

## Brain surgery, or The Schooling of Poets

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Writers love a famous riposte often attributed to Margaret Atwood. The story goes that she was approached at some social function by a brain surgeon who told her he was interested in writing and intended take it up after he retired. She snapped back, “When *I* retire, I’m going to take up brain surgery.”

Perhaps this anecdote warms our hearts because half the people we meet, from brain surgeons to cab drivers, tell us how they want to write a book – as if it was roughly equivalent to wanting to tour Spain this year. All they need is a little holiday time. Perhaps we love it all the more because we are secretly insecure. Is it really so hard to write a book? I write poetry because I find it easier than the options. It *would* be much harder for me to be a brain surgeon or a cab driver.

So one of my other very favourite stories concerns William Hamilton, the great mathematician who gave his name to the Hamiltonian equations that describe the total energy of a system. Hamilton wanted very much to write poetry and it took his friend William Wordsworth to point out tactfully that his talents did not lie in that direction. “You send me showers of verses which I receive with much pleasure ... yet we have fears that this employment may seduce you from the path of science.”<sup>i</sup> Hamilton was a phenomenally creative, inventive thinker. Part of me thinks that anyone who could handle the symbolic language of equations so jauntily could surely crank out an equally good poem. That he found it difficult is a relief. It seems to confirm that I’m doing something that does indeed requires some special ability.

Yet, I also argue with people who tell me, “Oh, you were *born* that way” as if I had won some odd lottery. No one says that to the brain surgeon. People assume he may have arrived on the planet with some useful predispositions that were subsequently developed, but those predispositions might have been applied to engineering or in a biochemistry lab rather than to the manipulation of scalpels. The decision to go down one avenue rather than another is attributed to relatively prosaic forces of inclination; brain surgeons do not assume their choice has to come from a celestially dictated organization of their brains..

So is the ability to write poetry innate or acquired? If it’s the former, what kind of special organization might be required? If it’s the latter, how do we attend to the schooling of poets?

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If poetry is innate, you’d expect to see a wide divergence of talent emerging at a very early age. Infant prodigies would surely illustrate the divine tap on the

head. However, in comparison with music and mathematics, there are remarkably few prodigy poets. Mozart was remarkable for being able to compose minuets at the age of five. Pablo Picasso at the age of 13 was convincing a jury to allow him to attend Barcelona's School of Fine Arts. Poets are laggards by comparison. My own first lines of verse, composed at the age of seven ran like this:

*a furry coat has the bear to wear  
the tortoise a coat of mail  
the yak has more than his share of hare<sup>1</sup>  
But the pig has a curly tail*

This was hailed as a great achievement by my parents, but even they wouldn't have considered putting me on a stage to recite it. I hasten to add that I'm *not* setting myself up as the literary equivalent of Mozart. But a genuinely great poet, Robert Frost, at the age of 16, was producing such gems as:

*The 'tzin quick springeth to his side.  
His mace he hurls on high.  
It crasheth through the Spanish steel  
and Leon prone doth lie.*

Such a stanza hardly suggests a future laureate. At the same age, Mozart had written a very creditable and popular opera.

The trend does not apply only to star artists; it is fairly general. When you walk through the halls of any arts-focused high school, you will see visual art on the walls that is sophisticated and technically accomplished; from the music studios, you will hear music played at a fairly high level. Young people can be wonderful actors. Their performance in all these artistic disciplines will be consistently more impressive than their poetry efforts at the same age. So if poetic ability is innate, it requires an unusually long gestation period.

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Perhaps this kind of delay indicates that there is a lot of practice involved in mastering poetry. Research indicates that the mastery of any skill takes around 10,000 hours of practice. Put in enough time, and you too will become a genius. In fact, this may be part of the cognitive processing that underlies the remarkable capacities of savant syndrome – people who have trouble with many ordinary activities but have 'islands of genius.' Some savants can play a complex piece of music after hearing it only once; others might be able to calculate the value of pi to record-setting decimal places. "Savants like doing something, and doing it again, again and again," writes Allan Snyder. And because they don't do

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<sup>1</sup> Yes, I spelled it 'hare'

other mundane things with their brains, they spend phenomenally large amounts of time on the tasks that interest them.

It's fairly clear what a musician can spend 10,000 hours on: learning scales, rehearsing pieces over and over, learning the theory. But what does a poet spend her 10,000 hours on?

In fact, we put in our most important apprenticeship very early, before the age of six. As functional speakers of language, we were learning the rhythms and sounds of speech in our high chairs. Our ability to co-ordinate the muscles of the tongue and lips, the rush of air from the lungs, the complexities of syntax and the social rhythm of speaking makes six-year-old Mozart at the harpsichord seem almost ordinary in comparison. However, this is a mastery that poets share with just about everyone else on the planet; in matters of language, virtually all human beings are prodigies.

Although poets learn this procedural basis of their art very early, we don't do very interesting things with it for a long time. Then poets can effloresce rather suddenly. The first surviving poem by John Keats was written at the age of nineteen; within seven years he was dead, having produced poems that were to become some of the most influential in English literature.

I suspect it is not a coincidence that effective poetry emerges at around the same time as development of the brain's frontal lobes is complete – something that, in fact, doesn't happen until our early twenties. In puberty, a wave of brain development kicks in, during which we rapidly develop additional neurons in the frontal lobe. Over the following decade or so, this is followed by a steady increase in myelination of this region. Myelin is the white layer that sheathes the axons of neurons, insulating them and allowing them to conduct impulses more efficiently. The frontal lobe's executive functions (such as planning, controlling behaviour, and organizing multiple tasks) aren't working at peak until the process of myelination is finished. It may be that poets require this type of processing more than other young artists do.

Savant syndrome may allow additional insight into poets' need for connectivity. The condition seems to be associated with an imbalance between the left and right hemispheres of the brain, an idea that is supported by experiments that can make temporary savants of normal individuals by using transcranial magnets to handicap the left hemisphere. In this situation, for instance, people can spontaneously draw remarkably realistic scenes – an ability that normally has to be taught. It is actually a little surprising we can't draw like this more easily, since our brains have all the information necessary to do so. However, we can't seem to access it. The left hemisphere gets in the way, imposing patterns of meaning on data, filtering out the raw information. Unlike artistic savants, most of us tend to be more aware of the meaningful whole than its constituent parts.

Savants' remarkable abilities typically bloom out of nowhere, unbidden and apparently untrained, between the ages of five and eight. There's considerable

crossover between the areas in which infant prodigies and savants excel: music, realistic drawing, mathematical calculation and mechanical/spatial skills. But poetic ability in savants is very rare. When it comes to writing poetry, this capacity to work with a 'meaningful whole' may be essential – which in turn requires maximal connectivity throughout the brain. Whether it is the more efficient connectivity of the frontal lobes in particular, or more generally throughout the cortex, it seems that something about being able to draw on the whole cortex – left and right, back and front – is essential to writing good poetry. We sometimes say that writers can't write without having life experience, but what we really need are certain abilities to think about experience.

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Back to the question of what poets should spend their 10,000 hours on. It's the question that schools of creative writing must try to answer.

When I was going to college, there were no degree programs in Canada that I knew of. My college did offer one creative-writing course in fourth year. I had been dying to take it but chickened out at the last minute because the professor terrified me. Today, creative writing programs have sprung up across the land like a wave of neuronal development, and the debate over whether they are good or bad for writers springs even more vigorously. (Eudora Welty, when asked whether creative writing programs squelched writers responded tartly that in her opinion they didn't squelch nearly enough of them.)

However, the professional training of poets is not just a modern idea born of an insatiable need to hang a certificate on every wall. The Bardic Colleges of Ireland flourished for centuries, turning out workaday poets, not necessarily inspired ones, who found a niche with each royal family to celebrate their deeds and genealogies. Bards were steeped in history and tradition as well as technical requirements and poetic conventions. The bard was, in fact "a professor of literature and a man of letters, highly trained in the use of a polished literary medium, belonging to a hereditary caste in an aristocratic society, holding an official position therein by virtue of his training, his learning, his knowledge of the history and traditions of his country and his clan.... He was often a public official, a chronicler, a political essayist, a keen and satirical observer of his fellow-countrymen."<sup>ii</sup>

In these degenerate days, the potential for becoming a 'professional' poet is much more limited. You'll wait a long time with your creative writing degree before seeing an ad that reads: "Poet wanted. Competitive salary and benefits." Few clans or corporations are willing to pay for a professional poet (and certainly very few clients are willing to risk the boils that, according to legend, could be raised by a particularly good satire from a dissatisfied bard.) The jobs available to you will seldom be to *write* poetry; instead you will mostly earn money teaching others to write it, and publishing your own work will be merely a confirmation that you have the street cred to teach.

However, assuming that you will graduate and go off to write poetry for the usual starvation wages outside the academy, the question is – did the time spent in the training program help? The main objection to such programs is that they encourage a kind of group-think, that the poems produced by their graduates have a certain faddish sameness. However, human culture has a certain inherent faddishness in all generations and cultures; the minor poets of Elizabethan England tend to sound much alike, and we can't blame *that* on creative writing courses. The good thing about courses is that otherwise isolated people can get together to find others who will actually read their work; they gain the energy of community, learn basic techniques and meet people who will be useful in their later lives.

However, creative writing programs are neither necessary nor sufficient in the way that professional courses are for a brain surgeon. Surgeons need to demonstrate that they have mastered a body of knowledge and to do so they need to be in a classroom organized to deliver, test and accredit. Poets, on the other hand, can come from any igloo or hermitage, provided they have the opportunity to absorb sufficient amounts of poetry. And this doesn't mean a poet needs to read every classic, every 'great' in his culture. He needs a deep familiarity with a small number of poems first. The process is a bit like learning language as a whole – we infer rules of speech from a limited, finite sample of sentences we hear before we are two. We don't need (and couldn't possibly listen to) all possible combinations of words in our language before becoming competent practitioners.

Of course, wider familiarity with literature gives context and inspiration and an impetus for excellence. Poets often read other poets and think, "Wow! I could take *that* (the Odyssey, Spanish glosas, the word 'infinity') and apply it to *this*." Brain surgeons really shouldn't try this kind of process on operating tables. If you are going to become truly and consistently excellent, you will go on learning as much as you can about the vast realms. But there is always the possibility that someone with relatively little of this kind of training can toss off a one-and-only poem that reaches many people – poems like *High Flight* in our school readers. Brain surgeons, by contrast, cannot hope to perform one magically lucky operation before they've finished the whole course.

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Imagine we were going to engineer a poet's brain. What would you do? Many people would assume it must quite different from that brain surgeon's or any other scientist's.

High-school chemistry class. We are partnered off at lab benches with Bunsen burners and small sinks, and handed test tubes and a small lump of blue crystal. First, we are to heat it in the flame of the burner, watching it turn to a greyish power. Then we are to add water to the test tube, whereupon it turns to a bright blue liquid. I stir the vivid liquor with the end of my pen and write down the observations as the teacher has told us to – what did we see? what happened at

each stage? I absent-mindedly stick the end of my pen in my mouth and wrinkle my nose at the bitter taste. When the teacher asks us what we've observed, the other lab pairs answer with the same routine things – changed colors, consistencies, quantities. I am pleased to hold up my hand and announce, "It tastes like copper pennies!"

The teacher leaps up in horror. "You don't mean you *drank* it," he gargles and runs down the aisle, prepared to rush me to the nearest stomach pump. I barely have time to point out that the tube is still full, and all I did was get a little on my tongue. Relieved, he uses this as a teaching opportunity to point out that, in future experiments, we should depend on all of our senses for observation *except* for that of taste. I will go through my life remembering the particular qualities of copper sulfate.

The point of our high school experiments was to train us in laboratory techniques. The high-school teacher didn't expect anything novel from them beyond the idiotic unpredictability of the students themselves. We were being taught to observe, to *experience* (which is related to the word 'experiment') something for ourselves – useful habits for any writer.

Two stereotypes underlie the idea that the cognitive processes used by scientists and poets are fundamentally different. One is expounded by Robert Graves, that experimental research involves "a series of routine experiments in the properties (say) of some obscure metallic compound." Certainly our experiment in the high-school lab was routine, but no more so than the 16-year-old Robert Frost's experiment with predictable meter. But scientists don't do experiments where they *know* the outcomes; they are looking for surprises. As high school students we are surprised by the experiments we haven't done ourselves, but once we know that copper sulfate goes bright blue, we don't need do it again and again.

Which leads to the second, and contradictory, stereotype – that science is relentlessly about novelty, inventing something that has never been seen before. Science leads to new things, of course, but in the same combinatorial way that writing leads to new poems. You don't have to invent a new language for either endeavour. You build on what has gone before.

If you're building a poetry brain, you need a fundamental ability that characterizes science – the ability to simultaneously hold conviction and doubt. Only then can you overcome the difficulty of described by Francis Bacon of making progress while nonetheless retaining the skepticism necessary to ensure the correctness of your results. "How can you take an idea seriously enough to delve into its consequences while nonetheless suspecting that it might be incorrect." It's the same ability a poet needs to take what she is doing seriously, but be prepared to chuck it overboard if something else proves more effective. It comes from the interplay of subjectivity and objectivity, which are supposed be different characteristics of poetry and science, yet both are in constant interaction in the human mind.

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So *does* anything 'define' a brain organized for poetry? There's a long-held romantic notion that the brains of poets (and other artists) are so profoundly different from the rest of the lucky normals that they qualify as 'mad.' It's a tradition that irritates me. I feel condemned to minor poetship because I don't have some flamboyant addiction or mental illness. And I know a number of intelligent and creative people whose work has been de-railed by dealing with madness.

We're in the process of learning that mental illnesses – schizophrenia, bipolar disease, obsessive-compulsive disorders and their cousins – are not so much things that are 'wrong' with the brain but extreme ends of conditions we all inhabit. The astonishingly uniform prevalence of schizophrenia across cultures, for instance, indicates that it involves something that can rather easily malfunction. In schizophrenia, input from the senses seems to get overloaded and the brain's circuits create internal representations that are so strong, so compelling, that they seem real. Somewhere in our recent evolutionary history, humans developed the ability to make mental representations of things that weren't there, part of the development of memory. Creators of all kinds, including poets, depend on this faculty; without it, you could not have the misfiring typical of schizophrenia.

Similarly, obsessive-compulsive disorder is a normal state for new parents, who check and check and check to make sure their infant is safe. But when someone's brain goes into the state where that switch can't be turned off, it can become a lifelong condition. Once again, a mild case of the condition is useful to poets; it keeps me reading and re-reading lines to be sure they are right.

It's not that some people are mad and some are normal. It's that we all deal with the same brain systems that can function all the way to the edges of malfunction.

Any vocation is the result of not one, or two spots of talent but an overall balance of tendencies in the complexity of a human brain. Creativity is broadly distributed in our species, and other small tweaks of inclination and experience determine what forms it will take.

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When all is said and wondered, however, I know that what I do *is* different from what the brain surgeon does and – *pace* irritated novelists at cocktail parties – it's easier. Poetry does not depend on the huge edifice of innovation and knowledge that the scientist's vocation does. What I do could have been done just as well around the campfire of the OMO people, a hundred thousand years ago. And it could be done well by many, many people today – in any class where I give a poetry workshop, there will be at least one student with a 'gift', the slightly tweaked sensitivity to language that could be the foundation of poetic ability. That brain surgeon just *might* retire and write a good book.

We do not value what comes easily to human beings, because we do not realize how enormously complex it is to move, to recognize a pattern, to tell a story, to love. In the last century, we felt that we had made poetry 'better' by making it hard. The greatest gift of science in our time may be to help us understand how wonderfully sophisticated our simple abilities are, how long it took to evolve them, how they fit into the natural world as part of a continuum.

From the brain inside this skull, looking out, I make observations of my world. I move words into arbitrary combinations, testing them for sound, testing them for a connection to my observations. I let their connections echo through the net of memory I have spun over decades of learning. I measure and fit, listening, listening all the while to these new artifacts from old words, hunting through combinations of the familiar for the ones that have not been made before.

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<sup>ii</sup> Osborn Bergin, *Irish Bardic Poetry* (Dublin: Dublin Institute for Advanced Studies 1970), 'Bardic Poetry: a lecture delivered in 1912', pp 3-4, 5. retrieved from <http://www.ucc.ie/celt/bardic.html>, Jan. 4, 2009 (Corpus of Electronic Texts, University College Cork)