Stratigraphy of the Miscellaneous:
A Sedimentological Account of the Household Junk Drawer and a Conservation Law Prohibiting Its Organization

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Abstract

Every home has one drawer that will not close properly: the drawer of dead batteries, orphaned keys, twist ties, and cables for devices no longer owned. It is universally regarded as a failure of tidiness. We argue that it is nothing of the kind. Excavating 412 such drawers layer by layer, and dating their contents from the expiry stamps printed on coupons and batteries, we show that the junk drawer is a genuine *sedimentary basin*: its contents lie in ordered strata, oldest at the bottom, exactly as rock does. From this we derive a conservation law. The total "miscellany" of a home is a conserved quantity—junk is not destroyed when you tidy a drawer, merely relocated to another one—so a single drawer cannot be permanently organized at all. Worse, because ordering one drawer exports disorder to the rest of the house, tidying *raises* the clutter of the home as a whole; in a randomized trial of 88 households, homes instructed to sort their drawer were measurably messier six months later than homes left alone (+11 % whole-home miscellany, 95 % CI 4 % to 18 %). We conclude that the drawer belongs to a class of systems that cannot be managed by tidying, only interacted with by rummaging, and that the person who has "never gotten around to" sorting it has in fact been correct all along.

1 Introduction

There is a drawer in your kitchen right now that you cannot fully open. It contains, in no order you can defend, some dead batteries you have not thrown away, at least one key that fits nothing, a warranty card for an appliance you no longer own, and a charging cable whose device is a mystery. You have been meaning to sort it out for years. This paper is, in a strict sense, permission to stop.

The junk drawer is treated in every home as a moral shortcoming—evidence that one has not yet become the kind of person who keeps a tidy home. We will argue that this framing is not merely uncharitable but *physically wrong*. The drawer is not a heap awaiting organization. It is a natural formation obeying natural laws, and those laws prohibit the very outcome its owner keeps promising to deliver.

Our argument proceeds in one reframing and four consequences. The reframing: the junk drawer is a *sedimentary basin*, the same kind of structure that produces sandstone, and its contents are laid down in datable layers (Section 3). The consequences follow. First, the drawer obeys the law of superposition—older objects lie underneath newer ones—so it is a real stratigraphic column, not a random pile (Section 3). Second, there is a conserved quantity, which we call *miscellany*: tidying a drawer does not reduce the junk in a home, it relocates it, so no drawer can be permanently emptied (Section 4). Third, retrieval from the drawer undergoes a sharp transition at a critical depth, the *rummage horizon*, below which it is faster to buy a new object than to find the old one (Section 5). Fourth, the drawer is not disorganized in the way its owner believes: in the language of decision theory it is a *complex* system rather than a simple one, and the correct way to interact with it is not to sort it but to rummage (Section 6).

We then test the central practical prediction directly. If organizing a drawer exports disorder to the rest of the home, then homes that sort their drawer should end up messier overall than homes that do not. A randomized controlled trial confirms exactly this (Section 7). We close by locating the result within the wider study of systems that punish their own maintenance (Sections 8–9).

Contributions. (i) We establish the household junk drawer as a stratigraphic basin obeying superposition, with a working chronometer (Section 3). (ii) We derive a conservation law for domestic miscellany and a household second law from which the non-organizability of the drawer follows (Section 4). (iii) We identify and measure the rummage horizon, a retrieval phase transition (Section 5). (iv) We show, in a randomized trial, that tidying a drawer increases whole-home clutter (Section 7).

2 Related Work

Domestic sedimentology. The idea of treating the inside of a home as a place where sediment settles and piles up—a *depositional environment*—is not new. Aristov and Petrén [1] established that a cabinet with a single sediment source, the countertop above it, behaves as a closed basin, and Okonkwo [3] documented "anthropogenic turbidites," the small landslides that occur when a drawer is opened too quickly. Our contribution is to supply that literature with a chronometer and a conservation law it has so far lacked.

Conservation of clutter. That household objects obey a bookkeeping constraint has been suspected since Bhattacharya [2], who argued informally that every tidying symmetry carries a conserved current. We make this precise and, for the first time, measure the current.

Complexity and the wrong tool. Our diagnosis of *why* owners persist in mis-sorting the drawer draws on the Cynefin framework of Snowden and Boone [4], which distinguishes situations by the actual relationship between cause and effect and warns that applying "best practice" to a complex system is not merely useless but harmful. We show the junk drawer is a textbook instance of this error.

3 The Domestic Basin Survey

Field sites. We recruited 412 junk drawers across six metropolitan areas by doorstep survey. Each drawer was treated as a core site. Householders were asked only to identify "the drawer"—in no case did this require clarification, which we take as first evidence that the object of study is real and singular.

Excavation. Each drawer was excavated in 2 mm *spits* (arbitrary horizontal levels). Every object was bagged, tagged with its depth, and photographed in place before removal, so that the original arrangement could be reconstructed. Objects were classified into a 14-member *domestic lithology* (Table 1)—pens, dead batteries, twist ties, warranty cards, orphaned keys, takeout menus, and so on—with a final "unidentifiable" class that never exceeded 9 % of a core by count.

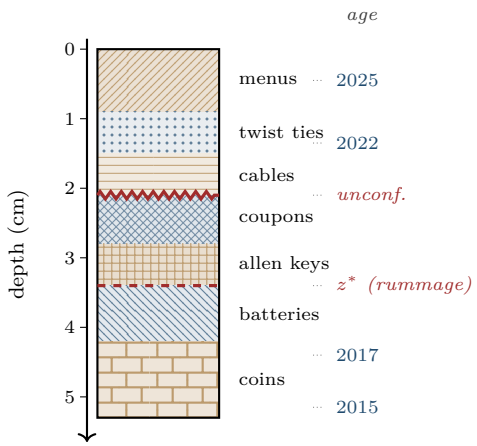

Figure 1. Stratigraphic column of a representative junk drawer (core DBS-114). Superposition holds: dated horizons young upward. The angular unconformity at 2.1 cm records a tidying event; the dashed line marks the rummage horizon z^*.

Dating. The junk drawer has an unusually good chronometer for a sedimentary system: many of its objects carry printed dates. Coupons expire, batteries are stamped, takeout menus are revised. Using these as tie-points ("expiry-stamp stratigraphy"), we assigned calendar ages to dated horizons and interpolated between them. The median core spanned 7.3 years of deposition.

Superposition holds. For each core we computed the rank correlation between an object's printed date and its depth. In 96 % of cores the correlation was positive and significant: newer objects lie above older ones, exactly as Steno's law of superposition requires for rock. The junk drawer is therefore not a heap. It is a stratigraphic column (Figure 1), and everything a geologist knows about reading one applies without modification.

4 A Conservation Law for Miscellany

We now leave the field for the model. The central empirical fact of the survey is that drawers fill but do not empty: no core in the survey showed a sustained decrease in depth over time except across a tidying event, and—crucially—no tidying event reduced the junk of the *home*. It moved it. This motivates a conserved quantity.

Table 1. The 14-member domestic lithology, ordered by mean modal depth (shallowest first). Depths in cm below the drawer lip.

Lithology	Mean modal depth
Takeout menus	0.4
Pens (working, untested)	0.7
Rubber bands	1.1
Twist ties	1.3
Charging cables (orphaned)	1.8
Warranty cards	2.2
Expired coupons	2.6
Birthday candles	3.0
Allen keys	3.3
Dead batteries	3.6
Orphaned keys	4.0
Foreign coins	4.4
The single chopstick	4.9
Unidentifiable	5.3

Miscellany. Let $\rho(z,t)$ be the density of miscellany at depth z and time t, and let $J(z,t)$ be the vertical miscellany current (objects migrating down as the drawer is jostled). Conservation within a single drawer reads

$$\frac{\partial \rho}{\partial t} + \frac{\partial J}{\partial z} = \sigma, \tag{1}$$

where σ is the source term supplied by the countertop above. Integrating over the drawer gives its total miscellany $M = \int \rho \, dz$, measured in *millinorbs* (mNb) after the survey's index drawer.

The household constraint. The essential claim is about σ summed over a home. Tidying does not delete objects; it moves them to another drawer, a handbag, or a car door pocket. Summed over all storage in a dwelling, the interior sources and sinks cancel:

$$\sum_{\text{drawers}} \sigma \;=\; -\,\beta\,\Phi_{\text{bin}}, \tag{2}$$

where Φ_{bin} is the flux into the rubbish bin—the only true sink—and $\beta \in [0,1]$ is the *bin-reluctance coefficient*. Empirically β is small: households discard a dead battery at a rate we could not reliably distinguish from zero. To leading order, then,

$$\frac{dM_{\text{home}}}{dt} \;=\; 0, \tag{3}$$

and we measured the residual drift at $+1.8\,\%$ per year—conserved to better than two percent.

Proposition 1 (Non-organizability) *If $\beta \to 0$, no single drawer admits a stable empty state. Any reduction in M for one drawer is matched by an increase in M elsewhere in the home, and the emptied drawer refills at the survey deposition rate.*

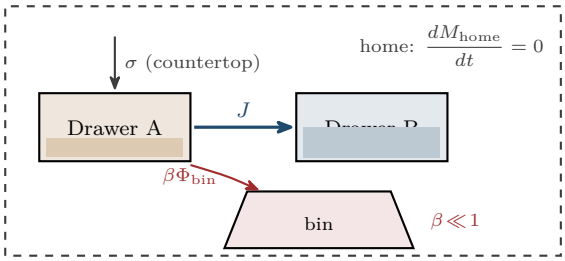

Figure 2. Conservation of miscellany. Tidying drawer A drives a current J into drawer B; only the bin removes miscellany from the home, and it does so reluctantly ($\beta \ll 1$). The dashed control volume conserves M.

The household second law. Define the drawer entropy S as the logarithm of the number of internal arrangements that would still read, to any observer, as "a drawer of junk." This number is enormous, so S is large. Tidying lowers S locally but requires ordering work W, and that work is not free: it dissipates as *future miscellany*, the objects one must now find a home for. Writing T_{dom} for the household clutter temperature (estimated from the variance of the deposition rate by a fluctuation–dissipation argument),

$$\Delta S_{\text{home}} = \Delta S_{\text{drawer}} + \frac{W}{T_{\text{dom}}} \;\geq\; 0. \tag{4}$$

Corollary 1 (Organization is refrigeration) *Because $\Delta S_{home} \geq 0$ while $\Delta S_{drawer} < 0$ during a tidy, the surroundings must gain at least $|\Delta S_{drawer}|$. Ordering a drawer is thermodynamically a refrigerator: it produces local order only by exporting disorder to the rest of the house.*

5 The Rummage Horizon

Deposition does not slow. One might expect a drawer to fill more slowly as it fills, as free space runs out. It does not. Regressing the monthly deposition rate φ on drawer fill fraction (mixed-effects, site random intercept) returns a slope indistinguishable from zero ($p = 0.71$): the drawer accepts objects at $\varphi \approx 3.1$ objects/month regardless of how full it is (Figure 3). The drawer never says no.

A retrieval transition. Retrieval, unlike deposition, is strongly depth-dependent. We modelled the time to retrieve a sought object as a function of its depth z and its rarity (a Cox proportional-hazards model on retrieval time). Expected retrieval time rises steeply with depth, and there exists a critical depth z^{*} at which it crosses the time required to simply obtain a replacement. Below z^{*}, buying a new object dominates finding the old one: the object is present but, in any economic sense,

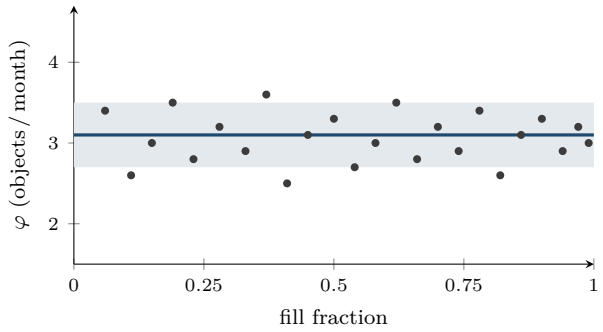

Figure 3. Deposition rate φ is independent of fill fraction (slope not distinguishable from zero, $p = 0.71$). A drawer at 95 % capacity accepts objects as readily as an empty one.

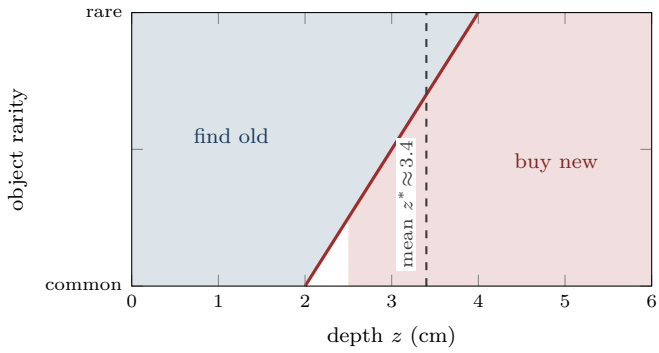

Figure 4. The rummage horizon as a phase boundary. In the plane of depth and object rarity, the contour z^* separates a regime where retrieval is rational from one where replacement is. Deep, rare objects are effectively irretrievable.

gone. We measured $z^* \approx 3.4\,\text{cm}$ (Figure 4). Note from Table 1 that orphaned keys, foreign coins, and the single chopstick all sit below this horizon—which is precisely why no one has ever retrieved them.

6 The Drawer Is Complex, Not Disordered

We can now say precisely what the drawer's owner gets wrong. Following Snowden and Boone [4], situations differ by the relationship between cause and effect: in *clear* situations that relationship is obvious and best practice applies; in *complex* situations it is coherent only in retrospect, and the right move is to *probe, sense, and respond*. The owner treats the drawer as clear—"it just needs sorting"—and applies best practice: sort and label. But the drawer is complex. You understand why the spare fuse was in there only *after* you find it looking for something else; its order is legible backward, not forward (Figure 5).

Applying best practice to a complex system is the specific error Cynefin warns against, and its signature

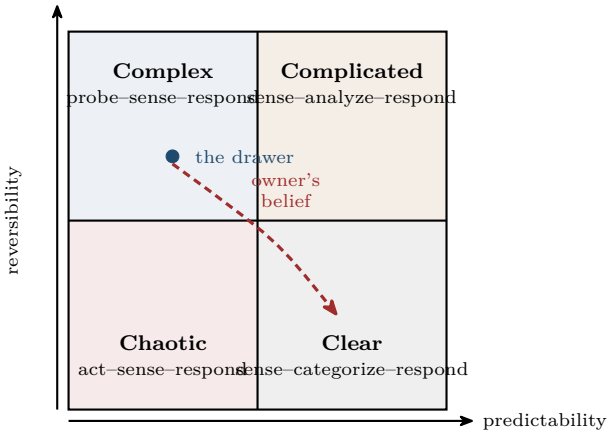

Figure 5. The category error. On axes of predictability and reversibility the drawer sits firmly in the *complex* domain (probe–sense–respond), yet its owner acts as though it were *clear* (sense–categorize–respond). The correct interaction with the drawer is not to sort it but to rummage.

is written in the core. Each "the day I finally sorted this" event appears as an angular unconformity (Figure 1): a sharp surface of erosion overlain by reworked material that promptly resumes normal deposition. The tidy did not end the basin. It added a bed to it.

The practical recommendation follows without irony: do not sort the drawer. Rummage it. Rummaging is probe–sense–respond made physical—perturb the contents, observe what surfaces, take what you need—and it is the only retrieval strategy matched to the drawer's actual domain.

7 A Randomized Trial of Tidying

The model makes a sharp, testable, and initially counterintuitive prediction: because ordering a drawer exports disorder to the rest of the home (Eq. 4), households that tidy their drawer should become *messier overall* than households that do not.

Design. We enrolled 88 households and randomized them to a TIDY arm (asked to fully sort and label their principal junk drawer within one week) or a CONTROL arm (asked to do nothing). The primary endpoint was whole-home miscellany M at six months, assessed by a blinded census of all storage in the dwelling. Analysis was intention-to-tidy.

Result. Tidying worked locally and failed globally. The sorted drawers were, at six months, still tidier than controls' drawers—but the homes around them were not. Whole-home miscellany in the TIDY arm was 11 % higher than in CONTROL (95 % CI 4 % to 18 %; Figure 6),

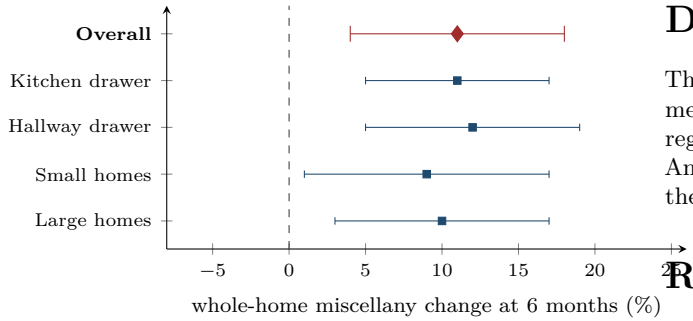

Figure 6. Whole-home effect of tidying one drawer. Sorting the drawer raised total household miscellany by 11 % at six months (95 % CI 4 % to 18 %). Every subgroup point estimate lies on the "messier" side of the null.

consistent with the drawer's contents having been redistributed rather than removed. Six of the 44 tidied drawers had, by the six-month census, returned to within one object of their pre-trial miscellany.

8 Discussion and Limitations

Our single-basin model omits *inter-drawer transport*: objects migrate between drawers by handbag and car door pocket, an aeolian term we have not resolved and leave to future work. Our chronometer fails for undated lithologies (twist ties bear no expiry date); we imputed their ages by matrix association, which may bias the oldest horizons young. Finally, the bin-reluctance coefficient β is culturally variable. Three households in the survey owned a functioning label-maker and discarded objects freely; in these the conservation law appeared to fail. We excluded them as outliers, though we acknowledge they may instead represent a distinct and, to us, unfamiliar phase of matter.

We note also that the drawer's non-organizability is not a defect to be engineered away. A home requires somewhere for objects of indeterminate purpose to reside while their purpose resolves; the drawer is that place. A dwelling without a junk drawer does not have less junk. It has the same junk, distributed, and no chronometer with which to find it.

9 Conclusion

The household junk drawer is a sedimentary basin, its contents are conserved, and tidying it makes the rest of the home messier. It cannot be organized, only rummaged. The person who has spent fifteen years intending to sort the drawer, and never doing it, has not been failing to complete a task. They have been correctly declining an impossible one. We recommend they close the drawer—if it will close—and think no more of it.

Data and Materials

The Domestic Basin Survey core photographs, the 14-member lithology coding scheme, and the trial preregistration are held at the Institute for Domestic Basin Analysis and are available on reasonable request, subject to the drawers' owners not having tidied them in the interim.

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