

From *Intersecting Sets: A Poet Looks at Science*

By Alice Major

## Excerpt from the essay *Metaphor at Play*

I'm rinsing out the bathroom sink. At my feet, Pushkin is poking a toy mouse under the blue plush of the bathmat, then pouncing on it where it is hidden. He scoops it out of its soft cave, tosses it in the air a few times, then pokes it back into the hole. Then he lurks with his chin on the floor, his tail twitching, until he pounces again and the toy mouse is sent spinning into the air.

It suddenly occurs to me that he is *pretending* it's a real mouse. He's not under any delusions that it *is* a real one – he's not fooled into trying to eat its straw stuffing. He is imitating the instinctive actions that a cat uses to hunt but the activity is quite voluntary. He's having a great time.

For the first time, I realize that 'play' is a process of metaphor. It acts 'as-if.' It draws on an ability to hold two situations in mind at once – a real world and a pretend one – and to fool around with the combo.

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We have traditionally thought of metaphor as arriving in the human brain as a late-blooming, ornamental facility that needs deliberate thought and practice. I remember grade school exercises where we were set to laboriously pick out metaphors or similes in a piece of writing. Then the grade seven teacher gave us the assignment to "make up a metaphor of your own." I remember looking at the other puzzled faces in the classroom. It was as if she had asked us to twitch our ears. Maybe there are muscles for doing that, but you've never located them.

Later, in university, I was given ever more advanced words to shave the idea of metaphor into smaller slices. *Metonymy*, for that habit we have of using one thing to stand for something related. ("She lives by her pen" does not mean that she chews the barrel for sustenance.) *Synecdoche* lets a part stand for the whole (as in the phrase 'blue-rinse set' to describe elderly ladies.) I was impatient with such distinctions, thinking them artificial, thinking they mask something more fundamental – a process of laying one thing over top of another and seeing where they are the same, where they are different. I never did learn how to pronounce 'synecdoche.'

In fact, the underlying process *is* fundamental to all of language – and indeed, to how we think. As Mark Turner points out in *The Literary Mind*, our thinking in language is based on what he calls 'small spatial stories.' We learn these minimalist, consistent combinations of event from the time our newborn brains are starting to sort out the rush of incoming sensation into something useful.

Objects can drop through the air or roll across the floor. Liquids pour from one bounded container into another – or spread all over the table. Some objects move

in ways that indicate they have intentions towards us. Our brains piece these sequences together from bewildering incoming data – the ball flies through the air, and at every microsecond we’re getting different sense impressions of shape, speed, sound. But we bundle them together into a single event narrative and know they belong together, that the thump against the floor means something has happened in the immediate past and will continue to rebound into the immediate future.

These small stories about how objects and actors move become so ordinary a part of our experience that we no longer pay attention to them. But they shape language because we are continually taking them as a template for other experiences. Something follows a path towards a goal, is blocked along the way, flows around it. It can be the observation of snow melting or the plot of the hero myth.

Turner points out the tremendous agility of our brains in applying one story over top of another. Take a proverb like “when the cat’s away, the mice will play.” Proverbs are highly condensed versions of narratives that we unpack with dizzying speed. We can apply ‘the cat’s away’ to situations that range from a rowdy classroom to a banking system with insufficient regulation. Not a cat or a mouse in sight, but we make the metaphorical pattern fit effortlessly.

Douglas Hofstadter maintains that the making of analogies is not just a separate function of the brain like recognizing shapes or making syllogisms, but that it *is* thinking. That, in the constant back-and-forth between memory and present sensation, we lay down a kind of grid – one that gets larger and more finely meshed all the time. We lay this mental grid over whatever we have to deal with at the moment and compare ‘now’ with what we have stored, perhaps the way a painter might lay a grid over a blank canvas in order to reproduce a painting.

He suggests that this process of analogy is what we do whenever we choose a word or respond with a phrase to a situation. Essentially we do a lightning-fast comparison. To me, this makes a lot of sense. And it explains why poetry is so central, why we feel it is an important discipline even if few people pay much attention to it. The process of making analogies – metaphors – is central to our mental functioning, and it’s also central to poetry.

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Metaphor survives even when language itself is fragmenting.

“Look at the frogs,” my father said. We were sitting in a tired coffee shop in a downtown office building, while my mother finished a medical appointment upstairs. Dad, bundled in a puffy brown parka and wearing his dark-green tartan ‘bunnit’, was staring out the window at the street.

Startled, I turned around. Frogs on a concrete sidewalk in a prairie city? At this time of year? Outside, I saw curled brown leaves were being whipped up by a wind around the building’s sharp corner and skipping up and down. They didn’t look anything like frogs, except for that unusual motion.

By now, language was a system in tatters for my father, who had been supremely quick and inventive with words. He could no longer articulate the stories he had hung on to fiercely for as long as he possibly could – the narrative of his young life, the incidents that had shaped him. We had been driven almost to a hopping frenzy by having to listen (and respond) again and again to the same anecdotes.

All that was left were formulaic phrases. *Pleased to meet you. Hello. I love you. Look at...* He could no longer shuffle words into novel arrangements. But even so, he could observe and reach into the scrap-bag of his mind and put a motion together with a memory.

He said it slowly. “Look at the ... frogs.” The image was there in his mind but he couldn’t get to the language. When I looked at him, puzzled, he flapped his hand up and down, smiling, and gestured to the window behind me.

My father had always been an imaginative, playful man. His old Volkswagen van, with *Bill Major Painting and Decorating* in shiny peel-and-stick letters on the door, became the Starship Enterprise. Toronto Transit buses became the enemy Klingon ships, and he and my little brother got so excited by one game that Dad swung the van the wrong way down a one-way street to get away from a Klingon attack.

When Alzheimer began to shred his brain, I noticed that he tended to see faces everywhere – in lilac branches outside the windows, clouds, figures in the carpet. The line of the mountains as we drove towards the Rockies traced profiles for him, faces turned up to the sky. Sometimes it became hallucination. “Who are those people over there?” he would ask, and get up to look more closely at a group of ornaments on a bookshelf

It was as though he had returned in part to that state of an infant looking at the streaming array of incoming sensation to find the configurations that look like a human face – the most significant feature of our young lives. The ability to map what *looks like* onto what’s *really there* and assess similarities and differences is so central to our lives, from beginning to end.

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As a poet, I am constantly trying to twitch those mysterious muscles with which we ‘make up’ metaphors. Poetry has always seemed to have an essential relationship with figurative language – all the tropes from anathimeria to zeugma. So it’s no surprise when researchers find that lyric poetry really does have a larger percentage of active and extended metaphors than do other kinds of writing.

“If it weren’t for our ability to compare one thing to another, then to draw seemingly spontaneous knowledge from the comparison, poetry would be impossible,” writes poet Stephen Dobyns.

In my experience, metaphor is built in at the most formative stages of a poem. Once you’ve decided that you are moved to write about the dawn (or love, or your

father's dementia), there's a process of sifting through your brain to find some template, some parable or connecting hinge. Anything that will take the relatively simple and all-too-specific experience you want to describe and open it out, give it resonance.

There's something almost visual about this process, as though you were holding two images printed on celluloid one on top of the other to look at the light come through both at the same time. Having written fiction as well, I find the process of invention to be different in the two genres. Of course there is also a visual component to imagining fiction. For me, it's as though I'm watching a film – the actors are positioned here, the setting includes that vista and these objects, the camera is shooting from this angle, the character will move forward and say ... what? But this is a relatively uncomplicated process of visualization, as though you are only looking at one scene at a time. It doesn't quite have the layered tangle of the poem, the insistent sense that two (or more) things have been superimposed.

The poem might pull together the pale apricot colour, soft as feathers, of the sky in the east with a phrase free-floating in memory, "the bird of dawning." Which sends me to the source of that phrase in the first scene of Hamlet, where soldiers are huddled on a pre-dawn battlement, wondering at the ghost of a dead king and feeling the times are out of political joint. The bird of dawning referred to in that scene is the cock, said to cry all night at the time of the Saviour's birth to drive away ghosts and evil spirits, "so hallowed and so gracious is that time."

The poem will grow, not as a neat correlation of 'X is Y,' but as a tangle of connections between real birds, the idea of political ferment, the cold weather. That scene from Hamlet does not create a map where all points in my new poem must correspond to some feature of the original. Instead the original is a kind of web where relationships between its nodes are similar to relationships in what I am trying to describe.

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My poetry books are full of little pencil marks beside metaphors that have stopped me in my reading tracks. Take Derek Walcott's image for a chainsaw attacking a tree trunk:

*"... The generator  
began with a whine and a shark, with sidewise jaw  
sent the chips flying like mackerel over water."*

My neighbour revs up his chainsaw to cut down a sprawling Manitoba maple that's in the way of a new garage and I see that shark, the murderous teeth, the impossibility of escape. The picture maps onto my own experience as quickly as it maps onto the description of a 'gommier' tree being logged in the distant Caribbean.

Or a poem by Rhona McAdam, in which her mother's failing memory becomes a spinning wheel that "spins backwards, then not at all." I think instantly of

my father, the way his stories slipped backward in time, swung there for a time, then ceased.

Or that moment in Dante's *Purgatorio*, when Dante the Pilgrim, feeling sleepy, is overtaken by 'a thick rush of souls' – the shades of those who have been negligent and slothful while alive. They cry out,

*Faster! Faster, we have no time to waste,  
for time is love.*

I re-read Dante around the time that I was caring for my parents near the end of their lives. The image reached out to grab me by the throat, for of course time is love. I was spending so much of my time at a gallop trying to hold things together. *Faster, faster*, was the litany of my day, as their lives became suddenly smaller and slower. It was like living in one of Einstein's thought-experiments about relative motion. But, cranky, disoriented and dishevelled, I still knew that the time I was expending was indeed love.

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Fancy 'poetic' metaphors like these ones from Walcott and Dante may be arresting, but they are only an efflorescence of a process that goes on constantly in our brains. Cognitive science has come to realize that metaphor is central to *all* of language. Even something as small and apparently transparent as a preposition is a metaphor as often as not. The cat food may be literally *in* a plastic tub *in* a real kitchen cupboard. But a specialist in feline medicine is not *in* any kind of bottle, jug or closet. Instead, we have visualized an academic discipline as a container.

"Your English prepositions," moans a Brazilian writer friend who has been struggling with them for years.

But prepositions get you in any language that has them. In English, all sorts of concepts are viewed as relationships to containers – we work *in* physics, our books are *in* press, we are *in* the middle class. But even in a language as closely related to ours as French, underlying actions are often visualized differently. People are 'of' a class, as if the class owned the individual, rather than being a box that the individual could jump in and out of (or be constrained by). Books are 'under' ('sous') press, as if they were literally being pressed down.

Learning language is learning an invisible web of metaphor. Take a verb as ubiquitous as 'take.' It's rooted in a simple action, to move a physical object from its original holder, with a suggestion of overcoming at least some mild resistance in the process. But in the phrase, 'take the expression,' we've moved away from the physical concept and are talking about the process of moving an idea around. We can *take* buses, courses, lovers or connoisseur fits without noticing any metaphorical underpinnings.

Metaphor theorists such as George Lakoff call these familiar relationships 'conceptual metaphors' and put them in capital letters: AN IDEA IS AN OBJECT (which allows us to say ordinary things like 'I take your point' or 'she grasped the

subject') or EVENTS IN TIME ARE EVENTS IN SPACE (which allows us to say "I'll feed the cat *at* five o'clock" as though the time on the clock was a position.

"What about CATS ARE HUNGRY ANIMALS?" Pushkin interrupts in his loudest voice.

"No," I tell him. "That's a literal statement, not a metaphor. And cognitive scientists are not yelling. They're just trying to make the generalized underlying patterns apparent. And we haven't arrived at five o'clock yet."

"Oh, well..." He stalks back to poke the bathmat again.

Some conceptual metaphors appear in virtually all human languages, indicating they reflect some basic underpinnings of our bodily experience as patterned in the mind. For instance, the metaphors of ANGER IS HEAT or ANGER IS PRESSURE are remarkably consistent couplings across cultures. Others reflect connections that specific cultures are inclined to make, though they can still be surprisingly widespread. For example, languages as different as English and Chinese develop metaphors related to 'face' in surprisingly similar ways. Both share a pattern that progresses through ideas such as a face representing felt emotions ('he was long-faced'), to being the outer appearance of something ('the village wore a placid face'), to being equated with dignity or prestige ('he didn't want to lose face.')

Words from 'spirit' to 'internet' all got here the same way, by a process of observing and imagining how things are like other things. I'm particularly fond of the derivation of the word "muscle." It comes from the Latin 'mus,' or 'mouse.' The ancients saw the twitch of muscle under skin and thought it looked rather like mice moving there.

(Pushkin would quite understand this connection – it's exactly like the way toes move under the bed sheets, something he loves to leap on. "*Pushkin!*" we yowl and throw him off the bed.)

I'm enormously pleased by the idea that two words as different in meaning as 'muscular' and 'mousy' could emerge from our sensory experience with small rodents.

"Nope, no mouse here," says Pushkin at last, leaving the bathmat crumpled on the floor. "Should we move on?"

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Metaphor may build language, but the capacity is, in a sense, *pre-language*. It is built on a platform, a capacity for comparison, that had evolved long before we were capable of any verbal performance more complicated than hoots.

Neuroscientist Antonio Damasio theorizes that 'core' consciousness is a comparison of in-here and out-there – an ability we share with other species. We are not particularly conscious of our bodies, the state of our viscera, our balance, the regulating system that keeps our temperature within a narrow range, the mechanics of our breath, the chemicals being released into our brains by somatosensory signals. But our bodies are sending a continuous stream of information to the brain, which

becomes a stable framework of reference for assessing what's coming from beyond the body's boundary.

This process of mapping inner against outer began with the earliest organisms – as Damasio points out, it takes something like perception for a single-celled organism to sense the state of the chemical profile within its boundary and an 'unconscious knowledge' in order to respond to it. The continual evolution of an ability to perceive and respond leads slowly to systems like vision and complex emotional reaction.

"It's intriguing to think that the consistency of the internal milieu is essential to maintain life *and* that it might be a blueprint and anchor for what eventually became a sense of self in the mind," writes Damasio.

Core consciousness comes before language. We share it with amnesiacs who have lost all sense of their personal narrative, with dementia patients who have lost language almost entirely. We share it with other animals – the cat poking at a toy mouse, the real mouse in its nest of dry grass.

No animal experiences the world through a single modality. We touch/see/hear things at the same time and associate them firmly together. This facility for associating information of different kinds is essential to the brain's functioning at all levels and lays the groundwork for metaphorical speech.

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Just what does happen in our brain when we handle metaphor? There has been a burst of research into this aspect of language over recent decades, as new technologies for watching the brain in action have become available. They tell us, for example, that we recognize a metaphorical connection as fast as we recognize a face or a joke. Like so many of the apparently simple things we do (recognizing a voice, picking up a small object), it requires enormously complex computation. People trying to build artificial intelligence systems to handle interactive speech or translation have been stymied by metaphor.

From Aristotle on, we have tended to think that the brain must handle figurative speech differently than it manages literal speech. This idea seemed to gain some support in the 1970s from brain-imaging studies indicating that the right hemisphere becomes engaged when the brain is required to handle metaphors. Cognitive scientists hypothesized that the normal pattern was for the brain to 'look up' a literal meaning for any words presented to it and, if no match was found at that level, to hand this fragment of speech off to the right hemisphere for assessment as a metaphor.

However, more recent studies have largely discounted this view. Very detailed timing studies of how long it takes to process speech indicate there is no difference in the time required to handle literal speech and familiar metaphors. Researchers with electrodes can pick out the onset of waveforms that indicate when we have integrated the meaning of words in a sentence – a process that typically takes

between 200-400 milliseconds. They show we understand a familiar image like “My aunt is a battle-axe” as quickly as we understand “My aunt has a bad temper.” In other words, in real-life studies there is no time for our brains to look up ‘battle-axe,’ choose “No, not a real battle-axe” and hand the word over to another assessment process.

What *does* get handed over to the right hemisphere is anything where the lickety-split language look-up system centred in the left hemisphere gets bogged down. This happens most frequently with novel ‘literary’ metaphors, but also if there are surprising contexts for a literal meaning. The right hemisphere casts a wide net of inference and memory to examine potentially looser connections in order to find and assign some meaning.

So metaphor isn’t ‘special’ speech. But it does have some particular tendencies. First, we use metaphors a lot to talk about emotions. You can easily talk about buying groceries in literal language. (“I got a shopping cart but it had a stiff wheel, so I took another one. I needed milk and bread.”) But it’s almost impossible to talk about your friend’s love life without metaphor: “She really *fell* for this guy. But then he *dumped* her.” This is unsurprising. Emotions aren’t visible objects to pick up in the grocery aisle, so we are forced to reach for other ways to name and describe them. But this is probably another reason that metaphor is found so frequently in lyric poetry – a genre which is used so much to express how we feel.

Another feature I find intriguing is that verbs seem to lend themselves to metaphor more easily than do nouns. Studies show that, in English, verbs are more frequently used as metaphors in ordinary speech, and that we notice noun metaphors more easily. Once again, this is unsurprising. Verbs express relationships, interactions and transitions, so they make a natural fit to express metaphorical relationships and interactions. Most nouns have a certain intractable, stuck-to-the-world quality, which tends to make it more surprising when we apply them to something else.

It’s this quality that makes Walcott’s chainsaw-shark metaphor more arresting than the more subtle metaphor of the chips ‘flying’ through the air. Flying is something that, in a literal sense, requires a purposeful flier. Birds fly on their own, as do trapeze artists and squirrels. Planes fly as piloted mechanisms. But when leaves ‘fly’ in autumn, a quiet figurative transition has taken place – they have become personified as purposeful agents. “Let the chips fly” is a cliché, based on the same process of animation used for leaves. But Walcott has turned the inanimate wood-chips into mackerel flying briefly above the waves, paralleling the transformation of the inanimate machine into an animate, purposeful shark. The verb is just as much a metaphor as the noun is, but it’s completely overshadowed in our attention by the comparison involving nouns.

Finally, I’m interested by findings that in ordinary speech, we often tend to use familiar metaphors as a kind of social lubricant – a way of marking transitions in subject or wrapping up subjects in an inoffensive way. “Well, there you go,” we say and sigh to end the conversation about our unhappy friend, even though no-one’s actually going anywhere. Metaphor is not used always to surprise, but to reassure.



This leads us past cliché to what cognitive scientists refer to as ‘dead’ metaphors – connections that have become so thoroughly cemented that it may seem any figurative aspect has been lost. In such cases the word has simply taken on a new literal meaning, as ‘muscle’ did when the mouse connection disappeared entirely from view. Some theorists posit this as the end of a “career of metaphor,” a kind of conveyor belt that carries linguistic constructions from novelty to novocaine.

But metaphors are never as dead as they might seem. There’s evidence they do not become simple lexical items but remain alive in the brain. Some of this evidence comes from studies of the gestures that human beings use naturally and almost unconsciously to accompany speech. Careful analysis indicates that we’re very likely to echo the almost invisible metaphor with the physical pattern – for instance, someone talking about ‘pushing the limits’ may literally push into one palm with the other hand.

And clichés have a vampire-like ability to resurrect themselves through hyperbole and pun. Advertising copy constantly appeals to this universal faculty of recognizing the metaphors underlying the familiar. When a realty company advertises its service as being ‘above the rest’ with a hot-air balloon for a logo, they are playing on the idea of physical height that is almost invisible in phrases like ‘up-market’ or ‘high quality.’

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In my experience, there are three main ‘equations’ that underlie most of the literary metaphors I make up.

First, there’s the direct comparison of one sensory field to another. One of the most striking examples I’ve ever come across occurs in a poem that, to my embarrassment, I can’t remember the title or author of. It describes a man fixing a drink for a woman, someone he hopes to seduce. The nipped end of the lemon needed for the cocktail is superimposed on the image of a woman’s breast, a visual connection that’s direct and easy to make. When the poet presents the second stage of the image – the knife slicing the end of the lemon off – you wince because you instantly transfer the sensory details of blade, slice, sever from fruit to human tissue.

The second process is to compare a sensory field to some abstract concept. Emily Dickinson’s “Hope is that thing with feathers” is a familiar example. Hope has no fixed sensory qualities of its own so the ones you choose for it can be elastic as long as their emotional resonance is right. The feathers and flight of birds works nicely, though we’re more likely to think of hope as robins returning in spring than as a carrion crow.

(Although, in context, a vulture circling a battlefield *could* be a macabre figure of hope. The process is definitely elastic.)

The third comparison process is abstract-to-abstract, like Dante’s ‘time is love.’ In a sense this is the easiest, yet it’s still constrained by the physical world.

Dante's slothful penitents running around the mountain of purgatory to re-learn urgency are embodying time *and* love in a kind of triangulation back to real sensory fields connected with a human being in haste. So in this kind of metaphor you have to find such a real-world counterpart for two concepts at once, making it a little harder to do.

Of the three processes, I find the first to be the hardest. The physical world is very demanding. It looks and smells and feels a certain way and you depend on that familiarity to make comparisons that work for a reader. You can't say 'a robin is an oyster' and meet with anything but blank faces. Of course, our metaphorical brains are so elastic that you can always force a connection somehow – 'the robin is an oyster that opens on the pearl of spring song.' But this is really another triangulation back to a more abstract idea of spring that is providing a common denominator for the yoked-together concepts.

The chainsaw/shark or lemon/breast correspondences don't need those abstractions. They make one-to-one maps of sensory experiences and we decide that either they fit or they don't. But even though the world is so full of similar patterns, it's not always possible to come up with a really new way of comparing two sensory experiences. Most of the obvious sensory metaphors have already found themselves incorporated into day-to-day language. Take the sound of rain – it drums, it scutters like small paws, it lashes or beats. Just try and think of a word to describe that sound that hasn't become familiar already.

The inherent fuzziness of an abstract concept makes it easier. It may also be that we can go to different parts of our brains to help with such comparisons. Concrete nouns activate widespread parts of our sensory cortex, while abstract nouns are focused more exclusively in a particular part of the left hemisphere. So it may be easier to 'open up' sensory connections for abstract nouns that haven't been used before. Justice can be – well, just look around the room. A table. A carpet. An overhead light arbitrarily flicked on and off. Or poetry can resemble

*a hundred and fifty cats' eyes  
pickled in vinegar  
to see immortality.*

"I don't care much for that one," says Pushkin. ...

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