

The Use of Deontic Logic in the MAZE-Bank

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Abstract

The MAZE-Bank is a running service. It records deeds between people, lets the receiver countersign them, and derives every balance from the record. No money circulates inside it. This essay reads the bank as what it turns out to be: an implemented system of deontic logic. The reading is exact, not metaphorical. Every core mechanism of the bank corresponds to a deontic operator. Three of its operators do not exist in the literature: decay as continuous discharge, countersigned discharge as a counts-as rule, and netting as discharge by composition. The bank is, to our knowledge, the first normative system built without a sanction constant. The essay states the correspondence step by step, positions it against the formal literature and against current work on normative AI, and closes with the consequences for further construction.

1. The object

Picture a fishing net. The knots are people. The threads between them carry tension. A deed puts tension on a thread: someone gave, someone received. The tension is not a possession. It is a state of the thread, readable from both ends. A mesh is a ring of threads in which tension comes back around and closes. That is the whole picture. The MAZE-Bank is the bookkeeping of this net.

Concretely, the bank records sentences. "Hans helped Lea with the roof, Tuesday." The sentence has a verb and a context. It carries no number and no unit. One signature makes it a pledge. The countersignature of the receiver — one tap on "correct" — makes it a confirmed event. The confirmed events form the chronicle. The chronicle never forgets. Every balance is derived from it and never stored.

The register of a balance is the trit: -1 , 0 , or $+1$. Minus: received, not yet closed. Plus: given, not yet answered. Zero: rest. Every open state decays slowly toward zero. Credit that no one draws completes itself as a gift to the circle. There is no interest, in any wrapping. Money exists only at the boundary of the mesh, recorded as boundary posts in four separated flows: purchase, loan, gift, and levy. Inside the mesh there is no money at all.

This design was not derived from deontic logic. It was derived from a physical model of the vacuum as a net of strands, applied to human relations. The deontic reading came afterwards, and it fits without remainder. That is the subject of this essay.

2. What deontic logic is

Deontic logic is the formal study of obligation, permission, and prohibition. Von Wright founded the modern field in 1951 with three operators: O (it is obligatory), P (it is permitted), F (it is forbidden). His original operators applied to acts, not to propositions. Obligation was something one does, not something that is the case.

The field then grew in three directions that matter here.

First, direction. An obligation in real life is not "A must happen." It is "x owes A to y." Kanger and Lindahl built the formal theory of normative positions between parties. Herrestad and Krogh made the directed obligation explicit: $O(x, y, A)$. Hohfeld had already shown in 1913 that claim and duty are correlates. My claim against you and your duty toward me are one relation, read from two sides. They are not two facts.

Second, conditionality. Real norms are conditional: if C, then $O(A)$. Chisholm showed in 1963 that classical representations break down when a secondary duty arises after a primary duty is violated. Whole families of logic grew from this problem: dyadic deontic logic, defeasible deontic logic with priority relations, and Input/Output logic, which treats a normative system as a transformation from circumstances to obligations.

Third, sanction. Anderson proposed in 1958 to define obligation through a sanction constant: A is obligatory when not-A leads to the bad state V. Most practical systems inherit this shape. Violation is a state. Violation triggers consequences. The consequences need their own norms, which can be violated in turn. The apparatus of enforcement — reminders, penalties, courts, contrary-to-duty cascades — is the price of this definition.

The multi-agent literature made obligations operational. Singh defined commitments with a life cycle: create, discharge, cancel, release. Yolum and Singh built commitment machines around this cycle. In these systems the machine determines whether discharge has occurred.

3. The correspondence

We now read the bank against this vocabulary. Each step is a claim of identity, not analogy.

The deed-sentence is a directed obligation. "Hans helped Lea with the roof, Tuesday" states who owes what to whom, in a context. Its formal shape is $O(x, y, A)$. The appointment — a deed agreed for a future day — is the same formula with a date: $O(x, y, A, t)$. The sentence-form is Von Wright's original choice made literal: the unit of registration is a verb, never a noun with a number. Translating a deed into a number at the front turns it into potential and extinguishes the social emotion that carries the system. This is a design rule of the bank. It is also the founding intuition of deontic logic.

The trit is the Hohfeldian correlate. Plus is claim. Minus is duty. Zero is discharged. One trit per pair, because claim and duty are one relation. This explains a property of the bank that otherwise looks eccentric: the ledger does not add up. There is no world total, no account sum, no center. Directed obligations between pairs do not aggregate. Hohfeld's correlativity makes the non-additive ledger a theorem, not a preference.

The seven passages are the deontic action alphabet. Every state change in the bank passes through defined transitions. From zero to plus or minus: the creation of an obligation. From plus or minus to zero: its discharge. The passage from minus to plus must go through zero. Deontically this is exact: one cannot move from duty to claim unless the duty is first discharged. The alternative nine-letter alphabet, which permits the direct jump, exists as an explicit configuration frozen at the opening of a circle. What was a technical setting is in fact a principled deontic choice, and each circle makes it knowingly.

The countersignature is a counts-as rule. Jones and Sergot formalized institutional power: within institution I, act X counts as institutional fact Y. Within the mesh, the receiver's tap counts as fulfilment. This is a constitutive rule in Searle's sense. The tap does not prove that fulfilment occurred. It makes fulfilment occur, institutionally. The design consequence is severe and

deliberate: the system never determines discharge. Not from bank statements, not from sensors, not from plausibility. Fulfilment is an act of the counterparty or it is nothing. Here the bank departs from the commitment-machine tradition, where the system establishes discharge. The departure is a philosophical position: fulfilment is relational, not computable.

Decay is a new operator: continuous discharge. The literature gives an obligation four exits: fulfilled, violated, cancelled, or expired at a deadline. Broersen and colleagues formalized the deadline: at time t , non-fulfilment becomes violation. The bank's decay is none of these. Every open state loses force continuously. Who holds credit begins to draw. Who holds duty begins to deliver. Credit that no one draws completes itself as a gift. At zero, nothing has been violated and nothing punished. Economically this is Gesell's demurrage — ageing money. As a deontic operator it is new: time itself performs the discharge that other systems extract through enforcement.

There is no violation state. This is the deepest structural fact. The bank contains no Anderson constant. Silence — a pledge that never receives its tap — is not breach. It is a state, and decay carries it to rest. Consequently there are no reminders, no dunning language, no contrary-to-duty cascade. Chisholm's problem does not arise because its precondition, the violation state, does not exist. The escalation ladder of the bank carries tension upward through guarantors and circles; it distributes no punishment. Tan and Van der Torre already avoided the sanction constant in the 1990s by treating violation as diagnosis rather than penalty. Decay is the next step on that road: the diagnosis and the resolution are the same process, and the process is time.

Netting is discharge by composition. When circles settle among themselves, chains of obligations discharge each other across multiple parties. Only the unclosable remainder becomes a boundary post. This is the hawala operation, executed on directed obligations. As a logical operator — composition of discharges across a path in the net — it has no counterpart in the deontic literature. Netting closes states; it never erases deeds. The chronicle keeps every link of the chain.

The four flows are four norm sources. Purchase is contractual duty: money against an outside performance, here and now. Loan is guarantor-carried duty: n countersignatures instead of collateral, no interest. Levy is imposed duty from outside — tax and withholding — which the circle does not choose. It must therefore be correct first, because it is the only enforceable flow. Gift is supererogation: Urmson's category of the good that no one owes. The bank's claim that gift is the most productive money — money dies in the gift — is not a moral flourish. It follows from the classification. The obligation-free flow is the only one that adds to the net without adding tension. The boundary bookkeeping is thus an administration of norm sources: every euro carries not only its deed-context but its kind of duty.

Permission completes the triad. The bank records obligations (pledges) and needs (open deed-requests). The essay's analysis exposed a gap: P , the permission operator. "I can drive on Friday" is availability without duty. An offer-deed — same sentence form, no number, no obligation — gives the matching service its second input. Need and offer, O and P , feed the closure brokerage from both sides. Prohibition, F , already exists in the bank as designed absence: the rules of the system are enforced by what the interface cannot express, not by checks. No number at the front, no conversion, no ranking — these prohibitions are shapes, not sanctions. The triad is therefore deliberately asymmetric. The bank is primarily an obligation-and-discharge calculus. Permission enters as the offer; prohibition enters as designed absence. These are architectural representations, not full operators, and they are meant as such.

4. The bank as normative memory

Current work on normative AI converges on a hybrid architecture. A language model interprets the world and extracts candidate norms from natural language. A formal system computes what actually follows: which obligations hold, which conflict, which take priority. Recent studies show why the split is necessary. Language models follow valid normative patterns often, but exhibit specific biases; surface fluency with words like "ought" and "forbidden" is not normative competence. The literature projects, for the 2030s, agents that maintain a normative model of their environment: facts, roles, powers, obligations, exceptions, changes, all historically ordered.

The bank already contains this projected component, running.

The chronicle is the obligation memory: every creation and every discharge, kept forever, with derived states that change while the events beneath them never do. The consent decisions of the circle are logged norm changes: the decay rate is a norm that takes force at a time, decided by the absence of reasoned objection, recorded as an event. The rotating roles and the double linking between circle and ring are modelled authority: who may require what of whom, and no layer can overrule a circle outside its own delegation. And the coupling between the Weather service and the lending appetite is the connection the research literature marks as newly needed: epistemic uncertainty feeding deontic consequence. Uncertain outer weather narrows the space of prudent loan obligations. The label is reproducible from frozen data; no judgment sits in the loop.

The extraction front closes the circle with the language side. The classical objection to symbolic systems was the cost of representation: someone must translate the world into formulas. The practice speaks in rosters, care schedules, quotations, and messages. A language model now translates these into candidate obligations $O(x, y, A, t)$. The candidates become nothing until a person confirms the list, and fulfilment still waits for the receiver's tap. The model proposes; people constitute. The division of labour that the normative-AI literature recommends — extraction to the statistical layer, inference to the formal layer — is here extended by one step that the literature does not take: discharge to the human layer.

5. What the reading changes

The reading changes nothing in the machine and much in the understanding of it.

It explains the design from one principle. The bank's rules — verb above noun, no number at the front, recognition never dunning, the tap always a real act of the other, decay as homecoming — looked like a list of interface ethics. They are one decision: build the obligation system without the sanction constant, and let time do the work of enforcement. Every rule follows from that decision.

It defines the growth path. New functions are admissible when they are operators of this logic: the dated pledge, the offer as permission, the conditional pledge whose condition stays text and whose discharge stays the tap. New functions are inadmissible when they smuggle the sanction constant back in: reminders, automatic discharge, violation status, deadline semantics in which silence becomes breach. The criterion is now formal, not aesthetic.

It yields a measurement. Every obligation in the bank ends in exactly one of four ways: tapped (voluntary discharge), netted (discharge by composition), completed as gift, or faded in decay. The distribution over these four exits, together with the average time to discharge, is the discharge profile of a circle. It measures, per cycle, whether the appointments of a circle live, and how. The bank's own falsification test — one existing circle, one bookkeeping year, a report that must tell the treasurer something she did not know — gains its direct quantity.

And it places the work. The bank is not software that uses a logic. No system we have found implements this combination: directed obligations, countersigned discharge as counts-as, continuous discharge by decay, discharge by composition through netting, supererogation as a separated flow, norm change by consent, authority by double linking, and no violation state anywhere. The mechanisms it adds are contributions to the logic itself. They exist because the system was built and had to close, and building is how they were found.

One step remains to make the contribution formal. Decay, the countersigned discharge, and netting are established above as operational transformations of normative states, not yet as operators with a semantics. The semantics, however, already runs: the motor of the bank is the transition system. The next chapter writes it down — states, the seven passages as transition rules, decay as a flow on open states, counts-as discharge, netting as composition, and the properties that follow. It is documentation of a working machine, not speculation.

6. The calculus: a sanction-free deontic system

This chapter defines the system whose behaviour the previous chapters interpreted. Everything below is implemented and running; the definitions describe the motor, they do not extend it. The presentation is self-contained.

6.1 States

Let M be the set of members of a mesh. A pair is an unordered set $\{x, y\}$ with $x, y \in M$. The state of a pair is a trit:

$s(x, y) \in \{-1, 0, +1\}$, read from x 's side.

Correlativity holds by construction: $s(x, y) = -s(y, x)$. One relation, two readings — this is Hohfeld as a data structure. There is exactly one state per pair. No aggregation over pairs is defined anywhere in the system: sums, totals, and rankings are not in the language. Non-additivity is therefore not a policy but a property: what is not expressible cannot be computed.

The state is never stored. It is derived, at any moment, as a fold over the chronicle (6.2) combined with decay (6.5). Two consequences follow. Replay determinism: the same chronicle always yields the same states. And incorruptibility: a state can only be changed by appending an event, never by editing one.

6.2 Events and the chronicle

The chronicle C is an append-only sequence of events. Four event types exist:

1. **Pledge.** $\pi = (x, y, A, t, \sigma_x)$: x commits deed A toward y , optionally dated t , signed by x alone. A is a sentence with a verb and a context; it carries no number. A pledge is idempotent per (mesh, receipt-id): the same receipt cannot enter twice.
2. **Tap.** $\tau = (y, \pi)$: the receiver marks the pledged deed "correct". The tap may also be negative ("not correct"), which returns the pledge to the circle's conversation and changes no state.
3. **Netting event.** $v = (P, m)$: a closure applied along a path or cycle P of open states (6.6).
4. **Completion event.** $\gamma = (x, y)$: appended by the system when decay carries an untapped credit to zero (6.5) — the gift conversion.

Every event, once appended, is permanent. Correction is a new event that reverses meaning; the old event remains. The chronicle never forgets.

6.3 The counts-as rule

Only one rule connects events to states, and it is constitutive, not evidential:

(CA) Within mesh I: $\text{tap}(y, \pi)$ counts as fulfilment of the deed pledged in π .

Before its tap, a pledge has no effect on any state. It exists in the chronicle as commitment, and in the deontic reading as $O(x, y, A, t)$, but the state calculus does not see it. After the tap, the event is confirmed and enters the fold that produces s . There is no second route into the state: no import, no sensor, no inference, and no administrator can produce a confirmed event. Fulfilment is an act of the counterparty or it does not exist. This is rule (CA)'s only clause, and the system's deepest invariant.

6.4 Transitions: the seven passages

A confirmed event moves the state of its pair. The possible moves are pairs (a, b) with $a, b \in \{-1, 0, +1\}$: nine in total. The standard alphabet admits seven of them:

$$T_7 = \{ (a, b) : a = b, \text{ or } a = 0, \text{ or } b = 0 \}$$

that is: the three rests (no change), the two creations ($0 \rightarrow +1$, $0 \rightarrow -1$), and the two discharges ($+1 \rightarrow 0$, $-1 \rightarrow 0$). The two diagonal jumps, $-1 \rightarrow +1$ and $+1 \rightarrow -1$, are excluded: they must pass through zero. Deontically the exclusion is exact — a duty cannot become a claim without first being discharged. The switch, the healthy alternation of giving and receiving, is in T_7 a composition: discharge, then creation, with zero in between as a real state.

The alternative alphabet T_9 admits all nine moves, including the diagonal jumps. A mesh chooses its alphabet once, at opening, by consent, and the choice is frozen. The choice is thus itself a norm, logged as an event.

A confirmed deed from x to y applies the creation move toward x 's plus side if the pair is at rest, and the discharge move if x held the minus side. The trit saturates: a second confirmed deed in the same direction leaves $+1$ at $+1$. Depth of imbalance is not represented in the state — only its direction. History, including depth, lives in the chronicle, not in the register.

6.5 Decay: continuous discharge

Let q be the decay rate of the mesh — its one periodic governance decision, taken by consent. Decay is a flow on open states:

(D) Every state with $s \neq 0$ moves toward 0 at rate q per period, unless a confirmed event moves it first.

Beneath the trit, the motor carries the decayed fraction; the trit reads its sign until the flow completes. When decay completes on the credit side without a tap ever arriving, the system appends the completion event γ : the credit has become a gift to the circle. When it completes on the duty side, the duty has come home to rest. In neither case has anything been violated, punished, or reminded.

Two properties follow. **Termination without enforcement:** for $q > 0$, every open state reaches 0 in finite time in the absence of new confirmed events. Every obligation in this system ends. **No violation state:** the codomain of s is $\{-1, 0, +1\}$; there is no fourth value, no flag, no breach marker anywhere in the state space. Anderson's reduction is not rejected by argument but by construction

— the sanction constant V has no place to live. Chisholm's contrary-to-duty problem does not arise: a secondary duty after violation cannot be expressed, because violation cannot be expressed. Deadlines in Broersen's sense do not exist: the date t on a pledge is the moment the tap is requested, never the moment silence becomes breach.

Decay acts on states only. The chronicle is untouched: a deed, once confirmed, is remembered forever. Force fades; memory does not.

6.6 Netting: discharge by composition

Let $P = (x_1, x_2, \dots, x_k, x_1)$ be a cycle of members such that each consecutive pair holds an open state in the direction of the cycle. Then:

(N) netting appends one event $v(P)$ that applies the discharge move simultaneously to every pair in P .

Discharge composes along the path: k obligations end in one event, and no money and no deed moves. Between meshes the same operation runs on boundary posts and on service-deeds (weighted per rung of the ladder); only the unclosable remainder becomes a single boundary post. Netting closes states and erases nothing: every link of the chain remains in the chronicle. As an operation on directed obligations — discharge produced by composition rather than by performance, tap, or time — it has, as far as we have found, no counterpart in the deontic literature.

6.7 Exits and the discharge profile

From (CA), (D), and (N), every created obligation ends in exactly one of four exits:

1. **tapped** — voluntary discharge, constituted by the counterparty;
2. **netted** — discharge by composition;
3. **completed as gift** — decay on an undrawn credit;
4. **faded** — decay carrying the state to rest.

The distribution over these four exits per cycle, with the mean time to exit, is the discharge profile of a mesh (chapter 5). The profile is computable from the chronicle alone, by replay. It is the empirical face of the calculus: it measures whether the obligations of a circle live, and how they end.

6.8 Norm change and authority

Norms of the system — the decay rate q , the alphabet choice, the boundary settings — change only through consent events: a proposal, the absence of reasoned objection, adoption. Each change is itself an event in the chronicle, with its moment of taking force. The authority structure is the double link: each circle connects to the ring above through two persons, both full participants in the consent of the higher ring, so no layer can impose a norm on a circle outside its own delegation. In the vocabulary of chapter 4: norm change is logged, and authority is modelled — the system knows not only what holds, but since when, decided by whom, with what standing.

6.9 What the calculus is

Summarising: a set of trit-valued pair-states with Hohfeldian correlativity built in; an append-only event language of pledge, tap, netting, and completion; one constitutive rule (CA) connecting events to states; a seven-move transition alphabet that forces every reversal through rest; a decay flow (D)

that terminates every obligation without a violation state; and a composition rule (N) that discharges along paths. Creation is bilateral in effect but unilateral in origin; discharge is relational (CA), temporal (D), or compositional (N) — never inferential. The system is sanction-free by construction, auditable by replay, and non-additive by expressibility.

That is the calculus this essay set out to name. It was not designed from the logic; it was built from the net, and the logic was found in it.

7. Annotated references

Von Wright, G. H. (1951). "Deontic Logic." *Mind* 60, 1–15. Why read: the founding paper. O, P, and F as operators on acts. The bank's sentence rule — a verb, never a noun with a number — is Von Wright's original act-based reading, kept where most of the later field moved to propositions. Reading advice: short and readable; start here.

Hohfeld, W. N. (1913). "Some Fundamental Legal Conceptions as Applied in Judicial Reasoning." *Yale Law Journal* 23, 16–59. Why read: claim and duty as correlates of one relation. The justification of the trit and the theorem behind the non-additive ledger. Reading advice: the first twenty pages carry the argument.

Anderson, A. R. (1958). "A Reduction of Deontic Logic to Alethic Modal Logic." *Mind* 67, 100–103. Why read: obligation defined through the sanction constant V. Three pages that define exactly what the bank refuses. The refusal is legible only against this text.

Chisholm, R. M. (1963). "Contrary-to-Duty Imperatives and Deontic Logic." *Analysis* 24, 33–36. Why read: the paradox of the secondary duty after violation, source of decades of repair work. In the bank the paradox has no precondition: there is no violation state for a secondary duty to attach to.

Kanger, S. (1971). "New Foundations for Ethical Theory." In Hilpinen (ed.), *Deontic Logic: Introductory and Systematic Readings*. Reidel. — and Lindahl, L. (1977). *Position and Change: A Study in Law and Logic*. Reidel. Why read: the theory of normative positions between parties. The formal ancestry of the directed obligation $O(x, y, A)$. Reading advice: Lindahl's first two chapters suffice for the structure.

Herrestad, H., & Krogh, C. (1995). "Obligations Directed from Bearers to Counterparties." *Proceedings of ICAIL 1995*. Why read: the directed obligation made explicit. The deed-sentence of the bank is this formula in natural language.

Makinson, D., & Van der Torre, L. (2000). "Input/Output Logics." *Journal of Philosophical Logic* 29, 383–408. Why read: a normative system as transformation — circumstances in, obligations out — without classical deduction. The frame for the extraction front and for conditional pledges. Reading advice: the introduction and section 1 give the intuition; the proofs can wait.

Van der Torre, L., & Tan, Y.-H. (1999). "Diagnosis and Decision Making in Normative Reasoning." *Artificial Intelligence and Law* 7, 51–67. Why read: violation treated as diagnosis rather than penalty — the road away from the sanction constant, taken within the author's own research line with Tan in the EURIDIS period. Decay continues this road: diagnosis and resolution become one process, and the process is time.

Jones, A. J. I., & Sergot, M. (1996). "A Formal Characterisation of Institutionalised Power." *Logic Journal of the IGPL* 4, 427–443. Why read: counts-as. Within institution I, act X counts as institutional fact Y. The exact semantics of the "correct" tap. Reading advice: read alongside Searle.

Searle, J. R. (1969). *Speech Acts*. Cambridge University Press. — and (1995). *The Construction of Social Reality*. Free Press. Why read: constitutive rules make institutional facts. Why the tap makes fulfilment rather than proves it. Reading advice: for this purpose, chapters 1–2 of the 1995 book.

Broersen, J., Dignum, F., Dignum, V., & Meyer, J.-J. Ch. (2004). "Designing a Deontic Logic of Deadlines." *Proceedings of DEON 2004*. Why read: the deadline as the moment non-fulfilment becomes violation. The bank's dated pledge deliberately inverts this: the date is the moment of asking, never the moment of breach.

Singh, M. P. (1999). "An Ontology for Commitments in Multiagent Systems." *Artificial Intelligence and Law* 7, 97–113. — and Yolum, P., & Singh, M. P. (2002). "Flexible Protocol Specification and Execution: Applying Event Calculus Planning Using Commitments." *Proceedings of AAMAS 2002*. Why read: the commitment life cycle — create, discharge, cancel, release — operationalized. The nearest existing system to the bank, and the precise point of departure: there the machine establishes discharge, here the counterparty does.

Governatori, G., Rotolo, A., & Sartor, G. (2013 and later overviews). *Defeasible deontic logic in the legal domain*; see also the *Handbook of Deontic Logic and Normative Systems* (College Publications, 2013/2021). Why read: exceptions, priorities, and norm conflicts via superiority relations — the full apparatus of computational law. The bank keeps this apparatus outside its motor by letting the human tap be the conflict resolution. The condition on a conditional pledge stays text; the system never evaluates it.

Urmson, J. O. (1958). "Saints and Heroes." In Melden (ed.), *Essays in Moral Philosophy*. University of Washington Press. Why read: supererogation — the good that no one owes. The deontic status of the gift flow, and of every credit that completes itself as a gift through decay.

Gesell, S. (1916). *Die natürliche Wirtschaftsordnung durch Freiland und Freigeld*. Why read: ageing money, demurrage. The economic ancestor of decay. The bank turns Gesell's economics into a deontic operator: continuous discharge. Reading advice: part IV on Freigeld; the rest is of its time.

Endenburg, G. (1981/1998). *Sociocratie: het organiseren van de besluitvorming*. Eburon. Why read: consent and double linking, from Boeke's practice to Endenburg's method. In deontic terms, the bank's norm-change and authority layer: how the decay rate becomes a valid norm and why no ring can overrule a circle outside its own delegation.

"AI and Deontic Logic: From Language Models to Normative Intelligence" (commissioned report, September 2026). Why read: the current state of the hybrid architecture — language models as norm extraction, formal systems as normative inference — with the recent empirical lines: normative-reasoning benchmarks (2025), deontic Wason selection tasks (2026), LLM formalization of legal text into defeasible deontic logic, rights modelling under the EU AI Act, and the critique of shallow alignment. The report projects a "normative memory" for the 2030s; the chronicle is that component, running in 2026.

The MAZE-Bank runs at maze.swarp.nl/bank. Its description as built — the source of every mechanism cited here — is at maze.swarp.nl/bank/handleiding. The bank is a service on the MAZE, the self-addressing net on balanced ternary, alongside Weather, Living Environment, and Support.

