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Five Feet at a Time

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Abstract

In this contribution to a Symposium on Revising, Duncan Watts shares some personal reflections on his own writing process and how he was inspired early in his career by some advice from the Nobel Laureate Roald Hoffmann and the rock-climbing pioneer Royal Robbins. He also describes five strategies for writing that he has found useful, concluding that even the most hopeless seeming situations can be surmounted in the same manner as a big-wall climb: "five feet at a time."

Keywords: writing; revising; creativity; science; climbing.

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Many years ago, when I was a grad student at Cornell, I attended a lecture on the topic of creativity by the renowned scientist Roald Hoffmann, who was both a Nobel Laureate in Chemistry and an accomplished poet. I don't remember much about the content of the lecture but there was one slide that stuck in mind and to which I have returned to many times over the years for inspiration.

On the slide, Hoffman showed two images side by side. The first was a copy of an early draft of William Blake's poem, *The Tyger*, which Hoffman introduced as one of the most famous poems in the English language. The second was an early draft of Dimitri Mendeleev's periodic table of the elements (see Figure 1). What was immediately evident from both images — and Hoffmann's point in showing them to us — was how messy they were. In contrast with the pristine versions that one encounters in textbooks and anthologies, these early drafts revealed authors struggling with their ideas: crossing out words, entries, and even entire lines; writing in new suggestions or moving things around; at times crossing out their modifications and trying yet another idea or reverting to an earlier one.

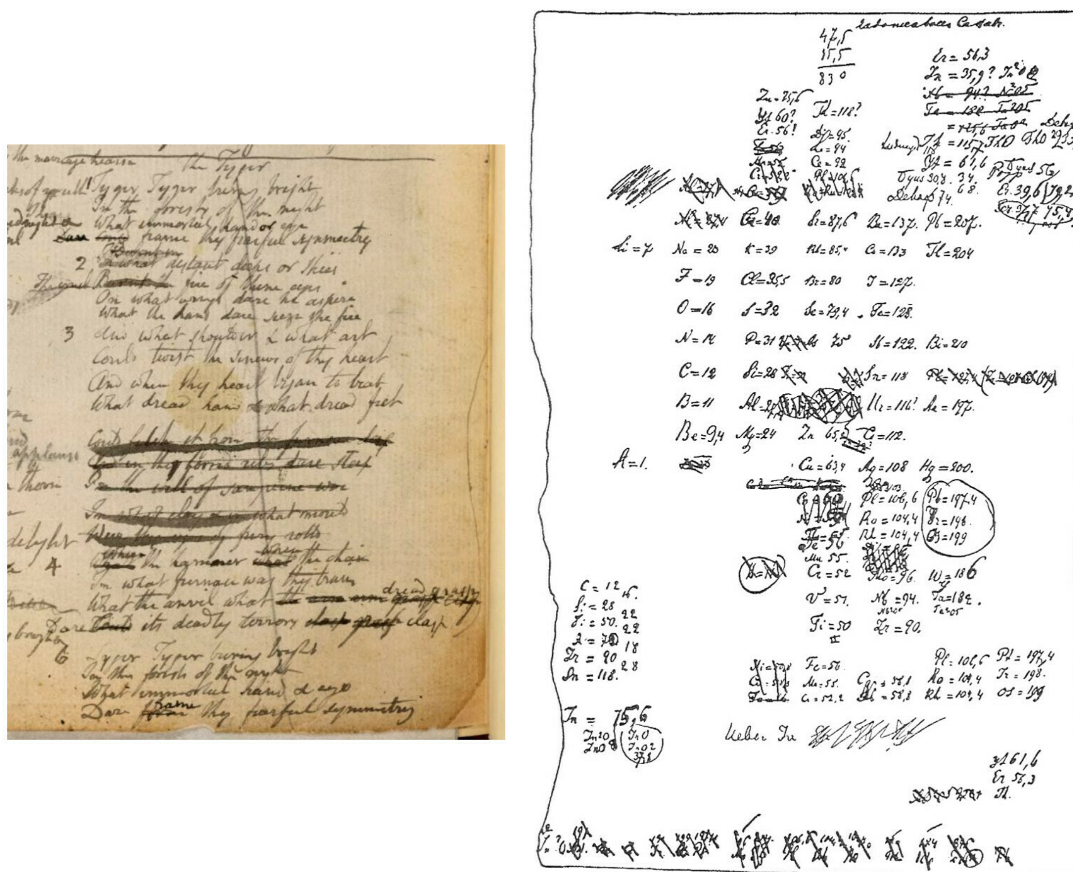

Figure 1. Examples of messy creativity.
Left: The first draft of William Blake's poem, *The Tyger* (source: https://en.wikisource.org/wiki/The_Tyger_(1st_draft)).
Right: An early draft of Mendeleev's periodic table of the elements (https://commons.wikimedia.org/wiki/File:First_Tabla_Periodica.jpg).

It was a simple point, maybe even an obvious one. But as a student who often made mistakes and who frequently found myself chasing the same thoughts around in circles for weeks

or months on end, I found it nothing short of inspiring. If even the greatest thinkers had had to work through a mess of conflicting ideas and uncertainty about what it was that they were trying to say, then perhaps my own struggles weren't the sign of inadequacy that I had thought they were. Perhaps this process of writing something down, then hating it or realizing it was wrong, and then revising it over and over again until it started to seem OK was actually a perfectly acceptable way to articulate creative ideas. Perhaps it was the only way.

At the time I was also a mad keen rock climber, and I spent a lot of my spare time on climbing trips or hanging out at Cornell's climbing wall. On one such occasion one of the more experienced climbers was teaching us to climb vertical cracks using a technique called "jamming," which — as the name suggests — involves placing your hands and feet into the crack and then twisting them such that they jam against the sides, allowing you to pull and push yourself up. It's a strenuous technique and I was complaining about how painful it was. "It's OK," he reassured me: "if it doesn't hurt, you're not doing it right." Perhaps, I thought, doing creative science, and writing about it, was the same.

Since those early days I've done a lot of science and a lot of writing about it, but the messiness and the discomfort and the feelings of inadequacy — the lingering suspicion that this time it really is terrible — have never gone away. The difference is that I've internalized all these feelings as a necessary and inevitable part of the process — just as my rock-climbing instructor, and possibly also Hoffmann, intended. Which is not to say that I don't still struggle with them. It's just that I can reassure myself that on the many previous occasions when I've faced the same struggle everything has worked out fine and it probably will this time also.

Beyond internalizing the expectation that a certain amount — and possibly a lot — of revising will be needed in any writing exercise, what else can one do on a practical level to get through it? I'm sure all writers have their strategies, but here are five that I've found helpful.

1 Just Write

My first rule is simple: if you want to write something, you have to start writing. It doesn't matter if you feel ready, or if you know where it's going, or even if you have any plan at all. Just write. It might be terrible and all over the place. You might end up deleting all of it (more on that next). The point is that it is easier to work with words that are written than with nothing at all. It's also my experience that the exercise of committing your ideas to the page helps clarify your thinking. So just start getting them down and keep going until they start to catch and flow. You can worry later about whether any of it makes sense.

Of course, "just write" is easier said than done. Sitting down to write something, especially something long, can be a daunting prospect. And on any given day there are a dozen other things — replying to emails, attending meetings, teaching a class, doing that mandatory training, running errands, attending to your kids, scrolling social media, replying to more emails — that seem more urgent, or at least easier to do, than starting at a blank screen or diving back into a big messy document. And because each day is much like another, the combination of prioritization, procrastination, and distraction can drag on for weeks or months. The problem gets even harder when your deadline is far off, or there is no deadline at all, while for everything else there is someone who will be disappointed or annoyed today if you don't do it.

For these situations, the best advice I can offer is to plan. Block out time on your calendar — a few hours at least — and decide ahead of time that you will use the time to do nothing but write. Turn off your phone, quit out of email, close your web browser, and find a physical space where nobody you know can interrupt you. It could be your home, your office, a library,

a coffee shop, even a plane or a train — it doesn't matter as long as it's somewhere that allows you to make the mental transition from whatever you were doing before into your "writing mode." Personally, I prefer to plan my writing time before lunch, so that at least I can enjoy the rest of my day knowing that I got some productive work done. But if you feel more awake and focused in the late afternoon or in the evening, that's fine too. The point is create uninterrupted chunks of time that are long enough for you to get into the zone, and stay there for a while, before you're inevitably dragged back to your other obligations. Then repeat as necessary until you make progress.

2 Cut Ruthlessly (But Keep It Somewhere)

Accompanying the first rule is a critical addendum: you must be willing to cut material that, on reflection, doesn't help your work. This rule is harder to live by than it sounds as written words are very much subject to the endowment effect from behavioral economics: owning something causes you to value it more than an identical thing that isn't yours. Just as it can be hard to go through your old junk and throw out possessions that you're no longer using, the time and effort expended in the "just write" phase can lead you to be more invested in your words than you would be if all you cared about were the final product. As a result, you can end up with lots of junk cluttering up your prose just as your old junk can clutter up your house (or storage container — there's a whole industry that profits handily from the endowment effect!)

Fortunately, there's another trick to help you overcome this psychological bias: create a separate "outtakes" file where you can park all the questionable snippets while you decide whether to permanently remove them or not. In my experience, these outtakes sometimes make it back into the main file, but more frequently I find that once they are removed the endowment effect is greatly diminished and they end up in purgatory indefinitely. Continuing with the decluttering metaphor, moreover, I find that the hardest part of cutting is starting. Once I have broken the mental barrier of the first cut, the next is much easier. After all, if those first precious words could go and I still feel OK, surely the next ones can also.

3 Ink Blots

One misperception that I had about writing early on was that it proceeded in a linear fashion, beginning at the start, and ending at the end. That makes sense of course, because that is typically how we read documents, and sometimes the writing is like that too. But in my experience, writing is more often like a collection of ink blots: I start in many places in no particular order and develop them in parallel. Perhaps I have an idea for one part of the argument that I want to get down before I forget. Perhaps I think of a nice example that I want to work in somewhere. Or perhaps some pithy turn of phrase occurs to me, and I think I can develop it into something interesting. It doesn't really matter. Going back to my first rule, the main objective is just to get down all the "blots" that come to mind and then start fleshing them out.

Initially the process can be haphazard. Maybe I work mostly on a single blot which eventually turns into the bulk of the manuscript, but sometimes I have several of roughly equal size going at once and I hop around among them, working on whichever one seems to be going well at the time. Mostly I go forward from each starting point, but I also work backward from what I imagine to be a nice ending. Sometimes I think I'm going forward but later realize I

was going backward. Sometimes the blots switch order, sometimes switching back and forth several times before settling down.

Regardless, over time, the blots grow and begin to join up. Eventually they form one continuous body that now resembles the overall format of final text, but with a bunch of lumpy joins — awkward segues, clumsy phrasing, sudden shifts in tone or terminology — where the previously separate blots have merged. I then go to work smoothing over the lumps until I no longer notice the transitions. Sometimes this process goes quickly, but sometimes it reveals a deeper problem — for example that two parts of the argument aren't logically consistent or don't help each other as I had thought they would. Then surgery is required, and everything gets pulled apart before being stitched back together again.

It's a messy process, but if it all goes well the result is indistinguishable from the clean linear flow from beginning to end that I had once imagined. My favorite example of this process is a paper that I worked on, in fits and starts, for several years. Over that time, I wrote ten major draft versions, each of which I revised many times before even submitting it to a journal. It then went through two major revisions at the journal, incorporating dozens of pages of referee and editorial comments and completely overhauling the argument and even the title in the process. In the end, I had pulled it apart and put it back together again so many times that it was almost unrecognizable from the original. So, I was thrilled when a respected colleague mentioned sometime later that when he read it, he assumed I'd just sat down one day and blurted it all out.

4 Even Unconstructive Feedback Is Still Feedback

As with the other contributors to this volume, when I talk about writing I'm mostly talking about academic writing, which in turn mostly means writing articles to be published in peer reviewed journals. As you probably know, the typical process for these journals is that one submits a draft manuscript and an editor either rejects the work outright or sends it out to review. In the latter case, one then waits for a few months and then receives some number of (usually anonymous) referee reports from experts in the field — usually two or three but sometimes just one and sometimes more (I think my record is eight). Based on these reports and the editor's own evaluation, the editor either rejects the paper or invites a revision, which could be "minor" or "major" (in theory it could be accepted off the bat, but that has never happened to me or to anyone else that I know of).

Either way, you now have some feedback. And as you may have heard, or experienced yourself, that feedback can be harsh. Sometimes it is very constructive and helpful and you're grateful to the referee for effectively helping you to improve your paper. But sometimes it is misguided, condescending, disingenuous, or outright malicious. Every academic has horror stories about how badly they were mistreated by such and such journal and "Reviewer 2" jokes are literally a meme on Twitter. Reading referee reports is one of my least favorite activities and responding to them can be as painful as it is painstaking.

Nonetheless, my experience is that no matter how off base and unfair the criticism seems, the paper almost always ends up better off for it. I'm honestly not sure why this is. Perhaps it's that first drafts are always in need of improvement and so any revision, even an unwelcome one, is likely to help. Perhaps I'm just rationalizing the countless hours I've spent writing out detailed responses to the thirteen sub-sub-bullets of R2's objection 7, part b. Regardless, what I've convinced myself of is that if one reader has a particular reaction to my writing, other readers are likely to also. So even if I think what I said was perfectly fine the way I wrote it, and the reviewer's reaction is unwarranted, it's incumbent on me to try to head off that same reaction

in others. It might be a little thing, but if fixing it helps you to avoid an unnecessary negative reaction in even some of your potential readers without compromising your overall message, it's probably worth it.

5 Five Feet at a Time

In closing I want to return to my main point about learning to live with your misgivings — especially when those misgivings amount to prolonged feelings of hopelessness. More importantly, I want to use it an excuse to invoke another rock-climbing metaphor.

During my time at Cornell, I got pretty involved in the university's outdoor education program, where I taught climbing and cross-country skiing among other things. One year, the program decided to host a conference and the organizers invited the legendary climber Royal Robbins to give the keynote. Robbins had earned his fame as one of the early pioneers of "big wall" climbing in Yosemite Valley, home to the giant cliffs of Half Dome and El Capitan. Among his many notable achievements were his 1960 ascent of *The Nose*, a 3,000 foot El Cap classic that was and still is the most famous climb in the world, and a particular brutal ten-day solo ascent in 1968 of the Muir Wall, also on El Cap.[1] As a young climber hoping one day to get up something as big as *The Nose*, I was delighted that Robbins was visiting Cornell and thrilled when one of the organizers asked me if I would pick him up from the airport. I was nervous to meet the great man, but he was very friendly and disarmingly unpretentious. He asked if I could recommend a restaurant for dinner and invited me to join him. I couldn't believe my luck! Over dinner, Robbins regaled me with climbing stories just as I'd hoped, eventually getting to his solo ascent of the Muir Wall. And here, some background is in order.

Rock climbing is usually conducted in pairs, where one climber (the "lead") ascends first, placing protection as they climb, while the other one (the "belayer") plays out rope through a braking device from a safe anchor below. If the lead climber falls, the rope will catch on their most recently placed piece of protection and the brake will stop them falling more than a short distance. When the lead climber runs out of rope, they create a new anchor in the rock (usually three or more pieces of protection), and they then become the belayer while the "second" climbs up, removing the protection as they climb. The whole process, called a "pitch," then repeats as many times as necessary to reach the top. Short climbs are often just a single pitch, but long climbs can have many. Standing at 2,900 feet, the Muir Wall on El Capitan has 33 pitches.

All of this sounds daunting enough, but when you're climbing solo you have to do the whole thing yourself: place an anchor; set a "self-belay" (a brake that moves on the rope with you); climb up as the lead; set another anchor at the top; rappel back down; break down the bottom anchor and then ascend your rope, removing all the protection. In other words, you must climb every pitch twice plus the rappel. Adding to the burden, on a multiday climb you also must bring all your food, sleeping gear, and — critically, because it is so heavy — water. All this stuff goes into a large sack called a haul bag, which, as the name suggests, must be hauled up after you pitch by pitch, typically by running the rope through a pulley and using your body as a counterweight to overcome the friction (for a ten-day expedition a haul bag could easily weigh 80 pounds at the start). So, in addition to doing all the climbing yourself, twice, a solo climber must also do all the hauling. Finally, there is the extra psychological strain. Climbing is dangerous as well as physically and mentally challenging — far more so on a big wall like El

1. For Robbins' own account of this epic climb, see http://publications.americanalpineclub.org/articles/12196931900/Alone-on-the-John-Muir-Wall-El-Capitan

Cap, where you're so exposed you feel you're going to get sucked off into space by the sheer emptiness around you. Even when you have a partner you trust, it's scary as hell. On your own — well, I couldn't even imagine it. What I wanted to know was: how on earth did he do it?

His answer surprised me. He said that for most of the climb he didn't think he *could* do it. He was moving much slower than he'd expected and kept encountering difficulties he hadn't anticipated. A couple of days in the whole thing seemed hopeless and he figured he'd have to go down. But then he thought: "Even if I can't make it up, I *can* climb another five feet. Five feet is no big deal, and I can go down just as easily from five feet up as I can from here." So, he'd climb another five feet. Not because he was trying to complete the climb — again, he didn't believe that he could — but just to get a bit further. But then of course he was in the same situation as before and the same logic applied. So, he'd repeat the mantra and climb another five feet, and then another, and another, and so on. And that's how he did it, as he told me: "five feet at a time."

It's a simple insight, but I've found it useful many times — especially when writing. In the middle of any large or ambitious project, there is always a moment — sometimes many moments — when it feels hopeless. In one case, I had spent almost two years working on a book and was a month or two away from my deadline. When I sat down and read the whole thing through, I was appalled at what a disaster it was, from basic sentence structure all the way up to the overall narrative. I remember sitting in my office in a state of disbelief, marveling at how something I had worked on so hard for so long could be so bad. The project felt like a giant hole in the ground into which I had shoveled years of my life and I couldn't even see the bottom. For all I knew I could spend another two years on it and not be any closer, and I only had a couple of months. Failure was inevitable.

What should I do, I wondered? Call my editor? Tell him I couldn't do it? Cut my losses and move onto other projects? Return my advance? I seriously considered all these options, but then I remembered Robbins. I couldn't finish my book, but I could start at the beginning and make a small change. It wouldn't make much difference — not nearly enough to matter — but it would make it a tiny bit better and, more importantly, it was something that I could do: "five more feet." And then once I made that change, I found the next small thing to fix and fixed that also. And over, and over, and over again. At no point did I feel that I was changing anything important. There was never any big moment where it all clicked or came together, no rush of creativity or frenzy of writing like they show in the movies. Just hundreds of little changes accruing over weeks of painstaking revisions. And yet, when I read the manuscript less than two months later, I realized that the giant hole had been filled. In climbing terms, I had "topped out."

This is the lesson, more than anything, that I'd like to leave you with. When you're flailing in a project and you're miles from the top and nothing you can imagine doing will solve the problem, stop imagining. Just go up five feet at a time and keep going. You might be surprised where you end up.

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Duncan Watts is the Stevens University Professor and the 23rd Penn Integrates Knowledge Professor at the University of Pennsylvania (USA), with faculty appointments in Computer and Information Science, the Annenberg School of Communication, and the Operations, Information and Decisions Department in the Wharton School of Business. In the summer of 1996, he and two friends climbed The Nose of El Capitan over five very long days.