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What qualifies as intellectual authority today is changing fundamentally. People are much less prepared to defer to the acknowledged experts in various fields. At the same time, however, we are being swamped with data and information — a glut that cries out for analysis and summary. So there is a dilemma: Whom do we turn to?

As president of the Council of Canadian Academies — an organization modeled on the National Research Council in the United States that oversees expert studies of the science underlying important public questions — I am in the business of brokering intellectual authority. I believe that intellectual authority should have a close correlation with expertise as conventionally recognized. It should flow from the tried and true, although never infallible, processes of peer review and other forms of elite consensus building.

More than that, I am comfortable with hierarchies that are based on merit. And I am quite willing to defer to the well-established institutions in today's society since, on balance, I believe that their power is adequately constrained by the legal, economic, and political structures of modern democracy.

But I also recognize that the values that have created my worldview are being eclipsed by a new paradigm shaped by technology, globalization, and postindustrial affluence. Those factors have spawned a culture that, to an unprecedented extent, celebrates and empowers the individual. And a significant symptom of that pervasive shift is the decline of deference to virtually all forms of traditional authority — the church, the schoolteacher, the family doctor, the business executive, the union leader, the politician, and, not least, the intellectual.

The fundamental reasons for the mistrust of hierarchical authority seem not to be widely understood in broad sociological terms. The explanations we typically see cite the public revulsion that stems from specific cases — for example, the scandals in the Roman Catholic Church, or in businesses like Enron, or in politics, where the examples are legion.

In fact, the growing decline in deference to traditional sources of authority is a nearly universal feature of advanced societies. It transcends every specific, local instance. We are witnessing a sociocultural change whose roots run deep in the nature of economically advanced societies. But our understanding of that profound change remains rather shallow and limited largely to a description of the symptoms.

What are the deeper causes? The best analysis that I have read is a body of academic work led by the political scientists Ronald Inglehart at the University of Michigan at Ann Arbor and Neil Nevitte at the University of Toronto. Their research draws on more than two decades of statistics from the World Values Survey, which tracks multicountry public-opinion data. Those data establish convincingly that "the new citizens are less likely than their predecessors to be satisfied with any form of authoritarianism. ... Citizens cut from the newer cloth are more attracted to formations that are bottom-up."

Thus societies formerly based on deference to authority, community loyalty, and the struggle for the material basics of life have given way to affluent societies that have engendered a generational shift toward the "postmaterialist" values of self-esteem, quality of life, and the search for personal fulfillment — a manifestation at the macrosocial level that is analogous to Maslow's hierarchy. When those postmaterialist values are combined with the empowering tools of universal education, a rights-oriented political culture, and the Google search engine, we should not be surprised that more and more people today regard ex cathedra expert authority with skepticism, if not outright hostility.

The paradox is that expert opinion is being sought and cited more than ever. But increasingly, it is individuals themselves who weigh the various authorities and come to their own conclusions. Just ask doctors about their Web-savvy patients.

The news media have also played a role in shaping broader public attitudes toward intellectual authority. The prevailing ethic in journalism is that "fairness" requires that all views on an issue be presented, often without regard for the relative weight of authority of the various sources being quoted. The objective is simply to report point and counterpoint, with an emphasis increasingly on sensationalism, conflict, and official screw-ups — in other words, those things that can attract at least fleeting attention and advertising dollars in a supersaturated information environment.

Consider, for example, the way medical science is reported. The advice in the news media on how to stay healthy keeps flip-flopping, creating in the public mind an impression that experts can never agree, whereas the full text of the journal articles would reveal the provisional nature of findings, statistical caveats, and so forth. In reality, progress is painstaking and tentative, and breakthroughs are rare. But that reality doesn't sell newspapers. The bottom line is that superficial news-media treatment of scientific and technical issues simply reinforces the prevailing skepticism as to the consistency and trustworthiness of expert authority.

Yet while expert-based authority is being challenged, the volume of information is exploding. The "half-life" of active information — the information we actually call on to do our jobs and run our lives — has been getting shorter and shorter, primarily because of the sheer rate of information generation. There are more and more data to process, but not more hours in the day or personal brainpower to apply. So we graze, or we gulp, and then we move on.

That half-life is also shrinking because of the very nature of electronic technology, which makes overwrite so easy and natural. We are all becoming addicted to the "refresh" button. Documents of every kind are being revised continuously until the moment they become virtually obsolete. And as the shelf life of any particular information product gets shorter — whether it's an e-mail message or a position paper — basic principles of economics dictate that fewer resources of time and money can be put into its creation. You simply can't afford to spend the time perfecting something that people will not take the time to ponder and that will soon be superseded anyway. So we dash it off. The ubiquitous PowerPoint presentation with its deck of bullets is the iconic example.

The result is a dumbing down of written communication. We can decry it — and I do — but it reflects a probably necessary trade-off in favor of easier and quicker absorption, unfortunately at the expense of nuance and rigor. That has profound implications for how good is "good enough" when it comes to authoritative information.

Information technology itself is clearly a key part of the reason for our information overload. But so too is the huge expansion of the world's knowledge-generating capacity, especially as China, India, and other giants plug into the economic and research networks of the industrialized world. Those societies are adding tenssoons to be hundredsof millions of trained knowledge workers. They will bring not only new sophistication and motivation, but also cultural and intellectual perspectives that are quite different from those of the West. We can therefore expect an unprecedented surge of innovation, and new impetus to the information glut.

Thus, on one hand, the entire globe is struggling to cope with an information explosion that shows no sign of letting up — quite the contrary. We need somehow to transform a data torrent into useful information and knowledge that can power economic progress and human fulfillment.

On the other hand, the agents that we have relied upon traditionally to filter and manage information, and to broker formal knowledge — agents like research universities, the traditional media, and highly trained experts of all kinds — are less trusted as intermediaries than they once were. And even if that were not the case, it is increasingly obvious that those expert resources are not up to the task of managing the information glut anyway. Just ask journal editors and referees, or researchers in any dynamic field, how well they are keeping up. Ask yourselves.

Of course, part of the response has been to deploy the same computer technology that is facilitating the information explosion in the first place to help cope with its management. In other words, the offense is also the defense. That's why Google has a stock-market value well north of \$100-billion, or several times the combined worth of Ford and General Motors. And it's also why "Google" has become a verb.

But Google and its ilk notwithstanding, the sheer volume of information, its global origins, and especially the dynamic, real-time nature of information today is simply overwhelming our traditional, centralized institutions of information screening and management — whether research libraries, book and journal publishers, or newspapers and other news media.

Therefore the infosphere, as I call it, needs new and decentralized mechanisms of self-regulation and self-organization, just as a complex economy, as Adam Smith realized more than two centuries ago, needs the guidance of an invisible hand. The outlines of such a mechanism are already emerging in the multifaceted development of what the cyberprophet Mitchell Kapor, a proponent of open-source software, has dubbed "massively distributed collaboration," or what the Yale law professor Yochai Benkler calls "peer production" in his new book, *The Wealth of Networks: How Social Promotion Transforms Markets and Freedom* (Yale University Press, 2006).

Indeed, unlike traditional media, which are inherently hierarchical examples of a communication of one to an audience of many, the Web has morphed into global, social, many-to-many meeting

places. Just consider some of the manifestations: blogs, MySpace, Facebook, YouTube, eBay, Amazon, and Google itself, which aggregates the behavior of millions of users into an index of relevance. Probably the single best example is Wikipedia, the user-edited encyclopedia that in just a little more than six years has become one of the most-visited sites on the World Wide Web.

Complete accuracy of information still matters as much as ever where lives, or fortunes, or other decisions of great moment depend on it. But for almost everything else, the trade-off point is moving toward faster, not deeper. In fact, technology advocates believe that it can be both faster and deeper. They may have a point, based on the adage that two heads are better than one — and thousands or millions of heads are incomparably better. And there is, undeniably, a certain wisdom in crowds, as James Surowiecki, a staff writer for *The New Yorker*, documents in *The Wisdom of Crowds* (Doubleday, 2004).

But aren't there times when the authority of the individual expert is more reliable? In the case of subjects where subtle insight and aesthetic judgments are paramount — which would include most of the humanities and many areas of the social sciences — the work of a single well-prepared and integrative mind far outstrips a homogenized amalgamation of contributors. And in those numerous cases where relevant expertise is highly specialized and spread very thinly, the "crowd" is unlikely to be sufficiently wise.

Thus, notwithstanding the remarkable rise of Wikipedia and other forms of Web-based peer production, there will always be a secure niche for expertise in the traditional sense. The competition among the many different sources of intellectual authority is not a game of "winner takes all." Instead, we should be thinking of the infosphere as an ecosystem where different "species" are adapted to specific niches.

Google, for example, delivers fantastic volume, but the measure of relevance is still pretty crude. Blogs give you an up-to-the-minute read on what's hot. Wikipedia provides a great first cut at coherently organized material, plus a good set of relevant links. But if reliability is a critical objective, then refereed journals and original documents become progressively more important.

Expertise, in the traditional sense of the formally credentialed individual or institution, will always have its place. But that place seems destined to become smaller, as traditional expertise gives ground to the more collaboratively determined, and more democratic, forms of intellectual authority that Internet technology has made possible and that diminished respect for hierarchy has made necessary.

So, at the end of the day, the social Web, the university, the individual scholar, and the public media are destined to be complementary and cohabitants in the infosphere. But it follows from the ecosystem metaphor that the infosphere will never be static. The species that inhabit it will compete and evolve: some, like Wikipedia and its ilk, colonizing more and more territory; others retreating into niches for which they are uniquely suited — all adapting in response to the surrounding cultural and technological environment.

There will never be one site to fit all, a point that is glaringly obvious but too often overlooked by the partisans of this source or that. The relevant task is to educate the users of information — and we are all users — as to what is right for what purpose.

Herein lies a challenge, and a great opportunity for our colleges, whose traditional educational paradigm is rapidly becoming obsolete for students who have mouse-click access to much of humanity's codified knowledge. What is most relevant to impart in this new world are the skills of discovery and discrimination — how to efficiently ferret out what best supports an argument or helps solve a problem, and how to tell the vital difference between the reliable and the slipshod. Those skills do not come naturally. In the past, they were highly developed only through years of research training and experience. Now they have to become mainstream.

Information, and the knowledge that can flow from it, is more than ever the lifeblood of our economy and culture, so we must all become much more sophisticated consumers of it.

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