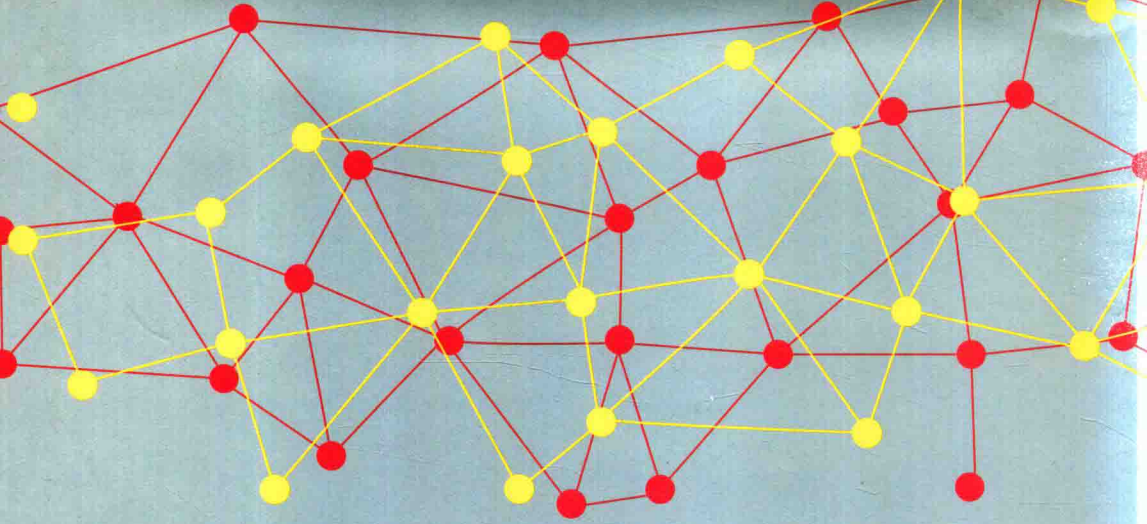
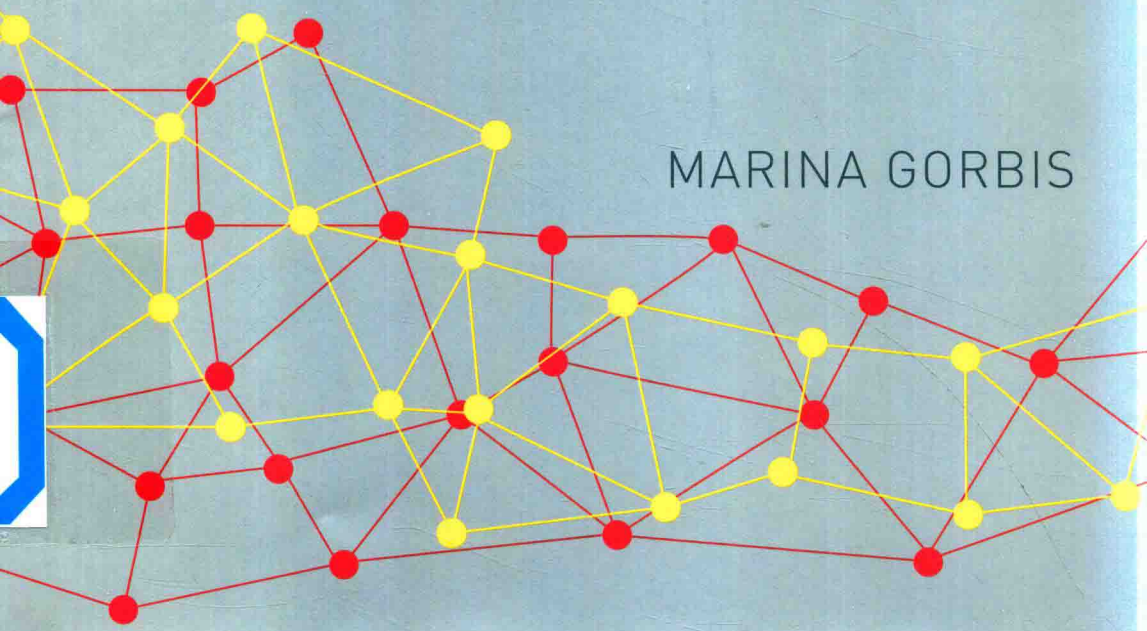


THE NATURE OF THE FUTURE

DISPATCHES FROM THE **SOCIALSTRUCTED WORLD**



MARINA GORBIS

THE NATURE OF THE FUTURE

DISPATCHES FROM THE **SOCIALSTRUCTED WORLD**

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To my mother, whose light continues to shine
To Greg, whose restless search for meaning is an inspiration
To Chris, my best friend and partner in this dance

THE NATURE OF THE FUTURE

Contents

1

Putting the Social Back into Our Economy

My mother never heard the term *social capital,* but she knew its value well. In the Soviet Union, where she lived and where I grew up, no one could survive without it, and she leveraged her social capital on a daily basis. It enabled her to provide a decent life for her family, even though she was a widow without much money, excluded from the privileged class of the Communist Party. We never worried about having enough food. My sister and I always wore fashionable clothes (at least by Soviet standards). We took music and dance lessons. We went to the symphony, attended good schools, and spent summers by the Black Sea. In short, we enjoyed a lifestyle that seemed well beyond our means.

How was my mother able to provide all these things on the meager salary of a physician in a government-run clinic in Odessa, Ukraine? Social connections were a powerful currency that flowed through her network of friends and acquaintances, giving her access to many goods and services and enabling our comfortable, if not luxurious, lifestyle. Even when no meat could be found in any store in the city, my mother was able to get it, along with a wealth of other

hard-to-find foods, from the director of the supermarket who was the husband of a close colleague of hers. I was accepted into music school because my mother treated the director of the school in her off-hours. We were able to get Western medicines because a friend was the head of a large local pharmacy.

Our apartment was always filled with people my mother was counseling, diagnosing, treating, and prescribing medicines for. No money ever changed hands; that was too risky. She had lived through the era of Stalin's purges, and the memory of his fabricated charges against Jewish doctors, who he claimed were trying to poison the Soviet leadership, was still vivid in her mind. She was too afraid to build a private underground medical practice. "With my luck, I would be the first to be caught," she would say with a nervous laugh.

All those people who regularly visited us, or whose houses she visited to provide care, were my mom's substitute for money, providing not only food, medicines, and clothes but also intangibles of information, services, and emotional support. When my mother died shortly after emigrating to the United States in 1990, the only material possessions she left me and my sister were her wedding ring, some books, and a few pieces of clothing. But she also left thousands of grateful friends and former patients whose lives she had touched.

Our story was not unique. All around us, amid empty stores, low salaries, dismal productivity numbers, and fraying infrastructure, people seemed to live normal middle-class lives. An economist would have had a hard time explaining our lifestyle by analyzing economic statistics or walking around the stores and markets in Russia in the 1960s and 1970s. In fact, visitors to the Soviet Union always marveled at the gap between what they saw in state stores—shelves empty or filled with things no one wanted—and what they saw in people's homes: nice furnishings and tables filled with food.

What filled the gap? A vast informal economy driven by human relationships, dense networks of social connections through which people traded resources and created value. The Soviet people didn't plot how they would build these networks. No one was teaching

them how to maximize their connections the way social marketers eagerly teach us today. Their networks evolved naturally, out of necessity, that was the only way to survive.

Today, all around the world, we are seeing a new kind of network or relationship-driven economics emerging, with individuals joining forces sometimes to fill the gaps left by existing institutions—corporations, governments, educational establishments—and sometimes creating new products, services, and knowledge that no institution is able to provide. Empowered by computing and communication technologies that have been steadily building village-like networks on a global scale, we are infusing more and more of our economic transactions with social connectedness.

The new technologies are inherently social and personal. They help us create communities around interests, identities, and common personal challenges. They allow us to gain direct access to a worldwide community of others. And they take anonymity out of our economic transactions. We can assess those we don't know by checking their reputations as buyers and sellers on eBay or by following their Twitter streams. We can look up their friends on Facebook and watch their YouTube videos. We can easily get people's advice on where to find the best shoemaker in Brazil, the best programmer in India, and the best apple farmer in our local community. We no longer have to rely on bankers or venture capitalists as the only sources of funding for our ideas. We can raise funds directly from individuals, most of whom we don't even know, through websites like Grow VC and Kickstarter, which allow people to post descriptions of their projects and generate donations, investments, or loans.

We are moving away from the dominance of the depersonalized world of institutional production and creating a new economy around social connections and social rewards—a process I call *socialstructing*. Others have referred to this model of production as social, commons-based, or peer-to-peer.[1] Not only is this new social economy bringing with it an unprecedented level of familiarity and connectedness to both our global and our local economic exchanges, but it is also changing every domain of our lives, from finance to

education and health. It is rapidly ushering in a vast array of new opportunities for us to pursue our passions, create new types of businesses and charitable organizations, redefine the nature of work, and address a wide range of problems that the prevailing formal economy has neglected, if not caused.

Socialstructing is in fact enabling not only a new kind of global economy but a new kind of society, in which amplified individuals—individuals empowered with technologies and the collective intelligence of others in their social network—can take on many functions that previously only large organizations could perform, often more efficiently, at lower cost or no cost at all, and with much greater ease. Socialstructing is opening up a world of what my colleagues Jacques Vallée and Bob Johansen describe as the world of impossible futures, a world in which a large software firm can be displaced by weekend software hackers, and rapidly orchestrated social movements can bring down governments in a matter of weeks. The changes are exciting and unpredictable. They threaten many established institutions and offer a wealth of opportunities for individuals to empower themselves, find rich new connections, and tap into a fast-evolving set of new resources in everything from health care to education and science.

Much has been written about how technology distances us from the benefits of face-to-face communication and quality social time. I think those are important concerns. But while the quality of our face-to-face interactions is changing, the countervailing force of socialstructing is connecting us at levels never seen before, opening up new opportunities to create, learn, and share. Consider a few examples of amplified individuals who are pioneering this transformation.

Opening Up Biology for the Masses

Eri Gentry always had a strong interest in health and well-being. She read health books and magazines as a teenager and moved on to academic papers on medicine in college. She got hooked on re-

search into aging and life extension, and in the process, discovered the SENS Foundation, a brainchild of the noted British anti-aging researcher and scientist Aubrey de Grey. SENS was located close to where she lived in Arizona, so Eri started volunteering there, doing a variety of tasks, from talking to real estate brokers to helping get visas for overseas scientists visiting the lab. She was dismayed to learn how top-heavy many scientific efforts are and that too often scientists themselves are undervalued and underrewarded. She became a true advocate for scientists. "Such important research should be scientist-driven and have as little overhead as possible,"[2] she says. Thus was born her desire to uplift scientists who are eager to do research, often for very little money, and at the same time to make science, particularly biology, more accessible to the masses.

While working at SENS, Eri and a biomedical researcher, John Schloendorn, started a nonprofit company called Livly to pursue research in immunotherapy treatments for cancer. Realizing that Arizona was not the best place for a start-up, the team decided to move to Silicon Valley. Eri looked into renting a biotech incubator space there, but the rents were exorbitant—more than $6,000 per person per month. Instead, she rented the cheapest house with a garage she could find in Mountain View, and she and John moved in.

The team soon turned their garage into a biotech lab. They acquired most of their equipment from biotech companies that were going out of business and were willing to get rid of their gear for pennies on the dollar. Eri and John would sometimes drive to Los Angeles to pick up equipment and attend a biotech conference on the way. Word about their lab spread quickly. Many people came by to visit, among them Peter Thiel, a venture capitalist famous for his early investment in Facebook. Thiel decided to invest in ImmunePath,[3] a start-up created by Schloendorn that specializes in stem cell therapeutics for diseases of the immune system.

Eri took a different path. The community of people interested in doing biology research quickly outgrew her garage and started meeting in larger spaces, including the Institute for the Future (IFTF). BioCurious, as the group became known, evolved into many things:

a physical space where people come to learn, share ideas, and collaborate on projects; a place for hackers to come together and apply their skills to biology; a community for interested amateurs to learn about and to participate in biology research. Today the members are a diverse group—scientists, philosophers, engineers, programmers, designers, amateurs and professionals, young and old. Eri sees BioCurious as a "space for people to innovate biology in a world where change is sorely needed."[4]

One of the projects developed by some of the members of the BioCurious community is an open PCR (polymerase chain reaction) machine. A PCR machine is critical for DNA analysis and is a foundational tool for virtually all of modern molecular biology research. Traditional PCR machines cost between $4,000 and $10,000, but two of the BioCurious cofounders, Josh Perfetto and Tito Jankowski, developed a PCR machine that sells for around $600. Along with Mac Cowell, a cofounder of DIYbio.org, another nonprofit dedicated to engaging people in biology research, Josh created another project called Cofactor Bio that sells kits to enable people to do all kinds of genetic and biological testing on their own.[5] You can, for example, specify which genes you want to test for, such as the gene associated with quick metabolization of caffeine or the gene associated with natural marathon-running abilities, and they will send you a kit to do the testing.

After a year of operating out of the garage, Eri and her co-conspirators turned to Kickstarter, a crowdfunding platform where strangers can contribute money to underwrite projects in the arts, music, and science. With contributions ranging from $3 to $2,500 and over two hundred backers, BioCurious managed to raise enough money to start a community lab in Sunnyvale, California, where members have access to lab equipment and a community to help them pursue their research interests in biology.

BioCurious and other DIY biology efforts come at an important time and serve a critical role in the evolution of biological research. Disciplines such as synthetic biology and genomics are truly transdisciplinary, that is, they require knowledge from multiple disci-

plines, including genetics, bioinformatics, chemistry, and biology. In most academic settings, these disciplines are highly specialized. Even in neuroscience departments, researchers might be highly specialized in biological, microbiological, cognitive, and other types of neuroscience. And people with different specializations find it difficult to talk to each other. Meanwhile, the stores of biological and genetic data we are accumulating are growing exponentially. To take advantage of this data and to speed up the rate of scientific discoveries, we need people from different disciplines to talk to each other in a similar language. Communities such as BioCurious provide a place for people to develop a common language and work together.

At the same time, tools for doing self-diagnosis, self-tracking, and biological research are becoming increasingly available to individuals. BioCurious encourages and enables people to acquire the necessary knowledge and tools to do such research, to become experts on their own bodies, and to participate in broader research by contributing their own data to a large pool of community information. Eri's goal is to engage more and more people in biological research—to bring biology to the masses.

Eri also helped shape Genomera, a platform for open-source clinical trials. Traditional clinical trials are lengthy and expensive and are done only by large R&D labs or government organizations. Genomera allows virtually anyone to run a clinical trial. Say you want to investigate whether drinking green tea affects your energy level or cuts down on your food cravings. You can propose a clinical trial to the Genomera community, and Genomera will help you recruit study participants, provide you with templates for running the study, and give you assistance with data analysis. Greg Biggers, the founder of Genomera, envisions it not only as a platform for conducting research but also as a social platform—a place where people can find others interested in similar issues, share research ideas, and help improve methodologies. Far from the way traditional clinical trials are conducted, where subjects never see each other, much less talk to each other, Genomera's approach is to create a community of participant researchers who are socially connected.

Genomera and efforts like it play an important role in crowdsourcing health information and in enabling highly personalized treatment choices. People are increasingly tracking data about themselves, and genetic testing is becoming routine. Combine that with years of data from doctors and aggregate personal data across thousands, if not millions, of people, and it becomes possible to determine which nutritional supplements would be helpful given your individual profile and which foods, drugs, and treatments are most likely to work for you.

BioCurious, Genomera, and platforms for social production of science open up a much larger terrain for investigation. Right now R&D dollars and investments are directed to a narrow set of discoveries that can produce large monetary payoffs for pharmaceutical companies and R&D labs. However, there are many questions that need answers but may not have a huge monetary payoff even though they could make an extraordinary impact on individuals and society as a whole. Efforts like BioCurious and Genomera democratize what we investigate and who does the investigating. At the same time, they drastically reduce the costs of running clinical trials—that is, the costs of innovation. The cost of running a clinical trial with Genomera is close to zero. And here is another benefit of Genomera and open platforms like it: the data they collect is available to anyone to review, analyze, and add to.

There are now hundreds of community labs such as BioCurious and Genomera around the world. Think about the collective impact of their efforts on research!

Combating Global Organized Crime

In 2001 Paul Radu, a young Romanian journalist, got a press fellowship from the Alfred Friendly Foundation to work on an investigative team at the *San Antonio Express-News*. While at the newspaper, he embarked on an investigation of a transnational group involved in helping Americans adopt children from Eastern Europe, including Romania and Ukraine. His investigation specifically focused on

Orson Mozes, the head of Adoption International Program, based in Montecito, California. Paul pored over court records and IRS filings, searched adoption forums, and conducted interviews in Eastern Europe and the United States. He uncovered numerous unsavory and sometimes illegal practices, including failure to disclose medical problems of adopted children, mistreatment of and threats against prospective parents who complained or asked too many questions, and separations of siblings without disclosure of that information to the adoptive parents.

Paul had completed the investigation and was ready to publish his exposé in September 2001, but his story was pushed aside by the events of 9/11. Few people were interested in adoption scams involving Eastern Europe. When the story finally appeared as a lead article in the *San Antonio Express-News* in October 2001,[6] it didn't garner much attention. Nevertheless the experience taught Paul the value of local information and sources, the importance of doing painstaking and often boring forensic reporting work, and the long life that archived online stories can have, with direct impact occurring possibly years after a story is published.

For seven years after its publication, Paul's article on Mozes was posted and reposted on adoption bulletin boards and in discussion forums. Parents who were looking for children and those who had had direct experience with Mozes kept bringing Paul's article back into the conversation. Finally, in 2008, Mozes was arrested for the crimes described in the 2001 article. It took a long time, but publication of the article disrupted Mozes' ablity to do business as usual. "What's more important is not that he was arrested," says Paul, "but that for seven years he tried moving his business to Azerbaijan and to various places, and these people, these local journalists, would always find my story. Or some parent who was interested in adopting would find it. So then I realized that archived information has a lot of power. If it's proper information, if it's sourced correctly, if it's put in a good form, if it's backed by documents, then it can have impact for a very long time."[7]

Paul and his colleagues apply these lessons in a new journalism

venture focused on creating a truly global investigative journalism platform. The Organized Crime and Corruption Reporting Project (OCCRP) is a virtual organization that brings together journalists with local knowledge and local connections from different parts of the world. Members of OCCRP collaborate online and in person to decide which investigations to launch. They allocate small amounts of money to groups of reporters, and sometimes citizen journalists, to conduct research in their locales. Working on shoestring budgets, these journalists interview people locally in their native language, go through bank records and company registrations, and collect reports from local media sources. That is, they do the same kind of work Paul was doing in Texas. They understand that organized crime is a global business representing millions of dollars in profits, with a huge network of people and assets.

Organized crime operations use familiar business structures—companies, banks, networks of employees—to conduct illegal activities. They thrive on exploiting jurisdictional boundaries—differences in regulatory, legal, accounting, and cultural norms—often setting up operations in areas where illegal activities can be well hidden from authorities. Unfortunately, because of these jurisdictional differences and constraints, it is often difficult or impossible for local authorities to uncover the whole network and see the larger picture. For example, during a drug bust in Argentina, the authorities might be happy to seize millions of dollars' worth of cocaine and arrest a few people. However, the culprits are likely to be part of a much larger network that involves people in Eastern Europe and elsewhere. "The criminal enterprises of today represent a multibillion-dollar set of networks that prey on every aspect of global society, distorting markets, corrupting governments, and draining huge resources from both," says Paul. "Criminal syndicates have unprecedented reach into the lives of ordinary people, and journalists need to do a better job of putting the transnational puzzle together and of presenting to the public the threat posed by such criminal enterprises."[8]

This type of globally networked criminal activity can go un-