FORMAL RECORD 3

ADCI Closure Theorem

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v2.2 is a formatting update. The proof, definitions, and logical content are unchanged.

Abstract.
This note defines the ADCI value layer: Agency (A), Dignity (D), Continuity (C), and Interpretive Authority (I) as four irreducible primitives required for structural personhood legitimacy in decision-permitting systems. We prove that these four primitives form a minimal sufficient and necessary set. The value layer is closed: no additional independent primitives are required.

1. Definitions

Let h be a human subject interacting with system S.

Agency (A)

A(h,S) = 1 if the subject can meaningfully participate in decisions affecting them. A(h,S) = 0 if the subject is coerced or structurally unable to participate.

Dignity (D)

D(h,S) = 1 if the subject is treated as an end in themselves. D(h,S) = 0 if the subject is treated as a mere object, category, or instrument.

Continuity (C)

C(h,S) = 1 if the subject's identity persists coherently across time. C(h,S) = 0 if the subject experiences temporal erasure or forced resets.

Interpretive Authority (I)

I(h,S) = 1 if the subject has authorship over the meaning of their own data, identity, and expressions. I(h,S) = 0 if the system imposes external interpretations that displace the subject's meanings.

2. Value Validity Function

Vvalid(h,S) = 1 if and only if:

$$A(h,S) = 1 \wedge D(h,S) = 1 \wedge C(h,S) = 1 \wedge I(h,S) = 1$$

Otherwise: Vvalid(h,S) = 0

3. Structural Harm Taxonomy

Primitive = 0	Harm State
A = 0	Coercion
D = 0	Objectification
C = 0	Temporal Erasure
I = 0	Representational Displacement

These four harm types define the domain of value-layer structural failure.

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4. Theorem Statement

For any subject h and system S, Vvalid(h,S) = 1 if and only if A(h,S) = 1 ∧ D(h,S) = 1 ∧ C(h,S) = 1 ∧ I(h,S) = 1. Furthermore:

1. Sufficiency: If A = D = C = I = 1, no structural value-layer harm remains.

2. Necessity: For each primitive X ∈ {A, D, C, I}, there exists a boundary case where X = 0 and structural harm occurs.

3. Irreducibility: No primitive can be expressed as a function of the other three.

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5. Proof

5.1 Sufficiency

Assume A = 1, D = 1, C = 1, I = 1. Coercion occurs only if A = 0 — no coercion. Objectification occurs only if D = 0 — no objectification. Temporal erasure occurs only if C = 0 — no temporal erasure. Representational displacement occurs only if I = 0 — no displacement. Therefore, no structural value-layer harm exists and Vvalid(h,S) = 1. QED

5.2 Necessity

Case 1: A = 0, others = 1 → coercion → Vvalid = 0. Case 2: D = 0, others = 1 → objectification → Vvalid = 0. Case 3: C = 0, others = 1 → temporal erasure → Vvalid = 0. Case 4: I = 0, others = 1 → representational displacement → Vvalid = 0. Each primitive prevents a distinct harm. QED

5.3 Irreducibility

Assume for contradiction: I = f(A, D, C). Consider boundary case: A = 1, D = 1, C = 1, I = 0. Then f(1,1,1) must equal 0. But validity requires f(1,1,1) = 1 when all primitives equal 1. Contradiction. Therefore I is irreducible. By symmetry, A, D, and C are also irreducible. QED

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6. Conclusion

The set V = (A, D, C, I) is sufficient, necessary, and irreducible. Therefore:

$$Vvalid(h,S) = 1 \text{ iff } A = 1 \wedge D = 1 \wedge C = 1 \wedge I = 1$$

The ADCI quartet forms the minimal sufficient value layer for personhood legitimacy in decision-permitting systems. QED

Suggested citation:

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