

The Mapping

Where the Sciences of the Human Land in the Throughflow-Closure Model

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What this document is

The model of the companion paper describes the human in seven quantities and six laws. The existing sciences of the human describe the same object in dozens of vocabularies. This document is the mapping between them, written as a mapping should be: for every technical term, its image or preimage, and the status of the correspondence.

Formally: let Φ be the map from model terms to discipline terms. For each pair we state one of three statuses. **Exact**: the discipline term denotes the same quantity or law, under another name. **Partial**: the terms overlap but one carries structure the other lacks; the difference is stated. **Empty**: the discipline term has no preimage in the model — the model refuses it, and the refusal is itself informative.

The model side, for reference: the identity pattern $N = [C, <]_{\equiv}$ and its realisations; the state $\bar{\chi}$; the retention time $\tau = C_W/\Sigma\eta_b$; the throughflow J ; the maintenance law $C^*(J) = \mu r J / [\lambda(vJ+r)]$ with ceiling $\mu r / (\lambda v)$; the duty cycle $f = vJ / (vJ+r)$; the window $[J_{\min}, R]$ with constitutional condition $\mu r > \lambda v C_{\min}(N)$; the spectral condition $q \gg 1$; the tower with scale separation σ ; the group closure $1 \ll q_{\text{group}} < q_{\text{human}}$.

1. Biochemistry and Cell Biology

Model	Discipline term	Status
Throughflow closure	Metabolism; dissipative structure; autopoiesis (Maturana & Varela)	Exact. Autopoiesis — a network that produces the components that produce the network — is the throughflow closure stated without equations. The model adds the
Realisation vs. identity	Dynamic state of body constituents (Schoenheimer): molecular	Exact. Schoenheimer measured that the material is replaced while the pattern persists; the class/realisation split is that measurement, made definitional.
Re-lay rate μJ ;	Protein synthesis and degradation; anabolism and	Exact in role; the linear form is Choice 2, theirs is enzymatic kinetics. Partial in form.
Repair	Autophagy, DNA repair,	Partial. The disciplines resolve r into mechanisms; the model
$J \rightarrow 0 \Rightarrow C$	No maintenance without metabolism; death on flux	Exact.

2. Physiology and Medicine

Model term	Discipline term	Status
$\bar{\chi}$ (state)	Stress level (Selye); allostatic state;	Exact in role: one scalar summarising system load.
Drift νJ accumulating	Allostatic load (McEwen): wear-and-	Exact. Allostatic load is the deviation of the realisation from N under throughflow, named clinically.
τ (retention time)	Recovery time; return-to-baseline	Exact. Medicine measures τ daily without calling it a model quantity.
Window lower edge $J_{\min}$	Disuse atrophy; deconditioning; "use it	Exact. Below $J_{\min}$ the pattern decays through threshold: that is atrophy, derived.
Saturation ceiling r/v	Overtraining syndrome; chronic	Partial. Medicine reads overload as damage; the model reads it as duty-cycle saturation — $f \rightarrow 1$, useful output $\rightarrow$
Constitutional condition $\mu r >$	Constitution; frailty threshold;	Partial. Medicine treats reserve as measured capacity; the model derives it from four kinetic parameters of N .
Homeostasis	The one-pole relaxation (4) toward	Exact, conditionally: homeostasis is what a winding with $q \gg 1$ does. T1 tests whether the human is such a winding.

3. Neuroscience

Model	Discipline term	Status
One-pole reductio	Neural mass / mean-field models: many units, one	Exact in method. The spectral condition is the licence both use.
Four states as protocol	Integrate-and-fire cycle: charge, threshold, discharge, refractory	Exact at the single-unit level; the model claims the same portrait at whole-person level. That claim is the content of T4.
Percepti on as inflow	Direct perception (Gibson, ecological psychology): information pickup without	Exact. Gibson's refusal of the representation step is the model's: the correlation is the contact.
Percepti on as inflow	Predictive processing: generative model corrected by input	Partial, and the difference matters. Predictive processing keeps an internal model that runs ahead; the throughflow model has no representation to run. What overlaps is the
Action as phase-	Affordance (Gibson): action possibilities read off the fit	Exact.

4. Psychology

Model term	Discipline term	Status
N (identi ty)	Temperament; trait structure; personality	Partial. Traits are statistical summaries of behaviour; N is the structure those statistics estimate. The model predicts trait stability equals class stability — and trait change equals class
$\bar{\chi}$	Affect; mood; subjective	Exact in role.
τ	Emotional inertia (affect dynamics): the	Exact. The AR(1) coefficient of mood is $e^{-\Delta t/\tau}$. Affect-dynamics research has been measuring τ_W for two decades
Wind ow	Optimal arousal (Yerkes– Dodson)	Partial. Yerkes–Dodson claims an inverted U of performance; the model gives a window plus saturation — flat ceiling, not

Rest fraction f(J)	Recovery–stress balance (sport and occupational psychology); burnout as	Exact in role; the saturating form is the model's testable addition (T3).
Identity through	Ship-of-Theseus problem; narrative identity	Exact resolution: identity = class, not material and not narrative.

5. Psychiatry and Clinical Science

Model	Discipline term	Status
Rising τ before closure	Critical slowing down as early warning (Scheffer); dynamical indicators of resilience in ageing	Exact. Slower recovery from small perturbations before a transition is the model's q falling toward 1, and it is already measured in depression-onset and frailty studies.
Class change	Personality change after major events; "not the same"	Partial. The model gives the clinical phrase a formal referent: a re-lay history that left the equivalence class.
Disorder as entity	—	Empty. The model has states $(\bar{x}, f, \tau, J)$ and class changes of N ; it has no disease entities. A diagnostic label maps, at most, onto a region of the state space or a class of N — a

6. Sleep Science and Chronobiology

Model	Discipline term	Status
Rest phase (η_b down, internal equalisation)	Sleep: sensory gating, homeostatic recovery	Exact in role.
$f = \nu J / (\nu J + r)$	Process S (Borbély's two-process model): sleep pressure	Exact in structure. Process S is the duty-cycle balance, discovered empirically forty years before this derivation. The model adds: the pressure is pattern drift, and its rate is
Multiple simultaneous cycles, separated	Ultradian, circadian, infradian rhythms	Exact in role; the ordering by tower level with ratio $\geq \sigma$ is the model's addition (T4).

7. Genetics and Developmental Biology

Model term	Discipline term	Status
Inherited substructure of N	Genotype; heritability	Partial. Genetics locates heredity in one molecule; the model states only that N_{new} inherits substructure from both carrier closures. The molecular channel is one
Tension state at the moment of	Developmental plasticity; prenatal programming (Barker)	Partial. The disciplines document that origin conditions mark the organism lastingly; the model places the mark in the invariant itself.
Growth as deepening of	Development as hierarchical integration;	Exact in role.

The gift running in families	Behavioural genetics of specific capacities	Partial; open question 3 of the companion corpus — distinguishing inheritance of N-substructure from transmission within families.
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8. Gerontology

Model term	Discipline term	Status
Rising τ with age	Loss of resilience; slower recovery as frailty marker	Exact — and already measured as a dynamical indicator.
Accumulated un-repaired	Ageing as damage accumulation (wear-and-tear)	Exact in role: ageing = lifetime integral of $(1-f)vJ$ — fr excursions that repair did not close.
Window	Shrinking homeostatic reserve	Exact in role: edges move as (μ, λ, v, r) shift with

9. Social Psychology and Sociology

Model term	Discipline term	Status
Group closure, $1 \ll q_{\text{group}} < q_{\text{human}}$	Group cohesion; entitativity; family as system (family)	Exact in role: the group is a real closure, more weakly held than its members.
Joint slow mode of a pair (T5)	Co-regulation ; physiological synchrony between	Exact. The synchrony literature measures exactly the T5 observable: shared slow dynamics absent in uncoupled pairs.
Ritual as group repair phase	Collective effervescence (Durkheim); ritual	Exact in role: ritual = the group's equalisation phase — boundary down, internal synchronisation, drift repaired.
Isolation pathology	Loneliness as health risk	Exact, derived: a knot whose mesh no longer shares tension loses its boundary conductances; the model predicts the
Tower above the human	Micro–meso–macro; levels of	Exact in role.
Near-decomposability (Simon, The	Spectral condition + scale separation σ	Exact. Simon's argument — complex systems survive as hierarchies of nearly decomposable units with separated time scales — is Choices 1 and 3b, stated in 1962. The model

10. Economics and Organisation Science

Model	Discipline term	Status
Throughflow closure	The firm as going concern: cash flow J, working capital,	Exact in role: a firm is a throughflow closure at group level; bankruptcy is the window exit.
R (environme	Carrying capacity; market size; sustainable yield	Exact in role; the steady-state qualification (transient $J > R$ on a depleting reservoir) is exactly debt-financed
Un-	Technical debt; deferred	Exact in role.
Four states	The credit/business cycle read as loading–holding–	Partial; this is the MAZE Tension Gauge's reading, tested there.

11. Anthropology and the History of Knowing

Model term	Discipline term	Status
Reading depth; boundary	The unevenly distributed capacity for direct reading	Exact in role; measurement is open question 1.
Body technique lowering internal	Standing, breath, repetition, heat — the technique thread	Partial, promising: the technique as variance reduction of the internal term, raising signal-
Ritual calendar	Phase coupling to deeper windings; scheduled group	Partial; the MAZE line carries the test.

12. The Empty Set: Terms the Model Refuses

Four discipline terms have no preimage, and each refusal is a claim.

Representation. There is no internal copy of the world. Perception is inflow along contacts; the correlation is the contact. (Shared with Gibson; against the cognitivist mainstream.)

Cause, between separate things. One strand admits no arrow between two substances. The model has constitutive relations (simultaneous), selection by fitting, and correspondence in time across winding depths.

The isolated subject. No winding exists without boundary contacts; $q \gg 1$ defines an inside, never a separateness. Every psychology of the closed individual maps onto nothing.

The disease entity. States, windows, class changes — no things a person has.

13. What the Mapping Shows

Read column-wise, the mapping makes one point. The sciences of the human have each measured a piece of the closure in their own vocabulary: Schoenheimer the realisation/class split, Selye and McEwen the state and the drift, Borbély the duty cycle, affect dynamics the retention time, Gibson the contact, Simon the tower, Durkheim the group repair, the resilience literature the approach of q to 1. None of these had the others' pieces, because each vocabulary stops at its discipline's boundary. The model is not a rival to any of them. It is the common coordinate system in which their measured quantities are the same seven variables — and in which the disagreements between them (Yerkes–Dodson's decline vs. the flat ceiling; Process S's time-based vs. load-based pressure; predictive processing's model vs. Gibson's contact) become decidable experiments instead of school differences.

That is what a mapping is for.

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