Not a Tool, but a Philosophy of Knowledge

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A little while ago I finally read "Building a Bridge to the Eighteenth Century" by Neil Postman. It contains many interesting insights, but the most striking to me was his observation that, from the invention of printing until the invention of television, children and adults occupied different information environments. The environment of the adults was "fuller, richer, broader, and, to pay respects to Rousseau and life itself, more depressing and scary" (Postman 1999, p124). Now this is clearly a simplification, a distortion of truth — surely for most of this time, most adults were poor and illiterate? Only with the advent of mass education in the 19th century can we say that Postman's description is generally accurate. However, it does explain some otherwise puzzling changes in our society since the arrival of television — changes that happened because there was no longer any divide between the information environments of adults and children.

Postman notes (p49) that American children watch around 5,000 hours of TV even before they go to school and that by age 20 they will have watched around 600,000 adverts. This avalanche of persuasion — "the most powerful and sustained system of propaganda in human history" (Jhally) — has had clear effects on society. We mostly believe, without examining the idea too closely, that our happiness and personal fulfilment can always be obtained by buying more things. TV advertising and the programmes between adverts are designed to be universally accessible — and so they are, even to children. The barrier which divided the information worlds of adults and children, which defined childhood, is to a large extent gone.

So. What now? Postman (p132) has a suggestion: "The modern school was a creation of the printing press with movable type, for it was to school that the young were taken to learn how to be literate, and therefore how to be an adult. Is it possible that the computer may have a comparable effect?" Postman is examining the idea that we might rescue childhood, might restore something like the previous form of our society, by teaching computing. From someone with a secure reputation as a Luddite, someone who wrote his books long-hand, that's quite a radical suggestion. Would it work?

"Not," says Postman, "if all we wish to do is teach the young how to use computers, especially if we do so to help them with their 'careers'. That is easy to do and unnecessary, since most young people will learn how to use computers without help from schools."

What then should we do? "Suppose we wished them to learn how computers are programmed," says Postman, "how different computer languages do different things, how computers impose a particular world-view, how computers alter our definition of judgement, how computers change our conception of information and knowledge — then indeed the young will need school learning." Postman is suggesting that there could be a world in which adult knowledge of computing could be as widespread and as necessary as literacy once was. If this could be true, then there would be a "body of knowledge"

about computing which we would expect all adults to hold. What exactly is that body of knowledge? And how can we create that world? It is to the task of answering these questions that I propose that we dedicate ourselves.

Is this the same thing as the "computational thinking" proposed by Jeanette Wing and others? In part, of course, yes it is. But Wing's goals seem more limited. Her definition (Wing 2011) of computational thinking is "the thought processes involved in formulating problems and their solutions so that the solutions are represented in a form that can effectively be carried out by an information processing agent." This describes a world-view looking out from core computer science, with the aim of demonstrating to the world that it really can do useful things for people other than just "geeks". What I am proposing, following Postman's suggestion, is something more ambitious. Something which if achieved would literally have a revolutionary effect on society.

What concepts would be in that body of knowledge? Surely as well as the obvious things like recursive processes, caching and pipelining there would be other concepts which as insiders we just take for granted, or which are not currently considered to be "core" computer science. What about feedback, for example? George Soros, in recent years, has devoted countless articles and lectures to explaining his concept of economic "reflexivity." (See, for example, Soros (2012).) Judging from the fact that he feels the need to continue explaining it, the lesson has not yet sunk in to his audience. And yet it is nothing more mysterious than feedback between agents in an economic system. For anyone who already has a gut-feeling for what feedback is, the metaphor easy. (But not all the concepts in our body of knowledge will be so modern. There is surely also a role for logic and grammar: and yet these are straight out of the Trivium!)

What reception would this revolutionary programme receive? Knowledge which helps people to make things quicker, better and cheaper is an easy sell. Knowledge that leads to better and quicker understanding is more dicey. As Postman (p132) points out: "It is not inevitable that the computer will be used to promote sequential, logical, complex, and even philosophical thought among the mass of people. There are economic and political interests that would be better served by allowing the bulk of a semiliterate population to entertain itself with the magic of visual computer games, to use and be used by computers without understanding. In this way the computer would remain mysterious and under the control of a bureaucratic elite. However, were our schools to grasp that a computer is not a tool but a philosophy of knowledge, we would indeed have something to teach."

There is something significant at stake here. Much more than merely the growth or collapse of university computer science departments. At stake is the future shape of our society. Let's follow Postman's lead and try to make the better future that we deserve.

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