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Learning to Play: Stories of learning mathematics, language and music

Abstract

This is a story about studying learning, and the story of coming to be a university teacher and researcher. It is a story about language and similar enchantments, maths and music; systems of patterns, about producing something bigger and interesting by joining them together one after the other, and combining and transforming them; and it's a story about learning to see learning as *play*.

When I was a child, I played with words. I remember hopping along beside my mother, hand in hand playing our special walking game of reciting nursery rhymes together: but not in unison – we'd take it in turn to say a line, or a word, or two words, and we'd play with the way it went and the way we walked. A step for a word, a word for a step.

I distinctly remember something puzzling happening; the thing we said, for our own step, was sometimes a proper word (so, "house" was a step AND a word) but sometimes it took two, three, four or more steps to make up a word ("caul" "lif" "flo" "wer").

Sometimes one part of a word was another word ("cab" "bage") but the word inside the word ("cab") didn't have much to do with the meaning of the enclosing word. Sometimes a word was made up of more than one word ("rail" "way") and each had something to do with the bigger word, helped you to understand it, and you could play with it (what happens to the meaning when you say "way-rail"? does it stay the same? why not?)

I remember copying the words on the fronts of the packets whose contents I knew. I copied the letters from the milk packet, carried the paper into the next room and gave it to my mother. She looked at it and said "milk". The delight of moving the word from the object and having someone reading it off another object is still with me; that moment of discovery of what writing meant and what it could do.....

When I began school, my friends and I were given coloured rods to use for learning numbers. Amongst the set of rods were small cubes, like dice, but without any dots. I enjoyed making patterns by grouping cubes and rods alongside one another, and thought the small cubes were very useful because they always fitted into the gaps. If I made a line with smallest cubes on the long side of one of the longest rods and then counted them, the number I got to was ten. I already knew that ten was a significant number because when I did

counting with other people, we always said “TEN!” in an excited way when we got to it, and it was the number we got to after doing counting with all of one person’s fingers and thumbs.

When I began learning music I learned that one of the white keys on the piano (which was called a note) was called middle C. I was shown how the sequence of notes repeated itself, in something called octaves. Octaves means that every eighth note has the same name, and oct is also in octopus, which has eight legs. But there are only seven names of notes (A, B, C, D, E, F, G) and the black ones in between have names that change according to whether you are going right (which is called up) or left (which is called down). Sharps and flats. There are only seven letter names, but because there are also five of these sharps/flats, there are actually twelve notes inside every octave.

The lack of correspondence with the idea of eight wasn’t limited to music, because as well as octaves and octopus, there is a month that begins with *oct*, but it isn’t the eighth month. It got worse when I looked at the way music was written down, because instead of using letters there are dots on lines, but there are only five lines, with four spaces between them, which add up to nine, not eight.

The world seemed to be characterised by patterns that you could explore by stretching and extending what was already there, but then asking people why some patterns that seemed would be there but then weren’t, usually led to a mystified response rather than an answer.

But... when I listened to what happened as I learned to play music, the struggle to understand came to an end. Once I stopped worrying about the failure to find the correspondences I expected and learned how to use my hand on the piano, and how to read the system of notation, it became possible to start bringing the music that other people had written down into the present; then, as my competence grew, to make it something that expressed a feeling, or an experience, or a wish, or even something that *said something*. And what it said was different from words; it wasn’t *about* something, it was just *saying*.

When I was a grown up, I played with ideas. I found myself watching my own child making sense of the world. I was curious about storybooks and computer games in the new world that that he and other children were growing up in. What were they learning? How did these contemporary *things* help them learn? Twenty years earlier, I had been at university, studying patterns: experimental methods connected with theories of learning; patterns of behaviour in pigeons and rats, patterns of young children’s behaviour with objects. And I supposed that by now, there would be more research that would help me understand learning. I started reading, went back to university, embarked on a thesis that was going to be about young children’s learning, and how a *thing* of some sort or another might be designed to help them learn.

As I read, I talked to other parents about what they and their children did with computers, and I watched them doing things together. One of the books I read made the point that amongst the patterns that characterise the culture that I live in, parents congratulate their children when they do things that our culture values and counts as learning. Meanwhile, there are lots of other things that children learn without any particular attention being drawn to it.

This rang true; in my conversations with families I noticed that parents felt their children could learn something useful when they were using the computer; they expressed a hope it was through the computer that they would gain knowledge of the alphabet and numbers before they started school. And when I watched parents and children using computers and other devices together, I could hear many instances of 'well done' and other congratulations on what the child had done.

I kept thinking about the idea that we value certain kinds of knowledge and pay attention to it, congratulating and encouraging children to display that they know it, while other learning and ways of knowing go on all the time, without attention being drawn to it.

And so the way I thought about learning began to shift. I looked back at my own experience, the games with words and walking, and my playing with patterns about numbers, my discovery that a written word meant the same thing whether it was on the milk packet or on a piece of paper, and my continued exploration of how far patterns went, and how you might find out whether and where they had limits. And then I started to see my own urge to write the thesis as part of this pattern of looking for patterns. What I now saw was that I had set out looking for academic knowledge of learning, a knowledge that extended from the experimental methods that I had studied during my degree, of relationships between specific experiences and learning; experiences of actions and rewards, and of demonstrating learning and being congratulated for it.

But MY stories about looking for patterns and in so doing, learning language, maths, and music are about *learning to play*. They are about shared experience, about doing things with other people, and about the pleasure of communication; the warmth of my walking game with my mother, sharing her own enjoyment of pattern; joining in with others in using 'ten!' as a significant word, a way of ending a sequence that connects to fingers and toes, and for starting with when launching rockets to the moon. They show me why learning to play the piano was never *really* about being able show that I knew how to put my fingers on the right keys at the right time, and why, when I could play music from a paper score, what I played was a kind of voice from myself, but also from the person who had written it, saying something, without words. Through playing with the patterns of my stories, I come to see my own thesis as my a weaving of my own voice with that of others, as the outcome of time spent playing with the regularities and the disjunctions that I noticed. I begin to see my work as a teacher as learning how to play, with fellow learners. And the things we play with are patterns - the patterns we see in our own experience, all the different ways we might find to describe

them, and what we notice as we bring our own patterns with those find together with other people's stories and writings. And what we are learning are the new patterns that emerge for us as we play.

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