

Re: Assembler in ten years?

Source: <http://sci.tech--archive.net/Archive/sci.nanotech/2006-10/msg00020.html>

- *From:* John.S.Novak@xxxxxxxxxx, III <jsn@xxxxxxxxxx>
 - *Date:* Mon, 23 Oct 2006 01:53:35 -0000
-

In article <12jg9lml1uduid3@xxxxxxxxxxxxxxxxxxxx>, the.sandwich.king@xxxxxxxxxx says...

Could massive funding, perhaps on the scale of the Manhattan project, or Apollo program, bring us the assembler in a decade or so?

If so, why aren't we doing more to speed up its development?

This one device could end poverty, eliminate all disease and provide near immortality to all. Why isn't the government taking it seriously?

You would think that with over two decades of research, we'd be there by now, right?

Phil Huggan gives one very good reason: the multiplicity of Manhattan Targets.

I'll give another: In my opinion, Manhattan/Apollo level national efforts should only be kicked off under particular circumstances, those circumstances being dire need at the national level. Despite my enthusiasm for nanotechnology and my belief in the magnitude of its benefits, I see no dire, pressing, national need for the technology to be developed Right Now.

(I should note, I am speaking from a United States perspective, here.)

In the case of the actual Manhattan Project, there was very arguably a pressing and immediate need for nuclear weapons. I am not interested in discussing the history of World War II international politics and weapons of mass destruction; suffice to say, the need was at least strongly arguable.

In the case of the Apollo Program, in my opinion, that need was much more weakly arguable— but it is strongly arguable that the Apollo Program's monomaniacal focus on the specific and narrow goal of a flashy Moon landing was itself harmful, as the benefits of heading straight for

Re: Assembler in ten years?

such a landing may well have been less than the benefits of an incremental approach toward easier targets.

My claim is this: Manhattan/Apollo level programs by their nature deform the scientific and industrial research communities. That can't be any other way. The United States research communities currently take many, many inputs for direction: governmental inputs at the federal and state levels (and in some cases, from large municipalities), multiple inputs from the industrial needs of many companies (which are in turn driven by the massively multiple inputs of individual consumers) and, of course, the whims of the researchers themselves. The result of all of this is a research community whose directions are both broad and deep, exploring many, many different directions of scientific and technological research at once.

The Manhattan mindset of research is a direct and willful attempt to short circuit all those multiple inputs and replace them, in large part or in whole, with only ONE research target. I have more confidence in research communities reacting to multiple inputs than I have in research communities reacting only to a single input, even if that input is mine. I might be wrong. You might be wrong. Even some presidential panel of a hundred experts is more likely to be wrong, in my opinion, than the tens or hundreds of thousands of researchers as a collective, all trying to solve the problems for which they are individually responsible. Moreover, the practical result of such programs is often not only the dictation of a research goal, but of research paths and methods, which is even more fraught with peril.

The overall effect, in my opinion, is to greatly reduce the vibrancy and reactivity of the research community that we have built up over the course of generations.

So again, if the decision were mine to make, even despite my enthusiasm for nanotechnology, I would not bring that level of research power to bear on the problem. Rather, I would try to replicate the successes we've seen over the past few generations in building up computer science expertise. We've funded computer science, and many different small to medium (from a national perspective) but never simply charged in and said, "We want you all to build This One Thing in the next ten years." The result is the strongest computer science research community in the world.

—

John S. Novak, III
The Humblest Man On The Net

.