

The Rise of Cognitive Work Design

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Cognitive technologies are capable of transforming contemporary business processes, but they won't do so without a concerted effort to redesign work around their capabilities. In order to achieve the productivity and effectiveness benefits that these technologies offer, companies will need to adopt, or readopt, business process reengineering approaches that were last popular in the 1990s. This time, however, they need to avoid some of the pitfalls that led reengineering astray in that period.

In the early 1990s, one of the most visible management trends was "business process reengineering." I should know—I wrote the first [article](#) on the topic with Jim Short in 1990, and the first [book](#) in late 1992. This set of ideas, which encouraged order-of-magnitude improvement in broad business processes, was advanced in best-selling books (mine sold well, but [Mike Hammer and Jim Champy's](#) sold better) and led to considerable activity among consulting firms. Some referred to it as "God's gift" to that industry. The primary drivers of the movement were a need for substantially improved productivity (in part because of a perceived threat from Japanese competitors) and a powerful new set of information technologies. The new technologies at the time included enterprise resource planning (ERP) systems, direct connections between customers and suppliers, and the then-nascent Internet.

Some of the same types of opportunities and threats are present today. Productivity growth in the United States has [languished](#) for several years, and some prominent economists ([Bob Gordon](#), for example) have proclaimed that information technologies have never fueled the productivity improvements of which they might be capable. The primary competitive threat perceived by many established firms is no longer large Japanese companies, but rather nimble startups in regions like Silicon Valley.

On the current technology front, perhaps the most disruptive collection of tools is found in cognitive technologies. This constellation of technologies, which includes deep and machine learning, natural language processing and generation, and older tools based on rule and recommendation engines, is currently capturing substantial attention as a source of business and workforce disruption. As in the 1990s, this generation of technologies can become a driver of work transformation. Also as in the 1990s, the desired transformation won't take place without more than technology. They need a set of management structures and best implementation practices to yield the benefits of which they are capable. In other words, we need a well-defined approach to "cognitive work redesign."

Given that these technologies create (from data) and apply knowledge, there are business process contexts for which they are particularly suited. These include situations:

- where there is a knowledge bottleneck (e.g., medical diagnosis and treatment in rural areas);
- where the required knowledge is too expensive to provide broadly (investment advice, and perhaps even college education, are examples);
- where there is too much data or analysis for the human brain to master (programmatic buying of ads in digital marketing is a great example);
- where there is a need for high decision quality and consistently (the best examples are insurance underwriting and credit decisions in banking);
- Where regulatory pressures require a more-informed process flow (again, in investment advice).

Some of these areas, like insurance underwriting, are already replete with cognitive technologies, albeit earlier versions of them like rules-based systems. Others, like medical diagnosis, are just beginning to be automated. I'm guessing we'll see a lot more areas for cognitive applications if we handle the work process component well this time.

Business process reengineering isn't around much anymore, and the primary reason is probably the overly high expectations it engendered ("10X" improvement was a common goal) and the fact that it devolved to being a code word for simply firing lots of people. I once wrote (in the first issue of *Fast Company* in 1995) about it as ["the fad that forgot people."](#) Given those associations, we probably shouldn't label the new version of cognitive work redesign "reengineering."

More importantly, if cognitive technologies become an excuse for automating lots of people out of jobs, they probably won't be successful. At the recent World Economic Forum in Davos, various vendor CEOs ([Ginni Rometty of IBM](#) and [Satya Nadella of Microsoft](#), among others), proclaimed that their cognitive technologies were all about "augmentation," not automation. That's a good marketing tactic on their parts, but it won't be the vendors that decide how these technologies affect workers, but rather the managers who buy and implement them. Let's hope they adopt the augmentation idea, which Julia Kirby and I have argued for in our book [Only Humans Need Apply](#).

Some other best practices for cognitive work redesign will include involving the people who currently do the work in the process, aiming at broad, end-to-end processes that affect customers, and engaging IT organizations at an early stage. Cognitive technologies alone probably won't do the job of supporting these processes; some traditional systems and IT architectures will come into play as well.

I don't know if cognitive work redesign will achieve the level of visibility that reengineering did; perhaps it's better that it doesn't. But I am confident that these powerful new technologies won't succeed without a systematic examination of how they can transform work. That old clichéd triumvirate of "people, process, and technology" became popular for a reason—we need all of them, no matter how impressive the technology is.