The Invisible College

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The Internet has been in use by a majority of citizens in the developed world for less than a decade, but we can already see some characteristic advantages (dramatically improved access to information, very large-scale collaborations) and disadvantages (interruption-driven thought, endless distractions). It's tempting to try to judge the relative value of the network on the way we think by deciding whether access to Wikipedia outweighs access to tentacle porn or the other way around.

It is our misfortune to live through the largest increase in expressive capability in the history of the human race—a misfortune because surplus is always more dangerous than scarcity. Scarcity means that valuable things become more valuable, a conceptually easy change to integrate. Surplus means that previously valuable things stop being valuable, which freaks people out.

To make a historical analogy with the last major spread of new publishing technology, you could earn a living in 1500 simply by knowing how to read and write. The spread of those abilities in the subsequent century had the curious property of making literacy both more essential and less professional; literacy became critical at the same time as the scribes lost their jobs.

The same thing is happening with publishing. In the twentieth century, the mere fact of owning the apparatus to make something public—whether a printing press or a TV tower—made you a person of considerable importance. Today, though, publishing, in the sense of making things public, is becoming similarly deprofessionalized. YouTube is now in the position of having to *stop* eight-year-olds from becoming global publishers of video. The mere fact of being able to publish to a global audience is the new literacy—formerly valuable, now so widely available that you can't make any money with the basic capability anymore.

This shock of inclusion, where professional media give way to participation by 2 billion amateurs (a threshold we will cross this year), means that the average quality of public thought has collapsed; when anyone can say anything anytime, how could it not? If the only consequence of this influx of amateurs is the destruction of existing models for producing high-quality material, we would be at the beginning of another Dark Ages.

So it falls to us to make sure that that isn't the only consequence.

To the question "How is the Internet changing the way you think?" the right answer is "Too soon to tell." This isn't because we can't yet see some of the obvious effects but because the deep changes will be manifested only when new cultural norms shape what the technology makes possible.

To return to the press analogy, printing was a necessary but not sufficient input to the scientific revolution. The Invisible College, the group of natural philosophers who drove the original revolution in chemistry in the mid-1600s, were strongly critical of the alchemists, their intellectual forebears, who for centuries had made only fitful progress. By contrast, the Invisible College put chemistry on a sound scientific footing in a matter of a couple of decades, one of the most important intellectual transitions in the history of science. In the 1600s, though, a chemist and an alchemist used the same tools and had access to the same background. What did the Invisible College have that the alchemists didn't?

They had a culture of sharing. The problem with the alchemists wasn't that they failed to turn lead into gold; the problem was that

they failed uninformatively. Alchemists were obscurantists, recording their work by hand and rarely showing it to anyone but disciples. In contrast, members of the Invisible College shared their work, describing and disputing their methods and conclusions so that they all might benefit from both successes and failures and build on one another's work.

The chemists were, to use the avant-garde playwright Richard Foreman's phrase, "pancake people." They abandoned the spiritual depths of alchemy for a continual and continually incomplete grappling with what was real, a task so daunting that no one person could take it on alone. Though the history of science we learn as schoolchildren is often marked by the trope of the lone genius, science has always been a networked operation. In this, we can see a precursor to what's possible for us today. The Invisible College didn't just use the printing press as raw capability but created a culture that used the press to support the transparency and argumentation that science relies on. We have the same opportunity.

As we know from arXiv.org, the twentieth-century model of publishing is inadequate to the kind of sharing possible today. As we know from Wikipedia, post hoc peer review can support astonishing creations of shared value. As we know from the search for Mersenne primes, whole branches of mathematical exploration are now best taken on by groups. As we know from open-source efforts such as Linux, collaboration between loosely joined parties can work at scales and over time frames previously unimagined. As we know from NASA clickworkers, groups of amateurs can sometimes replace single experts. As we know from www.patientslikeme.com, patient involvement accelerates medical research. And so on.

The beneficiaries of the system in which making things public was a privileged activity—academics, politicians, reporters, doctors—will complain about the way the new abundance of public thought upends the old order, but those complaints are like keening at a wake: The change they are protesting is already in the past. The real action is elsewhere.

The Internet's primary effect on how we think will reveal itself only when it affects the cultural milieu of thought, not just the behavior of individual users. The members of the Invisible College did not live to see the full flowering of the scientific method, and we will not live to see what use humanity makes of a medium for sharing that is cheap, instant, and global (both in the sense of "comes from everyone" and in the sense of "goes everywhere"). We are, however, the people who are setting the earliest patterns for this medium. Our fate won't matter much, but the norms we set will.

Given what we have today, the Internet might be seen as the Invisible High School, with a modicum of educational material in an ocean of narcissism and social obsessions. We could, however, also use it as an Invisible College, the communicative backbone of real intellectual and civic change. To do this will require more than technology. It will require us to adopt norms of open sharing and participation, fitted to a world in which publishing has become the new literacy.