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Kallolini Hazarat Memorial Lecture

The Human Aspect of Education

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Introduction

It is a particular honour to be delivering this, the first address dedicated to the memory of Kallolini Hazarat. Kallolini was a friend and co-member of the World Education Fellowship (WEF) over a long period of time, and President of the WEF Section in India. She has made an immense personal contribution to the education of young people in Mumbai, and beyond, through the schools and teacher training over which she kept a watchful eye.

I need hardly remind anybody who knew Kallolini that she was the most considerate person one could wish to meet. She always had an encouraging word and a ready smile. It happened that her birthday not infrequently coincided with WEF conferences, and she would enjoy sharing her celebration with others. She was a humanitarian, humane, and dedicated herself to the all-round education of human beings. In fact, any word which begins human… can be readily associated with her. It is for that reason that I have decided to devote this lecture to the question of the human aspect of education.

While I was turning this over in my mind, I was also reading through one of my favourite books, one volume of the complete works of Lev Vygotsky (Rieber, 1997). Vygotsky, commenting on the state of child psychology in the early 1930s, stated that the field was hampered because psychologists could only conceive of psychological reactions in terms of one pattern: stimulus-response.

The idea of stimulus and response was dominant in the early part of the twentieth century, as Vygotsky notes, because the two major schools of thought, behaviourism in the west and reflexology in the USSR, had taken on board fully the ideas of Pavlov, working with animals to investigate conditioned reflexes. And if we were simply dealing with animals, the idea that all behaviour is simply the mechanical response to stimuli would be perfectly adequate for explaining everything we see. And, of course, we are animals, so that everything we do should be explicable in terms of stimulus and response. Vygotsky understood this, and did not wish to deny that our behaviour can be understood in those terms.

However, the subtlety of his thought rests in the fact that he saw that humans, uniquely, can introduce their own stimuli for action at will. And this makes all the difference; it creates a uniquely human way of behaving that allows us to manage our own actions, even as we are bound by the laws of stimulus and response. Indeed, learning to use signs to manage our own behaviour constitutes the major part of a rounded education, as we learn compassion, empathy, restraint and enthusiasm. Adding that level of self-control, of auto-stimulation in a literal sense, lifts human activity above the level of the merely mechanical. And Vygotsky argued that psychology

had failed to grasp this development of the child because it was fixated with the mechanical.

So the question that I wish to look at here is how far we have come in the 85 years since Vygotsky's death. And my answer is a sorry one, that we have not come very far. We are still stuck with an imagination that is rooted in the vision of a mechanical explanation of human activity. (In the early twenty first century, a television company even produced a show with the title "Train your baby – like a dog" That gives some indication of how little has changed in the last hundred years.) That is not a very edifying answer. But perhaps an examination of why that is the case might offer some hope for future development.

The Mechanical Imagination and the Life of the Mind

We, as human beings, have a tendency to understand ourselves in terms of the technology that is available. In the nineteenth century, that meant that people tried to understand themselves as machines. And in simple machines, the purpose of the designer is evident in the way the machine is put together.

Figure 1: A simple mechanism

If you look at Figure 1, some ideas spring to mind immediately about how you are supposed to use it. You can see at once that you might expect to clamp it to the edge of a table before using it. You might also conclude that there is a handle at one end, and it is designed so that a person will wind the handle. Perhaps you might even deduce that there a prongs on the other end and something should be impaled on those prongs. Even if you cannot work out exactly what it is for, some ideas come to mind; we feel that the purpose of the designer is there to be found.

And if I tell you that this is a nineteenth century apple peeler, you should be able to see exactly how it would work. If you put an apple on those prongs, then when the handle is turned, the apple is moved forward past what we now know to be a knife edge, and the apple is peeled. Each part of the machine is seen to have a purpose, and the whole works in harmony to produce a neatly peeled apple.

What could have been simpler than to try to understand ourselves in similar terms, with a purpose expressed in each part. And that most mysterious part of ourselves, the brain, must be the same, with a purpose and process in each part, as in the vision of the phrenologist. Each part of the brain was supposed to be linked to a spe-

cific function. As knowledge of the brain grew, certain functions, such as sight and hearing could be linked with particular areas, but large areas of the frontal cortex could not be associated with specific functions. These areas became known as the "silent areas", although their silence spoke more to our ignorance of them than to their lack of purpose. In one way and another, this search for a specific function at a particular brain location persists in modern neuroscience.

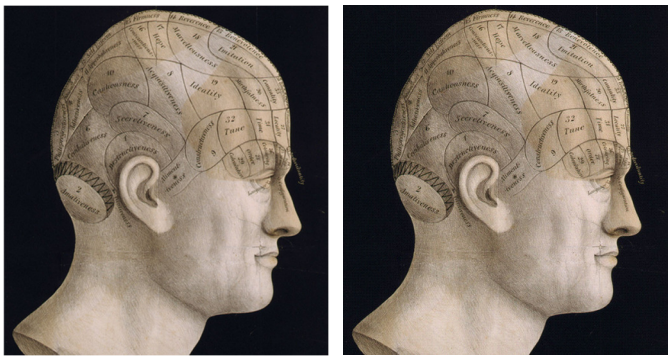


Figure 2: Phrenologist's bust

Later in the nineteenth century the technology changed, and people were inclined to think of themselves in terms of steam pressure vessels, with Freud's analysis that efforts to constrain the pressure in one area would lead to it bursting out somewhere else, unless an appropriate safety valve could be found. But I skip over that because today we have yet another new technology, in computers, and we attempt to understand ourselves in terms of that.

Computer Technology and Imagining the Brain

Now, in the twenty first century we have a completely new technology which we can use as a lens through which to look at ourselves and try to understand ourselves. Figure 3 shows a scene that will now be familiar to everybody, a desktop computer.

Figure 3: A desktop computer

You cannot guess by looking at it what it is doing. It could be performing a mathematical calculation on the strength of materials or a rocket flight to the moon. It

could be managing a traffic management system or handling emails. You might guess, because what is on the screen looks as though it is a screen saver, that it is doing nothing, it is just resting. But we know that even screen savers might be part of a huge, distributed computing network performing even more complicated calculations.

Or consider Figure 4. What do we see there? Here is a device that can be used from everything from finding where you are to finding a lifetime partner, from ordering groceries to identifying music playing in the background. It can even be used, occasionally, for communicating with friends who are a long way away.

The point that I am making here is that our current technology, unlike the previous mechanical technology, does not necessarily look like what it does. The apple peeler looks as though it was designed for a purpose, and when we know that purpose we can see how it is supposed to work. With our current technology, that is not even nearly true.

Figure 4: A smart phone

You might think that I am going to end there; people are more like the computer, because they incorporate endless possibilities that are not immediately obvious. Well it might be better than thinking of people as clocks or steam engines, but thinking of people as computers is only a small step in the right direction. And part of the problem is that we do not really understand the current technology. We still view it through the lens of the old technology, where specific functions are tied to specific physical features.

So you may come across someone who says that a child's brain is like a computer, and what we are doing, through education, is rewiring the inner circuits of the brain; neurones that fire together, wire together. Learning something new is like creating a new circuit in the brain. But of course this metaphor is merely that; a metaphor. I can be sure that nobody you know has ever thought of actually rewiring their computer when they want it to perform a new task. If you want to switch from writing an email to doing some on-line shopping, you do not think that you will have to find your soldering iron to modify your computer. That is, after all, the magic of the Turing machine, that is can be programmed to achieve an infinite number of different functions without taking out the soldering iron.

Yet we are encouraged to think that eventually we will be able to understand the wiring of the brain, and that eventually we will know where everything happens in the brain, by stories about neuroscience. In part, no doubt, these stories are sensationalised in the popular press, but the basic idea that a person's thoughts are somehow linked to specific physical events is part of neuroscience, and also part

of our imagination about the new technology, seen through the lens of the old technology.

As often happens, when one digs down into the story, it turns out that what the science shows is not exactly what we are being told. In this case, the scientists were tracing the brain messages to the muscles that produce the shapes of the mouth and face for speech. Of course, our bodies are the parts of us that are most easily understood in mechanical terms. And the parts of the brain that produce particular movements are those that have been understood longest. So by looking at the muscle movements that produce sounds, the scientists are able to estimate what sounds are being produced, and therefore construct the speech. That is technically wonderful enough, but it is not exactly taking speech direct from the brain.

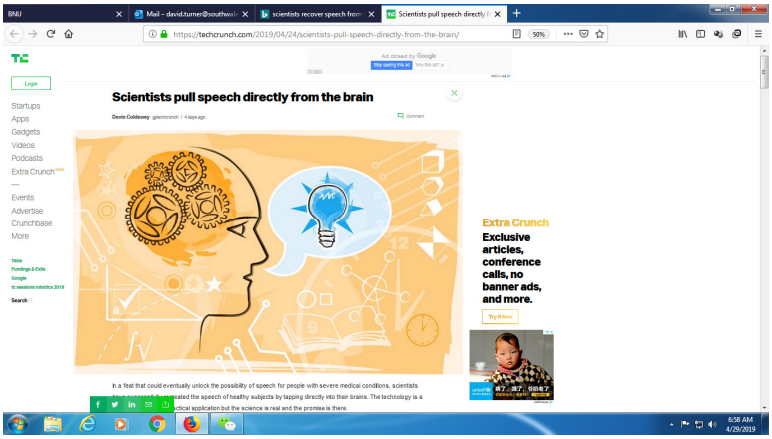
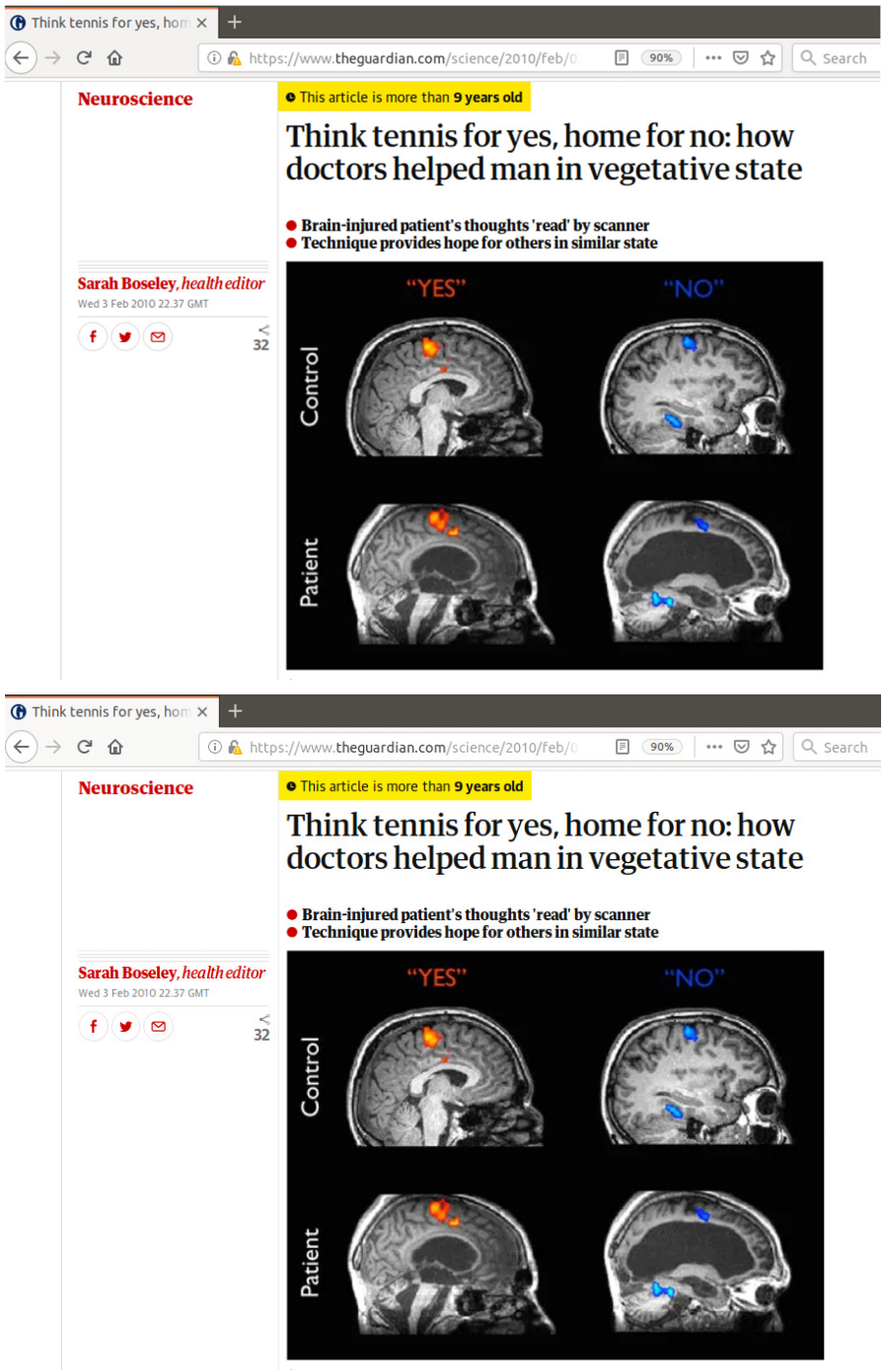


Figure 5: Scientists pull speech directly from the brain

And the further we get from specific movements, like raising one's arm or moving one's leg, the less and less direct, and the more uncertain, are the inferences of the neuroscientists. So, although we may all have seen stories about communicating with comatose patients by reading their brain scans, and the achievements have been impressive, the research does not always say exactly what the newspapers report.



Think tennis for yes, hom
https://www.theguardian.com/science/2010/feb/0
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Search
Neuroscience
This article is more than 9 years old
Think tennis for yes, home for no: how doctors helped man in vegetative state
Brain-injured patient's thoughts 'read' by scanner
Technique provides hope for others in similar state
Sarah Boseley, health editor
Wed 3 Feb 2010 22.37 GMT
32
"YES"
"NO"
Control
Patient

Figure 6: "Think tennis for 'Yes'"

Conclusion

We try to understand what we are, what it means to be human, by using the most potent metaphors that we have available to us. And those metaphors are often drawn from the technology that is available at the time. We may be more like computers than we were like clockwork and steam engines, but metaphors are still metaphors, and not very precise. We must, therefore, be careful when we try to work out exactly what it is to be human.

I was attending a conference earlier this year, when one of the participants proposed that we consider the possibility that somebody would gain knowledge without having a learning experience; their brain might somehow be modified without their knowing it, so that they knew something without actually having learned it. This is not such a very new idea. Thomas Edison said that he slept with books under his pillow so that he could absorb knowledge in his sleep.

But that we might take such a suggestion seriously, as opposed to the joke Edison clearly implied, indicates that we have taken the metaphor of rewiring the brain too seriously. When a human knows something, it is not merely that they can pop into memory and recover the factual information. Along with the propositional knowledge itself, they have accumulated a wide range of associated knowledge; how confident they are that they are right, how pleased they are to know that fact, whether they think it significant or incidental, whether they wish it were otherwise, how easy it would be to check or confirm, whether it is surprising, whether one would wish to tell other people about it, and so on. Having had the experience of learning is a crucial part of human knowing.

I cannot imagine somebody knowing something in the same way as a machine might "know". To know something necessarily involves that something having a place in one's life, which means that we give meaning to it by knowing it, and there is at least the possibility that knowing something will change the course of our life.

As Vygotsky noted, we do not merely react to stimuli with set responses. Between the stimulus and the response, we insert a chain of reason. And our ability to insert our own chain of reason provides the infinite range of possibilities that we have as humans.

Of course, we sometimes choose to restrict our options, to constrain ourselves to pre-set norms. I do not, for example, wake up each morning and make a decision about what side of the road I should drive on, or whether or not I shall wear clothes today. But the idea that human can be radically changed through learning, through education, is at the heart of the human experience.

And it is for that reason that the example of a woman who embraces what it is to be human, and also devotes herself to the bringing out the most human in other people, is an inspiration that we all need. And it is for this reason that I am happy to dedicate these reflections on the nature of learning as a human experience to the memory of Kallolini Hazarat.

- *Professor Turner's lecture in honour of Mr Kallolini Hazarat, the former President of Word Education Fellowship India, who died in 2018.*

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