, reasoned justification, practical contestability, and consequences must be examined

in their particular relations. The continuation of the research programme is therefore guided by a dual obligation: to keep open the study of unfamiliar forms of agency and vulnerability, and to respect the presently established protections and responsibilities of those whose lives are affected by law.

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