

Beyond Disclosure: Engineered Consent Distortion and the Architecture of Informed Consent

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Abstract

Bioethics has long argued that informed consent requires patients not only to receive information but to understand it and agree to treatment voluntarily. Yet few bioethical or legal frameworks examine how the surrounding institutional environment shapes whether information is actually understood. This paper introduces Engineered Consent Distortion (ECD), a framework describing how institutions can satisfy every procedural requirement of informed consent while diminishing the substantive autonomy consent is meant to protect. Drawing on information asymmetry, agency theory, behavioural economics, dark-patterns scholarship, and organisational trust theory, ECD shows how Trust Transfer lets institutions borrow, rather than earn, a patient's trust, and offers falsifiable antecedent-mechanism-outcome propositions with boundary conditions distinguishing ECD from legitimate persuasion. The framework is illustrated across assisted reproduction, umbilical cord blood banking, and hospital obstetric care in India — sectors chosen for their credentialed intermediaries and high-stakes, largely irreversible decisions. The paper's central contribution is an architectural model of informed consent separating procedural validity, whether required information was disclosed, from architectural adequacy, whether its delivery was designed to support genuine understanding — reframing autonomy as an outcome of institutional design, not merely an event of disclosure.

1. Introduction

Bioethics has long insisted that transmitting information is not enough for informed consent: respect for autonomy requires that a patient's decision be voluntary and really understood, not just recorded. Courts in medical law have operationalized part of this principle. Since *Canterbury v Spence* 464 F2d 772 D.C Cir 1972 in the US and more recently *Montgomery v Lanarkshire Health Board* [2015] UKSC 11 in the UK, courts require clinicians to disclose whatever a reasonable patient would consider material to a treatment decision including alternatives (Section 3.1). This doctrine changed clinical practice: certain decisions that weigh emotionally such as choosing a fertility clinic, cord blood bank or hospital are supposed not to go forward without documentation of risks and alternatives.

The focus of this paper is on the field of informed-consent ethics, not simply a matter of technical or "doctrinal" detail: Does the current framework for addressing issues of ethical and legal informed consent provide adequate protections when a healthcare organization creates a formal structure for disclosing information related to options, but structures the overall context of those disclosures so that patients' ability to understand what it means to agree to specific treatment is impaired? The core argument- no affirmative answer to that question, and provides a name for the void. ECD, in this paper's initial description, will be used to define, at the outset, the intentional or systematically structured design of a consent architecture (communication, sequence, frame, trust cue regarding disclosure) where all aspects of procedure meet the regulatory requirements of informed consent, yet the patient is deprived of meaningful understanding regarding their decisions; in favour of the interests of the organization responsible for creating the ECD. All subsequent portions of this paper will expand upon, defend and bound that one definition.

The question which is not asked is how that information was communicated. It is the difference in these two issues, rather than what was said in the first place about the risks, options etc. that usually limits the level of understanding required by autonomy in terms of substance. A doctor could inform every one of the relevant risks, alternatives, etc. in the form required by Montgomery in an order, tone and within an environment designed to lead the consumer to believe there is only one viable choice; yet the requirements for disclosure would be met and therefore the consumers' understanding may not have been adequately protected. Consumer protection law draws a similar distinction: consent based on manipulative user interface design may be invalid under GDPR, CPRA, or FTC UDAP (Federal Trade Commission, 2022; European Data Protection Board, 2023) regardless of whether all information was technically presented. This precedence of separating procedural from substantive validity has primarily been applied to digital environments. In contrast, existing ethical and legal analysis of informed consent have focused on the content of disclosure (Section 3.1) and thus have not explicitly addressed the analogous issue in human mediated, institutional settings (e.g., clinical consultations, IVF counselling, regarding hospital admissions); although there are typically greater consequences and less reversal potential associated with the typical medical decision compared to the typical "dark pattern".

This paper addresses a gap called Engineered Consent Distortion: An account of how procedural consent can be satisfied while at the same time autonomy that consent is supposed to protect is systematically degraded. Hidden-information problems of this kind were first described by the economist George Akerlof (1970), whose account of information asymmetry treated the gap between what a seller and a buyer each know about a product's quality as a structural, naturally occurring feature of a market, not something a seller would deliberately manipulate. We propose ECD as an extension of that account: where Akerlof treats asymmetry as a natural market occurrence, we argue that in ECD's cases the asymmetry is an intentional consequence of how the institutional environment is structured. Just as regulators have already recognised limits on what businesses can do to obtain valid consent in digital environments, bioethics needs a comparable account of when consent obtained in human-mediated healthcare environments should be regarded as failing to protect patient autonomy, notwithstanding its procedural validity.

2. Theory Development Methodology

Theory papers vary widely in scope according to the nature of phenomena studied and how broadly underlying theories can plausibly generalize. Whetten (1989) argues that any explanation grounded theoretically of observed phenomena must specify not only relevant entities, their interactions and reasons for those interactions but also where and when that explanation does not apply. This paper follows that logic: Sections 3–8 develop constructs, mechanisms and falsifiable propositions of ECD; Section 8 specifies boundary conditions under which ECD does not apply; and Section 9 illustrates theory across three healthcare sectors selected using clear criteria (Section 9).

During the preparation of this work, the authors used Claude (Anthropic), a large language model, in an assistive capacity for literature synthesis, structural analysis, and citation formatting, under the authors'

direction and subject to their review. The authors reviewed and edited all AI-assisted content, verified all citations and claims independently, and take full responsibility for the content of this manuscript. The AI tool was not used to generate the manuscript's core theoretical contribution, research question, or argument independently of the authors' direction, and is not listed as an author.

3. ECD as a Bridge Theory: Five Foundational Literatures

This section first grounds ECD in existing medical law doctrine (Section 3.1), to establish precisely what that doctrine does and does not capture, before turning to the five theoretical literatures that explain the mechanism operating within the gap doctrine leaves open. ECD is, in that second sense, a bridge theory: it takes mechanisms from five different established theories and combines them in a way no one theory provides on its own, positioned at the crossroads of five well-established literatures beginning with Akerlof's (1970) work on how information asymmetries lead to the breakdown of markets.

3.1 Doctrinal grounding: informed consent jurisprudence and fiduciary duty

The five theoretical literatures reviewed in this section (Sections 3.2–3.6) explain why and how ECD operates; medical law has independently developed doctrine addressing a closely related problem, and starting here fixes the boundaries the theoretical account below must respect. The self-determination principle underlying informed consent was stated by Cardozo J in *Schloendorff v. Society of New York Hospital*, 105 N.E. 92 (N.Y. 1914): “Every human being of adult years and sound mind has a right to determine what shall be done with his own body.” *Canterbury v. Spence*, 464 F.2d 772 (D.C. Cir. 1972) operationalised that principle into the modern materiality standard: a physician must disclose whatever a reasonable patient would consider significant to the treatment decision, and non-disclosure of a material risk or reasonable alternative can itself constitute negligence.

The UK Supreme Court extended this reasoning in *Montgomery v Lanarkshire Health Board* [2015] UKSC 11, replacing the profession-led *Bolam* standard (*Sidaway v Board of Governors of the Bethlem Royal Hospital* [1985] AC 871) with the same patient-centred materiality test, in a case with facts similar to those in Section 9.3: an undisclosed risk of shoulder dystocia and no offered alternative to vaginal delivery. *Montgomery* asks only whether the substantive content of a risk and alternative was disclosed, not how it was communicated — so it could be fully satisfied by a Consent Architecture simultaneously designed, through sequencing, framing, and Trust Transfer (Section 3.6), to make one course of action appear self-evident.

The fiduciary-duty strand applies where financial incentives are misaligned (A1). In *Moore v Regents*, 793 P.2d 479 (Cal. 1990), the California Supreme Court held that an undeclared research and business interest in a patient's removed tissue violated both informed consent and a separate fiduciary duty, since a reasonable patient wants to know of a financial interest that may have influenced professional judgment — conceptually close to cord blood banking (Section 9.2), where the same question arises over

an undisclosed financial interest in biological material. Together, materiality doctrine and fiduciary duty supply legal precedent for ECD's primary antecedents: information asymmetry and framing (A2, M2), and misaligned incentive (A1), which agency theory (Section 3.3) explains economically but does not make legally enforceable on its own. This progression is shown in Fig. 1.

This doctrine, however, only partially reaches the distortion mechanism this paper specifies. Adjacent scholarship on relational autonomy, shared decision-making, therapeutic misconception, informed refusal, patient vulnerability, fiduciary medicine, and procedural justice each illuminate a related dimension — institutional embeddedness, joint decision-making norms, incentive conflicts, or perceived fairness — without supplying a diagnostic apparatus for detecting when an outwardly compliant interaction has been architecturally engineered toward a predetermined outcome (Mackenzie & Stoljar, 2000).

Materiality and fiduciary-duty case law both ask a binary, retrospective question — was the required fact disclosed — rather than the architectural question this paper poses: even where disclosure occurred, was the surrounding communication, timing, and trust structure designed to degrade the decision-maker's capacity to use it? This is the doctrinal gap Section 11 proposes to close, and why this paper treats informed consent jurisprudence and fiduciary-duty doctrine not as competing explanations, but as the closest existing legal scaffolding onto which ECD can be grafted.

3.2 Information asymmetry and signalling

There are many models that describe what happens when information does not flow equally among participants in a market, Akerlof provided the first explanation of how asymmetrically informed actors would affect quality and/or price in markets. Although the signalling model developed by Michael Spence (1973), also describes the problems created by the inability of buyers and sellers to be perfectly informed about product or service attributes, both authors describe either costly signalling or market collapse as possible solutions to the inherent problems caused by naturally occurring asymmetries. Neither provide an explanation for the response ECD describes, which is that some individuals will manufacture or otherwise create asymmetries.

Akerlof's canonical 'market for lemons' analysis shows that when sellers know more about product quality than buyers, and buyers cannot verify quality before purchase, buyers rationally discount their offers to reflect average expected quality; this discounting drives higher-quality sellers out of the market and, left unresolved, can cause the market to unravel entirely. Spence's signalling model supplies the classic solution: an informed party can resolve the asymmetry by sending a credible, sufficiently costly signal, one only a genuinely high-quality seller could afford to send, allowing the uninformed party to sort sellers by quality without directly observing it. Both models therefore treat information asymmetry as a problem the market itself has an incentive to correct, through discounting or signalling, precisely because the asymmetry is nobody's deliberate design; this is what makes them the correct anchor for ECD rather than an adjacent literature, since bioethics' own disclosure doctrine (Section 3.1) implicitly assumes the same self-correcting logic, that once material information is disclosed, the asymmetry is

resolved. ECD identifies precisely where that assumption breaks down. In ECD's healthcare settings a credible signal already exists: the informed consent form, the physician's credential, the clinic's accreditation. But because the party controlling the underlying information asymmetry, the institution, also controls the design of the channel through which that signal is delivered, its sequencing, framing, and timing, the signal can be engineered to convey reassurance without transmitting the comparative information a reasonable decision-maker would need to act on it. Where Akerlof's lemons problem is solved once a credible signal exists, ECD identifies a further problem neither an information-asymmetry nor a signalling model alone can see: a credible signal can exist, and be entirely truthful, while still being architecturally engineered not to inform.

3.3 Agency theory

Jensen and Meckling's (1976) theory of the firm frames the principal-agent relationship as inherently prone to divergence of interest and imperfect monitoring, generating agency costs. This is precisely the structure of the patient-physician and patient-hospital-consultant relationships this paper is concerned with. Agency theory supplies the economic logic for why an agent might be motivated to distort; it does not, explain the specific communicative and procedural techniques through which distortion is operationalised inside a single consent event – the gap the Consent Architecture construct (Section 4) is designed to fill.

3.4 Behavioural economics: Framing, prospect theory, and choice architecture

Kahneman and Tversky's (1979) work on prospect theory and their subsequent study on framing (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981) established how reference-dependence and loss aversion shape decisions under risk; building on this behavioural foundation, Thaler and Sunstein (2008) introduced the terms 'choice architecture' and 'the nudge'. ECD's use of framing and emotion messaging in stages 1 & 2 (Section 7) reflect the studies done by Kahneman, Tversky, Thaler, and Sunstein but used for a commercial advantage and without transparency – this is what healthcare nudge ethics scholars identify as where nudges become manipulative.

Prospect theory's core empirical finding is that people evaluate outcomes against a reference point rather than an absolute scale, and weigh potential losses from that reference point roughly twice as heavily as equivalent gains; consequently, the same underlying facts, for instance, a treatment succeeds in 90% of cases versus it fails in 10% of cases, produce systematically different choices depending on how is it presented, even though the outcomes described are identical. Thaler and Sunstein's choice-architecture framework builds directly on this finding: because some presentation of choices is unavoidable, whoever designs the choice environment inevitably shapes outcomes, and a 'nudge' is any feature of that environment which predictably alters behaviour without forbidding options or changing incentives. Their account is explicitly normative as well as descriptive: for Thaler and Sunstein, a nudge is ethically legitimate only when operated transparently and, in the chooser's, own welfare, a position they term libertarian paternalism. This normative condition is precisely what makes their framework,

rather than prospect theory alone, the right anchor for ECD: it supplies not just a mechanism (framing alters choice) but an explicit ethical boundary for when that mechanism is legitimately used. ECD adopts the descriptive mechanism, that framing predictably alters choice independent of the content disclosed, while identifying a systematic inversion of the normative condition Thaler and Sunstein attach to it. Where a legitimate nudge is transparent and welfare-promoting for the chooser, ECD's use of framing and emotional messaging (Section 7, M2–M3) is neither: the framing is not disclosed as framing, and it is calibrated to the commercial interest of the party designing the choice environment rather than the welfare of the patient encountering it. This is precisely the boundary healthcare nudge-ethics scholarship has identified as separating a nudge from a manipulation; ECD's contribution is to convert that boundary from a general ethical caution into a specific, falsifiable proposition linking framing to emotional mediation to final decision (M2–M3), embedded within a broader institutional model of when and why that inversion systematically occurs.

3.5 Dark patterns and supplier-induced demand

The term 'dark pattern', coined by Brignull (2013), describes interface designs intended to trick users into choices they would not otherwise make; subsequent empirical (Mathur et al., 2019) and legal-analytical work (Luguri & Strahilevitz, 2021) has since documented the prevalence and doctrinal treatment of such designs at scale. Regulators under the GDPR, CPRA, and FTC UDAP authority have converged on treating consent obtained through such designs as failing the "freely given, specific, informed, and unambiguous" standard (Federal Trade Commission, 2022; European Data Protection Board, 2023) — establishing a clear legal precedent for ECD's central argument that regulators may act on substantive violations of consent standards even where procedural compliance has technically been achieved.

Dark patterns are identified by their design function rather than the business area in which they exist: confirm-shaming frames declining an option as a moral failure; forced continuity converts a trial into a paid commitment without a clear conversion point; misdirection visually foregrounds the designer's preferred option and backgrounds the alternative. What anchors these categories as an appropriate foundation for ECD, rather than a loose analogy, is that regulators examining each do not ask whether the necessary information was technically displayed, but whether its manner of display was intended to lead users toward decisions they might not otherwise choose — the same architecture question ECD poses (Section 4.1), asked and answered first in a digital environment.

The section title also names a second, human-mediated literature: supplier-induced demand (SID) theory, developed to explain why physicians paid per service or procedure can shift a patient's consumption of care beyond what a fully informed patient would independently choose, exploiting the same clinical information advantage that would otherwise let the patient limit demand (Section 9.3 reviews the empirical evidence). SID and dark-patterns scholarship identify the same phenomenon in two environments: a design decision, digital or relational, that predictably shifts decisions away from what full information would produce, while remaining compliant when any single element is examined in isolation. Dark-patterns regulation supplies the doctrinal vocabulary for this problem; SID research supplies the methods for detecting it in clinical billing data; neither alone extends to non-digital consent

environments where a credentialed intermediary controls both the information and its delivery, whether through a screen or a consultation.

3.6 Organisational trust theory — the missing piece

The four literatures above only partially address a fact common to every sectoral example in this paper: the decision-maker only evaluate the person in front of them, and transfer the trust earned by that individual's professional role onto the commercial transaction the individual is also, often invisibly, an agent for. Mayer, Davis and Schoorman's (1995) Integrative Model of Organizational Trust supplies the missing construct: a trustor's willingness to accept vulnerability is driven by perceived ability, benevolence, and integrity. This produces the paper's second construct, Trust Transfer: commercial organisations do not need to build the trust that makes ECD effective — they can borrow it, because the decision-maker's trust attaches to an institutional role rather than to the specific commercial recommendation made inside that role.

Trust Transfer operates through at least three distinguishable channels, each independently documented in adjacent literatures that this paper connects to consent distortion. First, symbolic authority: Suchman's (1995) account of organisational legitimacy shows that institutions accrue a form of trust attaching to role and appearance rather than to demonstrated performance — a physician's white coat, a hospital's signage, or a fertility clinic's clinical certificate functions as a legitimacy cue read before any information is exchanged. This channel remains empirically active: a 2025 systematic review of 28 studies found physician attire consistently shapes patients' perceptions of professionalism and trust, with white coats still read as trustworthiness signals across most clinical contexts (Kim et al., 2025). Second, professional-role transfer: Mayer, Davis and Schoorman's (1995) ability-benevolence-integrity dimensions are, in ECD's sectoral contexts, evaluated not against the commercial entity itself but against the credentialed individual delivering its recommendation — which is why a patient who would never extend blind trust to 'a fertility clinic' as a business routinely extends it to 'my doctor' inside the same transaction. Third, reputation spillover: trust accumulated for one purpose (a hospital's clinical reputation, a clinic's success-rate marketing) transfers to decisions made within the same institutional roof without separate evaluation of whether that trust applies to the specific recommendation. Together, these channels distinguish trust transfer from the mechanisms reviewed above: it requires no active deception, being instead a structural feature of how trust is earned and generalised among professional roles — which is precisely what allows ECD to use this trust unfairly rather than manufacture it.

3.7 Integration: from five literatures to one mechanism

Sections 3.2–3.6 are deliberately read separately first, so each theory's own claim can be assessed before it is borrowed. But ECD is one causal chain. Information asymmetry (3.2) is the precondition; agency divergence (3.3) supplies the motive to exploit rather than resolve it; choice and framing architecture (3.4–3.5) supplies the technique, letting an intermediary who controls both information and its presentation sequence and frame disclosure to predictably shift the decision; and organisational trust (3.6) disables the safeguard that would otherwise catch this — because trust attaches to the

credentialed role rather than the specific communication, the patient's ordinary scrutiny of a persuasive message is suspended. It is this sequence, not the mere co-occurrence of five literatures, that Sections 4–7 convert into Consent Architecture and Engineered Consent Distortion.

4. Two Constructs: Consent Architecture and Engineered Consent Distortion

4.1 Consent Architecture

Consent Architecture describes how an organisation arranges communications, authority, incentives, timeframes, documentation and emotional framing to create a consequential decision; every clinical, financial, or significant commercial decision will therefore have been created by some Consent Architecture. It is a descriptive, neutral construct — distinct from Thaler & Sunstein's "choice architectures" (Section 5) — that may be designed to enable better comprehension or to hinder it. Jurisprudentially, it is an analytical heuristic rather than a legal doctrine: it does not create a new cause of action and does not ask whether legally required information was disclosed, a question existing doctrine already answers (Section 3.1). Instead it supplies a second, unasked question alongside that doctrine: whether the organisational design surrounding a disclosure was reasonably structured to preserve, rather than degrade, the decision-maker's substantive understanding. Section 11.1 develops this distinction between procedural validity and architectural adequacy.

4.2 Engineered Consent Distortion

ECD is the intentional or systematically structured commercial design of a Consent Architecture such that its procedural requirements — a signature, a verbal assent, a completed form — formally satisfied, while the substantive understanding the architecture is nominally meant to protect (comprehension, voluntariness free of undue influence, alternatives) is systematically degraded in a direction favourable to the information-holder. The construct rests on a single conceptual distinction: consent exists; understanding does not — and this gap is produced by a specific, identifiable design of the surrounding architecture, which can therefore in principle be redesigned, audited, and regulated (Section 11).

This raises an immediate empirical question: how would a researcher establish that an architecture is intentionally or systematically structured, rather than accidental? Direct evidence of subjective intent will rarely be available and should not be required; intentionality can instead be inferred from observable features — a pattern repeating across patients, standardised scripts favouring one outcome, incentive structures rewarding it, and persistence after evidence of harm. None alone is dispositive, but their joint presence distinguishes a designed architecture from an accidental one on grounds a court, ethics committee, or researcher can evaluate.

4.3 Conceptual pathway

Institutional Objective

↓ Selective Information Disclosure

↓ Framing of Risks and Alternatives (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981)

↓ Trust Transfer via Authority Cue (Mayer et al., 1995)

↓ Emotional Messaging

↓ Procedural Consent Obtained

↓ Reduced Substantive Understanding

↓ Institutionally Preferred Decision → Institutional Financial Benefit

↓ Institutional Trust Erosion (feedback, delayed)

5. Distinguishing Consent Architecture from Adjacent Design Constructs

A recurring reviewer objection to broad architecture constructs is that they are indistinguishable from existing design vocabularies.

Table 1
Distinguishing Consent Architecture from Adjacent Design Constructs.

Construct	Primary scope	What it treats as manipulable	How Consent Architecture differs
Choice Architecture (Thaler & Sunstein)	Everyday choice environments (defaults, ordering, framing)	Decision environment generally, normatively neutral (can serve the chooser or the choice-architect)	Scoped specifically to high-stakes, trust-mediated, often irreversible decisions requiring formal consent; treats the trust relationship with an intermediary as a load-bearing structural element, not an incidental detail
Decision Architecture (operations/decision-support literature)	Structuring of information and options within decision-support systems	Sequencing and presentation of options within a system	Consent Architecture is evaluated specifically for epistemic outcome – whether substantive understanding survived – not decision-support efficiency
Information Design	Comprehensibility, format, and layout of information (typography, visual hierarchy)	How information is presented	Addresses who deliver information, in what order, under what time pressure, and through what trust relationship – not only format
Service Design	End-to-end service experience and touchpoint sequencing	Usability and satisfaction across a service journey	Evaluated for whether understanding was preserved or degraded, not for usability or satisfaction, which can remain high even where ECD occurs (Proposition 01)
Clinical Communication / Informed Consent literature	The clinician-patient encounter specifically: capacity, voluntariness, disclosure	Adequacy of a single clinical disclosure event	Deliberately cross-sectoral: the same audit logic applies to an IVF, cord blood bank counselling or a hospital admission discussion, not only a single medical encounter

6. Distinguishing Engineered Consent Distortion from Adjacent Constructs

A reviewer versed in consumer law scholarship will likely raise the challenge to ECD posed by Brennncke's (2024) concept of "exploitation" in consumer law, as related to online choice architecture, 'dark' design

practices, and autonomy violations, and the related "General Theory of Harm for Consumer Law" literature— both developed within the consumer-law tradition rather than medical law. ECD is positioned in relation to that and five other constructs in Table 2.

Table 2
Distinguishing Engineered Consent Distortion from Adjacent Constructs.

Construct	Core mechanism	Assumption about consent validity	How ECD differs
Manipulation (general)	Bypasses rational agency, often below conscious awareness	Typically treated as consent-vitiating once identified	ECD does not require the technique to operate below awareness; harm operates through the sequencing and ownership of an architecture, and consent can remain legally intact throughout
Deception	False or materially misleading factual claims	Consent obtained is treated as invalid once deception is proven	No factual claim in an ECD case need be false; understanding is degraded by selective disclosure, sequencing, and framing rather than by falsehood
Dark patterns (Brignull, 2013)	Interface design engineered to trick users	Regulators (GDPR/CPRA) treat resulting consent as legally invalid	ECD applies to relational/institutional as well as digital settings, and covers the harder regulatory case: consent that remains legally valid despite substantive harm
Sludge (Sunstein)	Friction added to discourage a beneficial action (the inverse of a nudge)	Typically, an omission — something the person is prevented from doing	ECD is an active architecture that produces an affirmative decision (a purchase, a signature), not merely an obstruction to a beneficial one
Asymmetric/prospect-theory framing	Exploits reference-dependence to shift preference	A single-mechanism cognitive account	Framing is one stage within ECD's four-condition, multi-mechanism pathway (Section 7); framing alone, without borrowed trust and misaligned incentive, does not meet the ECD threshold (see Section 6, boundary conditions)
Behavioural exploitation (general/umbrella) (Brenncke, 2024)	Any commercial use of a cognitive bias	Vaguely bounded, difficult to falsify	ECD requires the presence of four necessary conditions, with irreversibility as a severity moderator (Sections <link rid="Sec18">7</link>–8), making it falsifiable in a way the general 'exploitation' label is not
Persuasion (classical)	Changing belief or attitude through argument or appeal	Generally, a legitimate marketing activity	Persuasion aimed at a freely-informed decision is outside ECD's scope; ECD specifically requires that substantive understanding be degraded, not merely that preference be moved

Positioned in this manner, ECD's contribution to Brenncke (2024) theory of exploitation will not be competitive; rather, it will provide an additional dimension by suggesting that the same legal doctrine which has been applied against digital dark patterns (procedural consent can be considered lawful even if substantive), will also apply equally or more so to human mediated Consent Architectures which are currently unregulated.

6.1 Distinguishing ECD from ordinary persuasion and legitimate commercial communication

Table 2 positions ECD against adjacent scholarly constructs, but sceptical readers will ask a simpler question: what stops ordinary clinical communication from being classified as ECD? Intentional or systematic architectural design is doing all the work here, and its absence is dispositive. A novice counsellor who omits a comparative alternative through ignorance is not practising ECD, even though the degradation in understanding is real, because no one designed the encounter to produce it; the same is true of an overworked clinician disclosing risks hurriedly at an understaffed clinic. Ordinary persuasive marketing is not automatically ECD either: a clinic emphasising its success stories is engaged in ordinary reputational signalling unless coupled with a designed suppression of comparative information the patient would need. What distinguishes these cases from ECD is not the professional's sincerity or the accuracy of what is said, but whether the architecture was built around a commercial incentive to produce a particular outcome while formal consent is still met — a difference of design, not degree, that Sections [7](#) and 8 convert into testable conditions.

Put most compactly: ECD is defined by whether the decision environment was structured to degrade autonomous understanding while formal consent is preserved, not by whether the patient's choice changed. A patient reaching the same decision they would have anyway can still have been subject to ECD; conversely, a patient changing their mind after disclosure was not subject to ECD at all if nothing about that disclosure's architecture was designed to produce the shift.

7. An Antecedents → Mechanisms → Outcomes Framework

The theory is organised into antecedents that make ECD possible, the mechanisms through which it operates, and downstream outcomes at individual and institutional levels. Figure 2 depicts this framework.

7.1 Antecedent propositions

A1. Commercial incentive intensity (e.g., percentage commission, per-unit margin) affects the likelihood and severity of ECD, moderated by monitoring: incentives predict ECD most strongly where monitoring is weak, consistent with agency theory's prediction that agent behaviour diverges further from principal interest as incentives go unmonitored (Jensen & Meckling, 1976).

A2. Information monopoly (few independent means of comparison available to the decision-maker) increases the likelihood of ECD, and this effect is amplified when the information-holder also controls how that information is framed (see M2) – information monopoly and framing control are mutually reinforcing rather than independent antecedents.

A3. Emotional vulnerability (acute illness, infertility-related distress, financial stress) increases a decision-maker's reliance on Authority Cues as an indicator of trustworthiness at the time they are least able to evaluate that trustworthiness by themselves; therefore, in such cases, Emotional Vulnerability will increase the impact of Selective Disclosure on the Decision-Maker's final decision (Trust Transfer M1).

A4. Transferable institutional trust (the presence of a credentialed or branded intermediary whose role-based trust the decision-maker can extend to a commercial recommendation, as described in Section 3.6) is a necessary antecedent of ECD: where the intermediary has no such role-based trust to lend – an anonymous peer-to-peer transaction, for instance – the Trust Transfer mechanism (M1) has no trust available to transfer, and ECD cannot operate regardless of A1–A3.

A5. Decision irreversibility (the practical or financial difficulty of reversing a decision once consent is given) increases the severity of ECD's effect on outcomes: where a decision carries a genuine, low-cost "cooling-off" option, the decision-maker retains a corrective opportunity even if understanding was initially degraded, which attenuates ECD's downstream harm relative to decisions that are effectively final at the point of consent.

7.2 Mechanism propositions

M1. Since Symbolic-Performance Authority Cues (credentials, attire, institutional signage) are evaluated prior to and separately from any information exchanged with the provider regarding the performance of that provider (as described in Section 3.6), it follows that Authority Cues will be more influential than Demonstrated-Performance Authority Cues (outcome data published by providers) in increasing the impact of Selective Disclosure on the Decision-Maker's final decision via Trust Transfer.

M2. Text framing alters decisions toward predictions made by Kahneman and Tversky (1979) and Tversky and Kahneman (1981) based on reference dependence and aversion to losses (see prospect theory). This effect is mediated through emotional messaging (M3) rather than directly changing decisions: framing changes decisions by first changing the emotional state of the decision maker rather than changing factual beliefs directly.

M3. Emotional messaging mediates the relationship between selective information presentation and the ultimate commercial decision, and the strength of this mediation is moderated by the decision-maker's baseline emotional vulnerability (A3): the same emotionally-framed message produces a larger shift in decisions for high-vulnerability than low-vulnerability decision-makers.

7.3 Outcome propositions

O1. The distortion of engineered consent (ECD) distorts objective, quantifiable knowledge of risk and alternative options while allowing subjective, self-reported satisfaction with the consent process to remain unchanged—therefore, there exists a measured difference in the degree of subjectively reported versus objectively determined informedness.

O2. At scale, continued use of sustained ECD will result in a decline in trust in institutions as indicated by large volume complaints relative to low levels of violations of formal regulation—because Trust Transfer (Section 3.6) is a generalized, role-based model of trust, it is an asymmetrical relationship—perception of one high visibility incident within a profession/sector creates a negative reputation for all other organizations within that same profession/sector.

O3. Independent decision aids (second-opinion mandates, standardised comparison disclosures, cooling-off periods) weaken the effect of ECD on O1, and do so more effectively when mandatory than optional, since optional aids remain subject to A2's information-monopoly condition — a decision-maker who lacks independent means of comparison is also less likely to know an optional aid exists or how to use it.

O4. Where ECD is sustained long enough to become visible in aggregate complaint or outcome data, it triggers regulatory correction with a lag whose length is moderated by the visibility of the harm: quantifiable financial harms (e.g., the margin-based NPPA and CCI findings discussed in Section 9.3) predict faster regulatory correction than harms visible only through complaint volume.

8. Boundary Conditions: Where ECD Does Not Apply

A theoretical construct is strengthened, not weakened, by a precise account of where it fails to apply (Whetten, 1989). Building on the four conditions jointly necessary for ECD to occur — information asymmetry (A2), transferable institutional trust (A4), emotional vulnerability (A3), and misaligned financial incentive (A1) — together with irreversibility (A5), which operates not as a fifth necessary condition but as a severity moderator once the four necessary conditions are already met (Section 7.1), this section states six conditions under which ECD does NOT apply, even where superficially similar commercial activity is present. Each is stated as a testable exclusion condition.

- Aligned incentives: where an agent's compensation is structurally aligned with the principal's interest (a salaried physician under a fixed budget; a fee-only adviser paid solely by the client), the misaligned-incentive condition does not exist, and ECD should not occur regardless of asymmetry or vulnerability.
- Reversible decisions: When there are minimal costs to reversing a decision and a genuine "cooling off" period is exercised (e.g., a monthly subscription; a returnable purchase of a product in a retail store), then the irreversibility factor (A5) is absent, which reduces severity of any resulting distortion but does not, on its own, exclude ECD if the four necessary conditions above are otherwise present.

- Separate independent decision support available & used: If an independent second opinion, standardized comparative disclosures as well as independent ombudsmen reviews are truly available and exercised prior to consent being finalized for a consumer's benefit, this diminishes/eliminates the monopoly on information (A2).
- Lack of institutional trust: When an individual transaction takes place outside the context of a professionally qualified/branded intermediary (an anonymous internet market, a peer-to-peer transaction) then institutional trust cannot be exploited by the Trust Transfer mechanism (A4).
- Symmetrical information: If each party has equal access to the same relevant data (e.g., a standardized product with public specifications) then this foundational asymmetric condition does not exist.
- Independent expert intermediaries acting for the decision-maker's own side: In cases where the decision-maker has an independent agent of their own to represent them (e.g., patient advocate; broker acting exclusively in fiduciary capacity on behalf of the buyer; consumer retained lawyer) - this represents an entirely different trust configuration than that described above by virtue of the source and monitoring of the trust being independent of the intermediary's interests.

These exclusionary conditions are falsifiable: if a research design shows an ECD-proposed process (Section 7) occurring even after the above conditions are met, the theory as stated is falsified.

9. Sectoral Evidence

9.0 Sector selection criteria

Sectors were chosen against three explicit criteria, not availability or the authors' professional exposure: A legal requirement for consent before the transaction; a formally credentialed or branded intermediary able to transfer trust to the decision-maker (Section 3.6); and a decision that is high-stakes and difficult to undo once consent is granted.

The three sectors below illustrate the explanatory reach of the constructs developed in Sections 4 through 8; they are not offered, and should not be read, as empirical validation of ECD. Observing conditions consistent with ECD in a sector \u2014 high information asymmetry, credentialed intermediaries, misaligned incentives \u2014 is not itself evidence that ECD occurred in the specific cases discussed; it illustrates circumstances under which the theory predicts ECD becomes more likely, a matter for future empirical testing (Section 12).

9.1 Assisted reproduction and IVF

IVF marketing has faced direct regulatory scrutiny over the gap between formal disclosure and what patients actually absorb. The UK's Competition and Markets Authority investigated the fertility industry over clinics listing unrealistically low headline prices and exaggerated success rates while disclosing further costs only as treatment progressed (CMA, 2021, jointly with the HFEA). An academic-centre

study found 76% of surveyed physicians believed fertility centres often use misleading methods presenting success rates (Gunderson et al., 2020), and bioethical commentary on IVF risk-sharing programs notes patients often overstate their chances of success despite signing a consent form beforehand (Ethics Committee of the American Society for Reproductive Medicine, 2014).

Doctrinal engagement. Applying Section 3.1's doctrine to this sector shows both its reach and its limit. A clinic that verbally names its live-birth-rate methodology and lists standard risks in a consent form has, in substance, satisfied Montgomery; but Montgomery supplies no test for whether the order, timing, or emotional register of that disclosure was designed to make comparison with competing clinics difficult, or a headline price quoted without add-on costs calculated to mislead — the concern the UK's CMA/HFEA guidance addresses through consumer law rather than negligence doctrine. This is precisely where ECD adds analytical value: it names and makes auditable the sequencing and framing gap that materiality doctrine and consumer law each leave unaddressed separately.

9.2 Private umbilical cord blood banking (CBB)

CBB is among the most well-documented examples of procedurally valid but substantively hollow consent: a scoping review identifies insufficient information and undisclosed founder conflicts of interest as the two most common ethical issues (Gerdfarmarzi et al., 2022). Bioethical foundational research established that the process of obtaining informed consent should occur prior to labour and delivery; it is at this point that the constraints placed upon individuals due to both time-pressures and cognitive limitations of deliberation compromise their ability to make an informed decision (Salvaterra et al., 2006).

Doctrinal engagement. *Moore v Regents* is the doctrinally closest anchor for this sector: both concern the commercial afterlife of biological material collected around a clinical encounter, and Moore's reasoning would plausibly support a fiduciary-duty claim wherever a bank conceals a referral fee from parents. But Moore's holding requires only the fact of disclosure, not any particular manner of delivering it — a bank disclosing referral-fee arrangements in full, in writing, on page eleven of a consent packet handed to a parent in active labour, precisely the timing Salvaterra et al. (2006) identify as compromising deliberative capacity, satisfies Moore's fiduciary standard while the disclosure is, as a practical matter, unreadable. Doctrine compels disclosure of the underlying conflict but does not reach the sequencing decision determining whether that disclosure can actually be understood — the gap Consent Architecture (Section 4.1) makes visible: the same fact, disclosed differently, could satisfy Moore while producing a materially different level of parental understanding, a difference Moore's binary test cannot register.

9.3 Hospital care, obstetric intervention, and consumable overbilling

The theoretical structure for supplier-induced demand (SID) holds that physicians act as agents who create demand exceeding what fully informed patients would choose; qualitative studies identify weak

monitoring, fee-for-service payment, and patient information deficits as key drivers (Mohamadloo et al., 2019; Seyedin et al., 2021). In ECD terms, a discharge conversation and consumable billing lines may each be individually justifiable while the overall informational environment a hospital provides leaves families unable to distinguish clinical necessity from margin-maximising billing.

Indian courts and regulators supply further evidence on the billing side of this sector. India's National Pharmaceutical Pricing Authority found a Gurugram hospital had marked up consumables by roughly 1,700% during a fatal paediatric dengue admission (Press Trust of India, 2017; National Pharmaceutical Pricing Authority, 2017); consumer forums and the Competition Commission of India have since treated inflated or bundled billing as an Unfair Trade Practice and a unitary-service issue respectively (Indian Medical Association v VP Shantha and Ors (1995) 6 SCC 651; Narayana Health and Ors v State of West Bengal and Ors, 2026 INSC 481; Competition Commission of India, Orders, 21 May 2026) — reinforcing Section 11's claim that existing regulatory categories are not designed to capture a Consent Architecture problem of this kind.

The pattern is shown most clearly through obstetric care in the same-hospital setting. Against the WHO's recommended population caesarean rate of 10–15%, India's 2019–21 National Family Health Survey recorded 47.4% in private hospitals versus 14.3% in public hospitals (IndiaSpend, 2026; Ministry of Health and Family Welfare, 2021; ThePrint, 2019; Bhatia et al., 2020).

Doctrinal engagement: this sector stands out given Section 3.1, since Montgomery is itself a case about delivery method — a mother unwarned of a material shoulder-dystocia risk and the alternative of caesarean section. A hospital can fully satisfy Montgomery while its Consent Architecture still steers toward the commercially preferred outcome, whether disclosure occurred under time pressure, was framed by staff remunerated more for surgical delivery, or was sequenced to present caesarean as the lower-anxiety default. Indian consumer forum reasoning shows the same boundary differently: Shantha brings medical services within consumer law and Narayana Health confirms billing disputes remain civil absent dishonest inducement, but neither audits the manner in which a proposed caesarean is presented — the gap Consent Architecture and Section 11.1's audit distinction are designed to close.

A caution applies specifically to this sector: elevated caesarean rates and the supplier-induced-demand literature above are illustrative of conditions under which ECD could plausibly arise; they do not, alone, establish that ECD occurred in any cited case, since each can be present without the further, specifically architectural element — deliberate or systematic design of the disclosure environment — that ECD requires.

10. Positioning Within the Literature — What Is Genuinely New

This paper's contribution is theoretical: the structure surrounding a disclosure, not just its content, should be treated as part of informed consent. Existing literature has not integrated information asymmetry, agency theory, framing, dark-patterns scholarship, and organisational trust into a single framework treating procedural validity and patient comprehension as analytically separable (Sections 3–

4). Two constructs follow: Consent Architecture, the organisational arrangement producing a decision, and Trust Transfer, the mechanism by which institutions borrow rather than earn the trust that makes that architecture effective. Where prior work treated profit motive alone as sufficient explanation, this paper specifies a falsifiable four-condition model with clear boundary conditions (Sections [7](#)–[8](#)), generalisable across sectors, and offers common measures – trust attachment, information monopoly, comprehension gaps – that researchers can apply rather than deriving sector-specific measures repeatedly. Regulatory traction already exists piecemeal without shared theoretical grounding: CMA/HFEA on fertility advertising, GDPR/CPRA on dark patterns, and Indian commentary on caesarean rates each independently identify ECD-consistent findings without recognising the common underlying phenomenon.

11. Bioethical, Legal, and Regulatory Implications

ECD is not proposed as a replacement for established doctrines governing informed consent, professional negligence, fiduciary obligation, or unfair commercial practice, but as an analytical framework identifying a category of consent-related harm those doctrines evaluate only partially. Where contemporary bioethics and jurisprudence primarily ask whether material information was disclosed, ECD proposes that the architecture through which disclosure occurs should itself become an object of ethical and legal scrutiny wherever commercial incentives, institutional authority, and patient vulnerability intersect (*Canterbury v Spence*, 1972; *Montgomery v Lanarkshire Health Board*, 2015; *Moore v Regents*, 1990).

On this view, informed consent can either support or hinder a patient's ability to decide autonomously: autonomy requires not merely the provision of information but meaningful understanding of it and genuine voluntariness in choosing (Beauchamp & Childress, 2019).

11.1 Towards an Architectural Model of Informed Consent

Contemporary informed consent doctrine focuses mainly on content disclosure. *Canterbury v Spence* (1972) and *Montgomery v Lanarkshire Health Board* (2015) require clinicians to disclose material risks and reasonable alternatives, but neither systematically evaluates the process of disclosure itself – sequencing, framing, timing, institutional authority, or commercial communication strategy – which collectively constitute this paper's architecture of consent.

ECD therefore proposes that judicial analysis should distinguish between two analytically separate questions: (Fig. 3)

1. Procedural validity: Was the legally required information disclosed?
2. Architectural adequacy: Was the overall Consent Architecture reasonably designed to preserve the patient's substantive understanding and autonomous decision-making?

This distinction does not establish additional disclosure obligations beyond those in informed consent case law; it expands existing case law's recognition that organisational design can affect whether legally sufficient disclosure fulfils the normative goal of informed consent (Faden & Beauchamp, 1986).

Judicial application. This distinction has a specific, limited role: Consent Architecture is an evidential framework, not a new cause of action. A claimant would still plead an established claim — negligent failure to disclose, breach of fiduciary duty, or an unfair-practice statute — but could introduce the Consent Architecture itself (disclosure sequencing, timing relative to admission, the financial structure behind recommendations) as circumstantial evidence of whether disclosure was substantively adequate.

11.2 Implications for Consumer Protection Regulation

Consumer protection authorities already recognize that formally valid consent can be legally defective if obtained through manipulative interfaces; GDPR and FTC guidance increasingly requires consent be freely given, informed, specific and clear, not just documented (Federal Trade Commission, 2022; European Data Protection Board, 2023). ECD extends this logic to healthcare: regulators should assess whether the Consent Architecture favours commercially preferred decisions despite procedural compliance, complementing rather than replacing existing negligence and unfair-practice frameworks.

11.3 Professional Regulation and Healthcare Governance

This theory has implications for professional regulation. Medical councils, accreditation agencies, and hospital governance systems traditionally evaluate competence and clinical results, but pay little attention to whether institutional systems encourage commercially advantageous decisions while merely checking procedural compliance. ECD supports governance standards addressing disclosure of financial incentives, separation of clinical advice from sales functions, independent decision-support mechanisms, standard comparative disclosure documents, and organisational accountability for consent-system design consistent with fiduciary principles (Moore, 1990; Montgomery, 2015).

11.4 Consent Architecture Audit Framework

Another practical implication is a Consent Architecture Audit: Rather than asking only whether a form has been signed, regulators and healthcare organisations could evaluate five domains, distinguishing four core diagnostic conditions from a fifth severity moderator. The core conditions are information asymmetry, incentive, trust source and transfer, and vulnerability. Reversibility — how costly or practically difficult the decision is to undo — is scored separately as a severity moderator, not a diagnostic condition: its presence does not indicate ECD, but its absence indicates a more severe instance where ECD is otherwise present. Where the four core conditions coexist, enhanced scrutiny may be warranted even absent any finding of intentional falsehood or negligence. The audit does not itself determine

liability; it is designed to flag Consent Architectures where the risk of impaired understanding is high, before harm becomes visible in outcome data.

11.5 Comparative Medical Law

This paper draws examples mainly from India, the UK and the US, but the underlying theoretical framework is not jurisdiction-specific. Australia and Canada independently reached comparable patient-centred materiality standards well before Montgomery (Rogers v Whitaker [1992] HCA 58; Reibl v Hughes [1980] 2 SCR 880), each still asking only whether facts were communicated, not how. Convergence across four common-law jurisdictions over four decades makes the gap this paper identifies more striking, not less: the more consistently courts agree on what must be disclosed, the more conspicuous the absence of any parallel doctrine governing how disclosure is delivered.

ECD offers a conceptual framework for future comparative scholarship to look into whether jurisdictions only regulate disclosure of information or also regulate the organizational architecture through which consent is built. Future empirical research should test whether the antecedent conditions in this paper predict measurable differences in patient understanding, institutional trust and health results across different legal systems

12. Conclusion

What ECD is and why existing law falls short. ECD is the harmful condition produced when a Consent Architecture is designed so formal procedural compliance is achieved while understanding is diminished to the benefit of the party designing it; it is not a synonym for deception or manipulation, and requires neither to be proven for the harm to have occurred. Consent jurisprudence from Schloendorff to Canterbury and Montgomery secures content disclosure but does not audit the surrounding architecture (Section 3.1); fiduciary-duty doctrine reaches undisclosed financial interests but not the framing and trust-borrowing that can render such an interest practically invisible; and relational autonomy, shared decision-making, and procedural justice scholarship each illuminate adjacent dimensions without the falsifiable joint-conditions model Section 7 specifies. The gap is real, not a lack of relevant scholarship: existing bioethical and legal frameworks have not, to our knowledge, developed a unified analytical framework treating the architecture surrounding disclosure as a distinct object of scrutiny.

How ECD changes ethical and legal analysis. ECD reframes the central question informed consent analysis asks. Alongside the existing question — was the required information disclosed? — it poses a second, analytically separate question: was the Consent Architecture surrounding that disclosure designed to preserve the patient's substantive understanding (Section 11.1)? This requires neither a new cause of action nor an expansion of disclosure obligations, only treating the manner of disclosure as evidence relevant to whether its purpose — autonomous decision-making — was actually achieved.

Future work should proceed in three directions: comparative analysis of whether jurisdictions beyond India, the UK, and the US show the same disclosure/architecture gap; empirical validation of the antecedents-mechanisms-outcomes propositions in Section 7, particularly whether Section 8's joint conditions predict measurable differences in patient understanding; and testing whether courts and professional bodies will treat architectural evidence as relevant within existing frameworks, or whether new regulatory instruments (Section 11.4) are required.

Reduced to its testable core, this paper leaves three propositions for future work: that ECD's likelihood and severity increase jointly with incentive intensity, information asymmetry, and borrowed institutional trust (7.1); that its effect on understanding is mediated by architectural framing and sequencing, not disclosed content (7.2); and that its signature outcome is a measurable gap between procedural compliance and substantive understanding, present even where no disclosed statement is false (7.3). The Consent Architecture Audit (Section 11.4) is a natural first instrument for testing these propositions prospectively, in the credentialed, high-stakes settings this paper has used to illustrate the theory.

Declarations

Author Contribution

All authors contributed to the study conception and design. Literature synthesis and drafting of the manuscript were performed by U.R.C. S.R.C. and R.R.K. contributed critical revision of the manuscript and provided domain expertise in microbial/cell technology and industry/commercial context, respectively. All authors read and approved the final manuscript.

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Table of Cases

1. Full citations for every case cited by name and date in the text, listed in alphabetical order. Non-case sources are cited in the text using the Sage Vancouver reference style, with numbered in-text citations corresponding to the References list.
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Figures

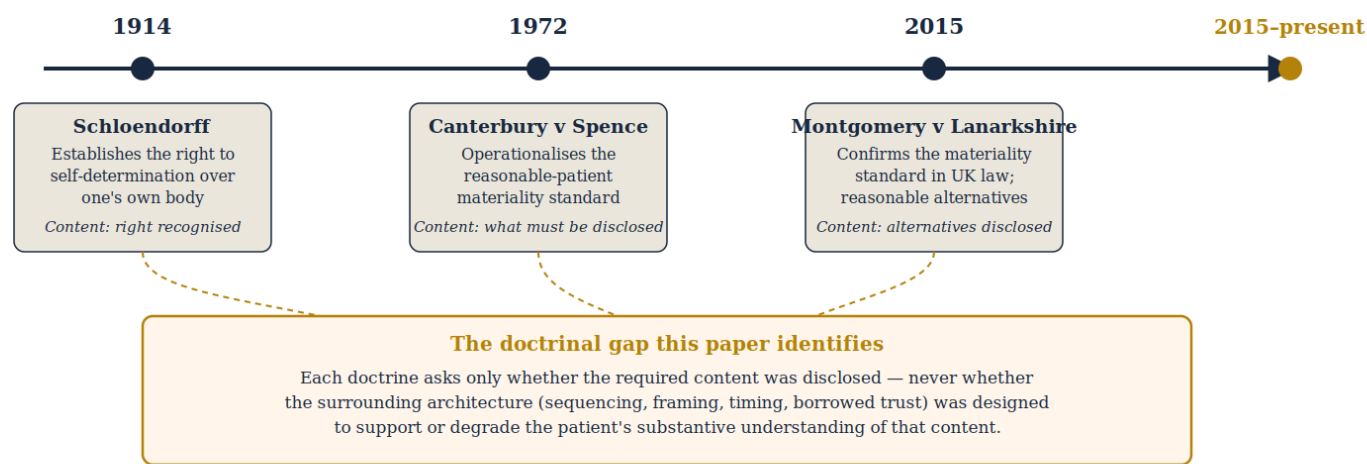


Figure 1. Evolution of the informed consent materiality standard across common-law jurisdictions, 1914–2015, and the doctrinal gap this paper identifies

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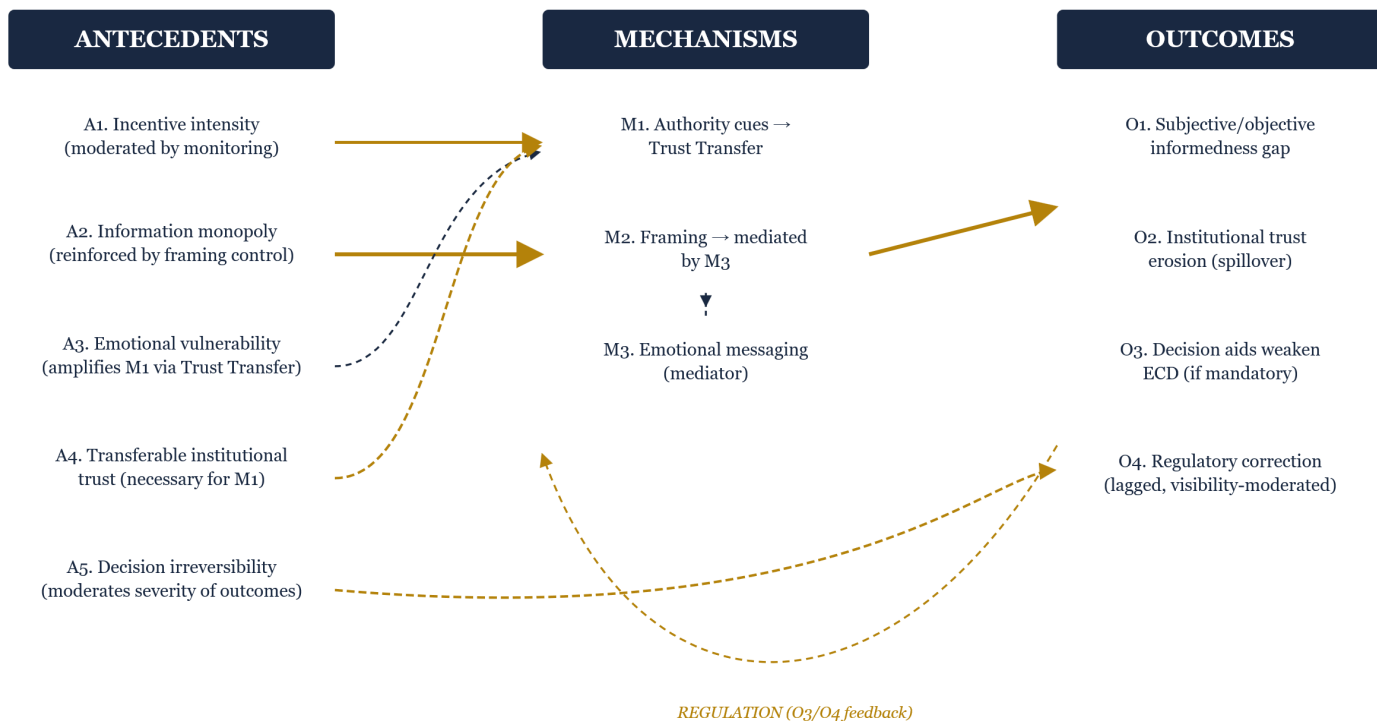


Figure 2. Antecedents → Mechanisms → Outcomes framework, with moderating/mediating relationships and the regulatory feedback loop

Gold-outlined boxes and gold dashed arrows: A4 (necessary condition for Trust Transfer) and A5 (moderates outcome severity), added in this revision.

Figure 2

Antecedents → Mechanisms → Outcomes framework, showing moderating/mediating relationships and the regulatory feedback loop.

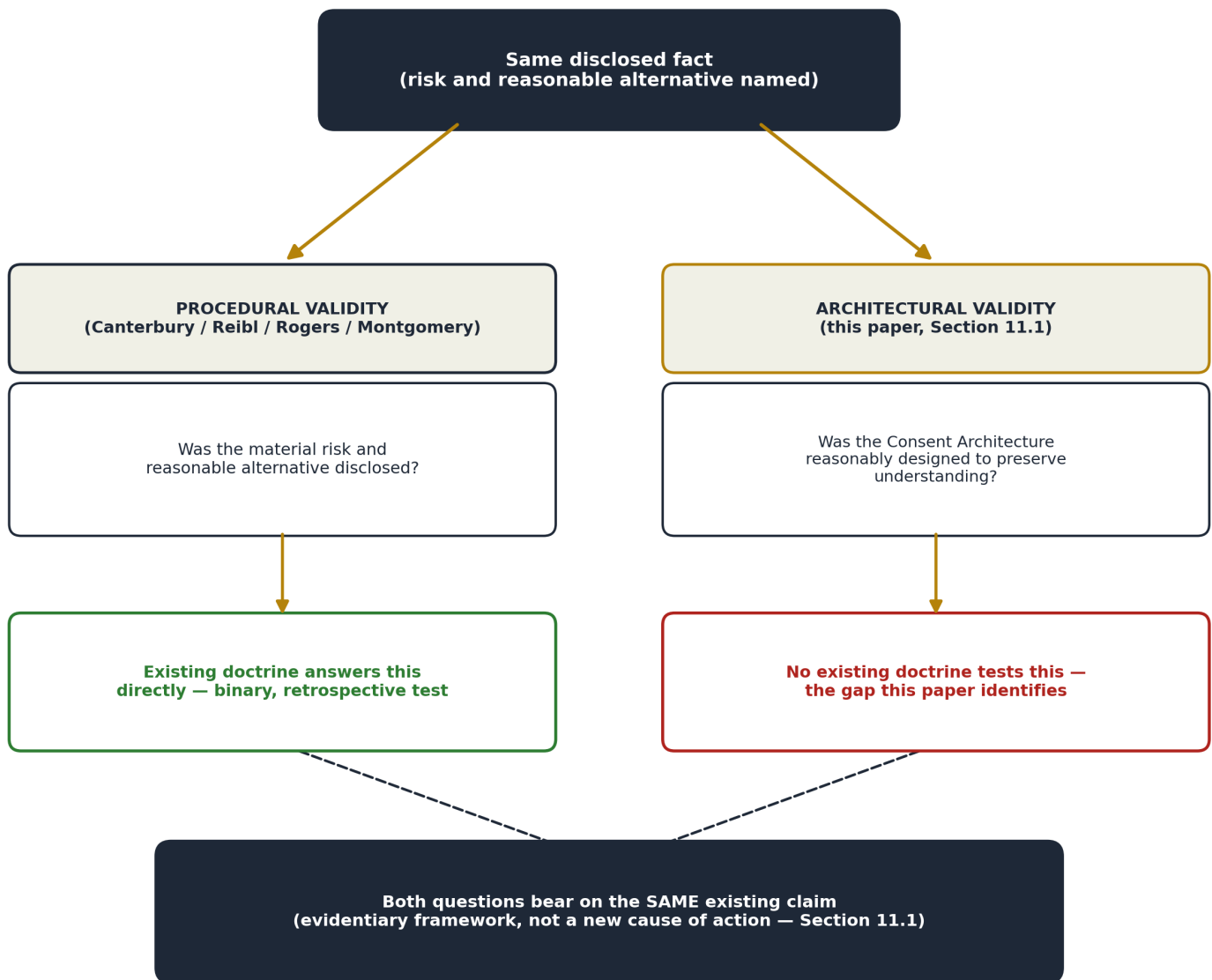


Figure 3. Procedural validity and architectural validity as two evidentiary questions arising from the same disclosed fact

Figure 3

Procedural validity and architectural adequacy, evidentiary questions arising from the same disclosed fact.