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Rank and File — Real Life

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One of my undergraduate history professors was a charismatic lecturer. He would speak without notes. Seating himself below the amphitheater of expectant faces, he would launch into exactly 90 minutes of sparkling anecdotes studded with precise dates and proper names, revealing at every turn a natural storyteller's flair for the phrase, the punch line, and the sensuous detail. After a few weeks in his class, inspired, I went to see him during his office hours. Would he give me a big list of serious history books to read? He responded by inviting me to tea.

When I arrived at his house, I was stunned by his library. They were co-extensive. The shelves began in the entryway, continued down every hall, lined all four walls of the living room, the kitchen, and I could only assume the bedroom. They were even some in the bathroom. I pretended to need it, just

so I could check.

He made us tea, then he told me to sit on the couch while he settled into his reading chair, a piece of furniture evidently much used, creased where he sat, dimpled and shiny on the arms where he rested his elbows. A strange wooden contraption hung from the wall beside him. Later I realized it was a hanging desk he could pull into place near his right hand to take notes without leaving the chair. The room smelled of paper and ink and tea.

A new conviction structured the next decade of my life: The un-annotated life was not worth living

What did I want to talk about? Tasting my first sour taste of imposter syndrome, I repeated my question about a book list. Surrounded by the evidence of real scholarship, I suspected that my half-preening request was vulgar and silly. But he nodded and his face fell into an expression I recognized from class. He was preparing a lecture.

He told me that he grew up in a house without books. When he arrived at university he realized that every single one of his classmates had a leg up on him. He would have to read hard to catch up, and he would have to retain what he read. From his first semester he made a habit of writing one-line summaries along the top edge of each page in every book he read, and he never stopped. He collected notes from these summaries in card indexes, filed and cross-referenced. He didn't have a good memory and he didn't read fast, but he was

diligent. His notes, a mass evolved over the last 50 years of his life from reading all the books in his house, were downstairs, collected in cardboard boxes. The notes were his life's work. I might think writing or teaching were scholar's work, but the real work was taking notes, imposing the will and unity of a single perspective on a vast quantity of argument and information. I should begin now, he said, while I was still young, still capable of making naively ambitious gestures like asking for long book lists. I had an advantage on him, he added, because I used computers and had grown up using them. If he could do his life's research over again with a computer he could have done twice as much. He leaned forward and fixed me with a stare that paralyzed every muscle in my undergraduate body. *It matters less what you read,* he told me, emphasizing each word, *than how you take notes.*

Later he gave me the list I had asked for, walking along his shelves pointing out books he considered essential as I scribbled down their titles. But it was his prior declaration that stuck. I can still smell the tea in my hands as he intoned the words. A few weeks later I lost the paper on which I'd taken down his booklist, but a new conviction structured the next decade of my life: The un-annotated life was not worth living.

When I arrived in grad school in 2011, his advice was fresh in my ears. Everyone had their preferred reference management system: Zotero, Mendeley, or JabRef. These programs had more or less solved the most tedious aspect of scholarly

writing — organizing and formatting citations. One friend bought a scanner, cut the spines off all of his hundreds of books, and turned them into searchable pdfs. Another began surreptitiously recording our professors, using transcription services to turn their spoken words into print. A third introduced me to an app that allowed us to upload bibliographic data to our personal databases just by scanning a book's ISBN number with a phone camera. It reminded me of a recurring dream in which I could walk down a library shelf, run my fingers over the spines of books, and effortlessly absorb their content straight into my brain.

My life's work would not reside in my basement in cardboard boxes — it would be a highly sophisticated bundle of files and software, accessible on a smartphone.

Enthusiastic proponents of Roam Research, a new note-taking app, call themselves the "Roam Cult." If you browse #RoamCult on twitter, you don't have to scroll very far to see claims that it is life-changing.

When you open the app, an auto-generated blank page with the day's date at the top like a diary confronts you. There's no absolute hierarchy of notes, only an infinitely interpenetrable collocation, and each note can be included — or "transcluded" — as part of another note. You simply begin typing your thoughts, surrounding key phrases in double brackets to generate topic pages and backlinks. Do this for a few days and networks start to grow, order emerges from chaos,

frequently bracketed words and phrases form hubs that reveal the hidden structure of your daily musing or of the books you read. For instance, when taking notes on a historical narrative, you might simply copy and paste an important section and bracket proper names, dates, and keywords as you read, generating an automatic index of links just through the act of highlighting. After a while, you just get in the habit of bracketing anything that might be useful later.

Thought incarnates into a network, and not only because Roam notes are cloud-based, easy to share and collaborate on: You realize that just by thinking the way you already do, and by taking note of what you think, you are building something. Roam accentuates that realization with a visual map of connections. The graph view shows all or a subset of your notes as bubbles connected by lines to indicate links. If you're bracketing words and phrases often enough, a few days' notes create a spiderweb in graph view, an image of your thinking. You can find personal testimonies by Roam users enticed for the first time to write down their thoughts due to the ease and pleasure of the app.

Lately, Roam, which has begun charging a steep monthly fee some members are unwilling or unable to pay, has spawned a growing number of software imitators. Some repurpose older, sturdy, lightweight software — like TiddlyWiki — to allow notes to be self-hosted; others — like Obsidian, or the forthcoming Athens — seek to replace Roam's profit-seeking ethos with

that of open source. Eventually there will be a whole set of competing note-taking apps, all featuring backlinking and a transclusive structure.

Possessing a frictionless method for accumulating a vast horde of notes means generating a huge personal index, but the very ease with which that index is generated makes it unwieldy at scale. After the initial spontaneous growth of topic hubs, you have to start memorizing your own taxonomies to make sure future notes will tie into past networks. You might begin to wish you *did* have more hierarchy and forethought before various words and phrases became ossified in your index. (Members of the #RoamCult love to share templates for taking various kinds of notes — templates for book notes or social databases, for example. You need templates like these to make the horde of notes usable at a certain level of accumulation; the sense of ease that excites new users is deceptive.)

Seeing the shape of your ideas is not the same as having new ideas. Creating a too-comprehensive portrait of your own thoughts can amount to locking yourself into a labyrinth of your own preconceptions

Early on, especially if you have never regularly taken notes before, it illuminates your thinking, perhaps surprising you with the recurrence of certain topics. But seeing the shape of your ideas is not the same as having new ideas, and in fact — as with the ossification of keywords — creating a too-

comprehensive portrait of your own thoughts can amount to locking yourself into a labyrinth of your own preconceptions. It is far easier to go on accumulating more references to existing topics in your index — and, superficially, it is more constructive to do so, it makes the visual map of connections bigger and more impressive — than to re-evaluate your use of a term. And thus, although old-fashioned forms of note-taking took longer and were harder to navigate, they were also more flexible, more adaptable as your views changed over time.

If Roam had existed a decade earlier, I would have adopted it in a heartbeat. Instead I auditioned many different candidates for the database that I hoped would hold *my* life's work, just as cardboard boxes had held my professor's: personal wikis, private websites, email clients, simple collections of text files. I was determined to take advantage of computers in my note-taking; my professor had said he could have done *twice as much* if he'd had them. But less than two years after the momentous invitation to tea, my notes were already out of control. Annotative impulse grew alongside technological capability. I added dozens of notes a day, an untrammeled accumulation. If I clicked through the labyrinth growing on my computer I could discover grottos and dusty corners I had already forgotten about.

I began to worry that the sheer effort involved in using primitive paper, pen, and cardboard box notation system had actually been the source of my professor's intellectual

development — that the arduous process of flipping through his cards for each new project was the secret source of his vast knowledge, and that by making the process so easy for myself I had sacrificed its primary benefit. I had no idea how to use this vast file system to develop a mind like my professor had, the sort of mind that could spin a textbook-ready narrative on command, dense with accurate details. Instead my notes were beginning to depress me. They were a visible testament of fruitless effort. The papers I was writing for graduate school sprouted a thicket of references — auto-formatted in footnotes and bibliographies by my reference management software — but that was all I had to show for all that note-taking. Surely if the scholar's real work was taking notes, as my professor had said, that work should be *changing me* somehow?

In an effort to get the notes that existed *out there* in my files into my head, I tried using algorithmic "spaced repetition" to memorize them all via a handful of flashcard apps like Memrize and Anki. But very soon the predictable happened: I missed a day here, a weekend there, and the daily flashcard quota became a wildly varying imposition on my time. I realized that in a few months, let alone years, at this rate *most* of my time would be spent on the maintenance of memories. I, as others have found, would be too busy maintaining these memories to use them.

I was trying to use a technology to achieve one of the extreme

possibilities of its hype. Like every other lifehacker who thinks that finding shortcuts for the little things would transform the results of my life and work, I had assumed that efficiency and increased productivity was itself a path to quality. But this was a vision I had invented out of the ethos of my professor's living room: those book-lined walls, that hanging desk, those shiny patches on his armchair where he propped his elbows as he read. I had mistaken his advice about note-taking for a recipe to become him. My busily note-taking self remained stubbornly, disappointingly me.

The influential German sociologist and systems theorist Niklas Luhmann wrote more than 70 books and 400 articles in his lifetime. As he explained in a 1981 essay, his super-prolificity was partially attributable to a note-taking system, the "slip-box" or *zettelkasten*. (Luhmann's 90,000 note archive, and the special wooden boxes he kept it in, can be viewed online.) The idea of a *zettelkasten* itself is about 500 years old, but Luhmann's use of it still feels like a technological disruption of thinking because of how he theorized it as an experiment in systems theory that would automate the process of thinking new thoughts. What was so special about his notes, he wrote, was that they actually served as "a competent partner in communication," surprising him with new ideas when he turned to them in the course of writing. In his own words:

> As a result of extensive work with this technique a kind of secondary memory will arise, an alter ego with whom we can

> constantly communicate. It proves to be similar to our own memory in that it does not have a thoroughly constructed order of its entirety, no hierarchy, and most certainly no linear structure like a book. Just because of this, it gets its own life, independent of its author.

How could a simple note-taking system amount to the creation of an independent dialogue partner? By organizing notes to facilitate serendipitous connections.

A *zettelkasten* is an accumulation of notes in which each successive note is given a number, rather than being placed in a category or topic. If a new note relates to previous notes, it references (or links to) them, and if subsequent notes add to or modify the note, they are given a number between the original note and the one that follows it. Thus the note-taker never worries about the overall structure of their note-taking system, which arises organically from use, but only about the content of an individual note and its connection to other notes. Key notes become hubs of links and backlinks; in fact the best practice for making a *zettelkasten* useful is seeking every opportunity to link notes. When the note-taker reviews their *zettelkasten* by entering the labyrinth at a particular note relevant to whatever they are thinking or writing about, they discover all kinds of associated ideas, examples, and quotations through the accumulation of links — as if the *zettelkasten* itself were coming up with ideas for them.

This sounded like a direct solution to the problem I had tried to

overcome with spaced repetition. I did not need to stuff my notes back into my birth-brain to make them useful, not if I could somehow organize them so that they functioned as a second brain (as a popular self-help course puts its). What if my note-taking system could think for me?

I selected a topic and sat down to browse my notes. It was a catastrophic revelation

Inevitably, I began my own *zettelkasten*. I started reorganizing my years of accumulated notes to fit into it. Luhmann had written that "the slip box needs a number of years in order to reach critical mass," and I took him seriously.

In my enthusiasm I was just ahead of the curve. The *zettelkasten* system has recently exploded in popularity, thanks in part to communities like zettelkasten.de and a devoted subreddit. Better technologists than me have made or adapted various apps, like The Archive, Sublime Text, and Zettlr to work like a *zettelkasten*. Mine was a primitive assemblage of locally hosted html pages.

The whole thing went swimmingly until the realities of grad school intervened. It came time for me to propose and write a dissertation. In the happy expectation that years of diligent reading and note-taking, filing and linking, had created a second brain that would essentially write my dissertation for me (as Luhmann said his *zettelkasten* had written his books for him) I selected a topic and sat down to browse my notes. It was a catastrophic revelation. True, following link trails

revealed unexpected connections. But those connections proved useless for the goal of coming up with or systematically defending a thesis. Had I done something wrong? I decided to read one of Luhmann's books to see what a *zettelkasten*-generated text ought to look like. To my horror, it turned out to be a chaotic mess that would never have passed muster under my own dissertation director. It read, in my opinion, like something written by a sentient library catalog, full of disordered and tangential insights, loosely related to one another — very interesting, but hardly a model for my own academic work.

In the end, I wrote my dissertation the normal way, the way dissertations have been written for centuries. My *zettelkasten* remained (and remains) an interesting object, but I had to admit that once again my attempts to disrupt thinking with a technology of note-taking had only resulted in an enormous, useless accumulation of busywork.

My decade of misadventures in note-taking are not that special or unique. Every graduate student I know has their own bizarre odyssey, their own story about trying to adapt the ancient arts of reading, thinking, and writing in a rapidly changing technological world. And I have only told one version of the inner experience of the story — outwardly, whole scholarly disciplines are changing to conform to new possibilities and incentives. The definition of scholarly excellence is getting wrapped up in the countable, and the

dominance of quantity is reshaping scholarly practices toward the automatic generation of what can be counted. Take citations, the problem "solved" by reference management software. It also enables things like rapidly proliferating references to fake papers, driven by the automation and ease of the citation process. But strange stories like that, or my own misadventures with note-taking, might obscure an ancient, perennial problem in the relation of thinking to its technologies. Our latest attempts to disrupt thinking don't successfully revolutionize it, but they also don't invent new problems.

For example, in the *Phaedrus*, one of Plato's dialogues from the 4th century BCE, Socrates relates the myth of the king Thamus and the god Theuth. Theuth was the inventor of letters — the first technology of thinking! — and when he showed them to Thamus, this was the king's assessment:

> O most ingenious Theuth, the parent or inventor of an art is not always the best judge of the utility or inutility of his own inventions to the users of them. And in this instance, you who are the father of letters, from a paternal love of your own children have been led to attribute to them a quality which they cannot have; for this discovery of yours will create forgetfulness in the learners' souls, because they will not use their memories; they will trust to the external written characters and not remember of themselves. What you have discovered is an aid not to memory, but to reminiscence, and you give your disciples not truth, but only the semblance of

> truth; they will be hearers of many things and will have learned nothing; they will appear to be omniscient and will generally know nothing; they will be tiresome company, having the show of wisdom without the reality.

It strikes me that the dangers of writing in relation to thinking have a common pattern: something devised to enhance one aspect of life can take on a cancerous energy of its own, rendering its original purpose no more than a parasitic appendage to its own hungering body. This is, of course, one of the archetypal dangers of technology in general. The human condition, the condition of the tool-using animal, is to be perpetually vulnerable to mistaking instruments for ends.

After the failure of my *zettelkasten* to write my dissertation for me, I finally had to acknowledge that something had been wrong about the advice I received so many years before: a scholar's notes were *not* a life's work, but only a tool. Or perhaps I had misunderstood the advice. After all, the professor who so memorably impressed the notion upon me had only begun taking notes in order to catch up in school, and he kept taking them to write his books and prepare his brilliant lectures — note-taking might have been the major site of his labor, but it was never the goal of his work. I had misplaced the focus and meaning of intellectual activity onto the act of taking notes, like someone deciding that the point of eating was the gurgling metabolic activity of their stomach rather than either the taste of food or the effect of nutrition.

This is a widespread mistake among those who think that a sexy note-taking app like Roam will suddenly free their minds, or that they can train themselves into geniuses with enough spaced repetition, or that they can build a *zettelkasten* capable of thinking original thoughts for them. Strange though it seems, all these quintessentially modern delusions are already predicted in the myth of Theuth. We will keep attempting to disrupt thought and, as usual, we will only manage to interrupt it.

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