The Trouble with Computational Thinking
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Of the articles that we read for this week, I was most interested by – or rather, troubled by – the article titled "Computational Thinking" by Jeannette Wing. One of the first things that troubles me about this particular piece is that I feel like Wing never really gives us a solid definition of what computational thinking is, exactly. On the last page of the article she gives us a number of characteristics of computational thinking, but no real definition emerges throughout the course of the piece. Because of this, Wing's understanding of computational thinking encompasses a very wide range of ideas, everything from "a way that humans, not computers, think" to "for everyone, everywhere" (35). But humans think in a very large variety of ways, and I don't believe that Wing means to include every method of human thinking here. Even the other parameters that she lays out for computational thinking still include a large range of possibilities.

This is directly tied to the other thing that troubles me about this article: How exactly is computational thinking different from other forms of thinking? Wing's parameters mention that it "requires thinking at multiple levels of abstraction" (35) and that it uses "massive amounts of data to speed up computation" (34). Yet she never seems to really explain how computational thinking differs from other kinds of thinking that require abstraction (such as artistic thinking) or require a great deal of data (such as the process of drawing scientific conclusions). Because I find it hard to track down what exactly sets this form of thinking apart from other forms, I find it hard to be convinced by Wing's argument that computational thinking should be more integrated into our society.

I am also troubled by the undertone of the Wing's article that computational thinking can be used to solve any problem. There are a number of problems that would seem to lie outside the realm of computational thinking – for example, when I consider how to revise a draft of a story. While I go through a problem-solving process in thinking about the changes I wish to make, there are a number of elements that I consider which seem very different from a computational process, such as questions of aesthetics, or what I personally wish to gain from the story itself, as well as what I wish my reader to gain from it. These things are concerns that are both personal and creative, and I don't feel that I rely on a computational process to resolve them – unless one considers the process of drawing on my own experience to be similar to the process of amassing a great deal of data and extrapolating conclusions based on that. But if that is the case, I would once again raise the question of what, then, makes computational thinking so different from any other kind of thinking.

Similarly, it seems that it would be difficult to solve something like a moral problem, or a question of ethics, based on the system of computational thinking. I would argue that such problems are not a process of amassing data and drawing conclusions based on that – or even a process of conceptualizing. Rather, they are a process of understanding personal values and ideas, or values that belong to a society as a whole, and they are also problems that do not always have a concrete, reachable solution.

It is possible that what Wing is really looking to encourage is for people to start thinking about solving problems as a process, wherein a number of steps are taken in effort to reach a solution, rather than relying on rote knowledge to draw conclusions without truly considering them. If this is the case, then I support her ideas – though I would still ask what makes this mode of thinking particularly unique to computer science. While I understand that Wing is working within a limited space for her article, it troubles me that she keeps her ideas on a rather abstract level, rather than offering a solid definition or computational thinking or comparing it to other forms of thinking. For now, it seems a little bit like she is lauding the praises of this kind of thinking to an audience who is already convinced, rather than seeking to convince new readers.

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Oct. 4, 2011