

2021: Mass Collaboration and the Really New Economy

The Internet will force cataclysmic environmental change on business and politics

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In the year 2021, the world's largest corporations will have morphed into widely distributed fleets of specialized businesses, and the political landscape will be transformed into a radical consumer democracy. The new economy will be based on a central nervous system of mass collaboration technology in which businesses and consumers have almost perfect information about goods and services, obtained from sharing their collective experience. Economic and political power will flow, in real time, to the source that delivers the greatest value as perceived by consumers.

For example, let's take a market that will be extremely dynamic in 2021: healthcare. Baby boomers, generating overwhelming market demand, will insist on state of the art healthcare at competitive prices. Currently, Medicare delivers its public service through a government monopoly, which is justified by a gross asymmetry in the buying power and market transparency between providers and consumers of health services. However, with mass collaboration technology people will have good information about the quality of service, technology, and treatments, based on their collective experience and the intelligence offered by information brokers. Healthcare providers will be able to bid in a dynamic market to offer a range of quality/price options. Government or insurance providers will bid for services, and resell risk. The drivers for monopoly contracts will have disappeared. As health care is taken over by a consumer democracy, it will become clear that the providers of most other products and services that are today dominated by government or corporate monopolies can be radically distributed. The structural forces that hold up the modern large corporation, and its partner, the campaign-financed political system, will have dissipated. The monolithic emperors will fall to the mob.

What will happen during the next twenty years to cause such a transformation? No more than a continuation of trends that are already visible to today's naked eye.

Imagine that companies are like organisms in an evolutionary landscape. Following Darwin's logic, the fittest companies survive as the business ecology changes. Ford Motors thrived in the 1900s with mass production based on

insourcing and one central assembly line. When the ecology evolved and outsourcing became cheaper, Ford changed its model to spread the production process around the globe.

This gradual evolution over time is also punctuated now and then by radical changes in the environment. During the Ice Age, only those organisms that could survive in the sudden climate change lived to tell the tale. In the business world, the Internet has forced the same type of cataclysmic environmental change.

Today, globalization and the Internet are the equivalents of large-scale climate change. Globalization is eliminating the traditional advantages of the large corporation: access to capital, access to markets, and economies of scale. Capital flows instantly to the point of greatest expected return. Geography and transportation are negligible in making and delivering goods and services. Vertical economies of scale are no match for a well-orchestrated supply chain. Globalization is redrawing the natural borders of the landscape--wooly mammoths are out and wolf packs are in.

For companies, the cost of getting timely and accurate information on competitors and customers has dropped dramatically. Because of Internet-based services, even the smallest companies today can afford the equivalent of yesterday's corporate market research department. Cheap communication, ubiquitous email and collaboration software, and lower outsourcing costs make it possible to work in large teams that span country and company boundaries. Technology is changing the environmental fitness function: big, bad, and ugly count less than lean, fast, and smart. T. Rex gives way to the social mammal.

As companies evolve to a new ecology, so will their prey. The markets themselves – the consumers of goods and services – are developing new organs of sensation and communication. For the markets, the Internet is driving down the cost, and improving the quality, of information about commercial goods. It is easy to see how the Internet has taken the wind out of traditional car sales tactics, which are based on asymmetric information about dealer costs and inventory. Word of mouth is no longer limited to local mouths; people seek advice on what to buy, and from whom to buy it, from an Internet grapevine of thousands of enthusiastic opinions.

But these are early experiments. Mass collaboration technology will make it possible for virtual communities of consumers, providers, and intermediaries to emerge. What is the barrier to finding out about the reputation of a vendor, or the usability of a consumer product, or even the bedside manner of a physician? Just ask – somebody knows. For example, we already know the on-time

performance of our airlines on a flight-by-flight basis – supplied by agents on the Internet. We can find out that a digital camera has an unexpected glitch, unmentioned in any product description, because previous owners complained about it in a discussion forum. Technology now makes it feasible for the collective *experience* of consumers, including businesses as buyers, to be captured on-line and shared. The data are simple to collect, if people are shopping and communicating on-line. What are you looking for? Whom did you ask for advice? What did you choose? What problems did it have?

In the next twenty years, the practice of online commerce and mass collaboration will become commonplace. People will naturally check the web before buying things, because they will find what they need to know from people on the same team – who have bought the same product or service, or who make a living aggregating information from previous buyers. Why drive around to physical stores to comparison shop, when you can get a rollup of product offerings delivered to the screen on your kitchen table? The connectivity of devices will evolve rapidly, but the gadget race is a sideshow. The big event is a change in behavior. Collective human behavior is driven by individual benefit, and for things that can be bought without being touched, the value of personal time will continue to drive shopping on-line. Then, as on-line shopping becomes a mass experience, market forces will make it convenient for every interaction with the web to contribute to the collective consumer experience. The technology will make it easy to capture, find, and aggregate the experience of others. Consumers will not need to identify with a “buyer community” or opt in to a targeted marketing campaign; they will simply *be on-line* and the intermediaries will aggregate their experiences. This will happen because it is driven by an increasing-returns dynamic: the more consumer experience occurs on-line, the better data there will be to inform buying decisions; and this improves the on-line consumer experience for everyone.

Of course, there will be an adversarial war for the buyer’s *attention*, but the consumer will win that one. With the right technology, people hold the power to their own attention. Think of how the remote control has helped shift the market from broadcast monopolies to cable, and how it has eroded the value of spot advertising. Web surfers discovered the trick much earlier, and now the banner ad is losing its hold on their eyeballs. When convenience is aligned with awareness, it’s hard to fool all the people all of the time.

The effect is even more dramatic for services, especially at the corporate level. What is the basis for choosing a service provider, such as a large consulting firm? It is the *relationship* built up between provider and consumer of the resource. In the old days of massive ERP projects costing millions of dollars and years to implement, the customer was at a disadvantage: it paid the fees of the Name

Brand firms and accepted their practices because there was too much at stake to “risk an unknown player.” In other words, the customer was the victim of asymmetric information. Today, the professional services business is already undergoing a rapid transformation, with large firms losing their grip and waves of hungry new entrants throwing themselves at the big game.

The winners in this new ecology are the most socially intelligent organisms: those that are both highly intelligent as organizations (having highly evolved internal communication as well as external sense organs) and highly effective at *relationships* with other corporate organisms. In the old ecology, cross-organizational relationships were concentrated in small-scale relationships among the few at the top: the tribal chiefs would meet and make treaties. In the new ecology, mass collaboration technology enables many-to-many relationships between organizations – relationships that are distributed and span changes in individual membership. The relationship between the firm and the client is based on the collective experience – the corporate memory – of this distributed, collaborative work. There is no room for the customer to quietly change the scope of the project midstream, just as there is no way for the provider to get away with retraining new staff on the client’s budget. Instead, there is the real possibility of the cross-organizational virtual community to be far more effective as a partnership: knowing the common goals, resolving problems collaboratively, and accurately measuring success. The organizations that learn to master this idea--creating, judging, and maintaining relationships based on their collective experience of working together – will rule in the new ecology.

In twenty years, the shape of the fittest organization will have changed. It will lose weight, become more specialized, gather in dynamic social groups, cross breed with other groups, and learn to transmit the benefits of collective experience through a newly evolved cultural medium.

SIDEBAR: What about governments? We live under representational democracies, not popular democracies, because of asymmetric information (the voters do not know everything relevant to policy or its execution) and the limits of collective intelligence (better decisions can be made by fewer people). The American political system has remained stable in part because a free press provides internal learning mechanisms (voters and representatives learn about each other), and a strong executive paired with a two-party system provides at least medium-term collective intelligence (power and information is aggregated to a few decision makers who are bound culturally to a broader agenda).

While it is hard to predict how technology can change the dynamics of a political ecosystem in as few as twenty years, it is clear that governments

act as organisms on a global playing field with corporations and markets. If corporations respond to increased transparency about the goods and services they deliver, and consumers get used to being well informed, governments will feel the same evolutionary pressure. While the free press battles the lobbyist-funded PR machines for Public Opinion, a quiet revolution may occur in the accountability for the delivery of government services. What if a fresh crop of congressmen and women, who grew up on the Internet, decided that many government services could be outsourced to specialists just as the rest of the global economy? Then they would be subject to all the same forces of mass accountability based on collective experience. Once the market mechanism and consumer feedback loop in is in place, it would be hard to reverse: with good information about needs and the quality of service, reforms would occur more easily through incremental adaptation than by legislative fiat.

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Prior to founding Intraspect, Gruber was a research scientist at Stanford University Knowledge Systems Laboratory, where he created the "ARPA Knowledge Sharing Library," a WWW-based digital library and public exchange for reusable software, ontologies, and knowledge bases. With colleagues at Stanford, Xerox PARC, and SRI, he designed systems that provide shared virtual spaces for collaborative work, agent-based collaborative engineering, and collaborative learning technologies. Gruber also led the Stanford team that invented and deployed the first virtual document applications on the web that generate natural language explanations in response to questions. Gruber later served as senior project leader for Enterprise Integration Technologies (EIT), where he created the widely used "HyperMail," which turns ordinary electronic mail into a group memory on the web and was used as the web archive for early email discussions such as www-talk. Gruber received a B.S. degree in psychology and computer science from Loyola University (New Orleans) in 1977, and his M.S. and Ph.D. degrees in computer Science from the University of Massachusetts in 1983 and 1988 respectively.