THE FUTURE
IS A CHANCE TO BE NEW

The next decade will be new at scales humans have never before experienced. From vast geoengineering projects that aim to curb climate change to tools for tinkering with the tiniest neuro-receptors in our brains, humans will explore the technology of scale. But more important, we will also reinvent our social and economic systems on scales both massively global and fundamentally local.

We will define new micro-units of economic contribution and link them to boundless systems of rewards. We will innovate in our backyards and tie those innovations to other projects halfway around the world. We will design materials in nano-measures and cut a template for remaking manufacturing across the planet.

In short, we will *superstruct* the institutions and activities of daily life.

> **superstruct:** [verb] to extend, to build upon, to reach beyond present limits.

Our experiments in superstructing will eclipse the economies of scale of global corporations and the reach of the world's largest nations. We will learn to collaborate at extreme scales, build new mega-infrastructures in the image of the Internet, and manage our world at the level of ecologies. In fact, in learning to superstruct, we will move from organizational management to ecological design.

To do this, we will take our economy apart and put it back together using new measures of wealth, from renewable energy to human happiness. We will also finally turn our best thinking to the praxis of governance—and perhaps begin to move beyond 18th century forms to invent a new post-Newtonian vision of democracy.

The evolution of life on this planet has been the story of increasing levels of complex organization to support ever more life. As we enter the next decade, our project is nothing short of reorganizing life on the planet to support the 9 billion people we may be by the end of this century. Think of this year's *Map of the Decade* as the first glimpse at the project plan.

TEN-YEAR FORECAST
Perspectives 2009
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SOCIETY:
EXTREME-SCALE COLLABORATION

Humans tap non-human minds for new knowledge

From digital and pharmaceutical experiments on animal brains to computers and sensors that give us a new language for communicating with animals, we are constructing new cross-species platforms that will change the way we relate to non-human animals. We'll engage in new cross-species politics, integrate animals into our economies in new ways, engage them with new tasks in our daily lives, and rely on them to give us new and unexpected ways to understand the world we share. At extreme scales, these interactions will create a sentient landscape that reshapes our strategies for meeting 21st century challenges.

Seven superstruct strategies steer an engagement economy

As participation trumps production in creating new value in the economy, new rules of engagement suggest seven new keywords—evolvability, extreme scale, ambient collaboration, reverse scarcity, amplified optimism, adaptive emotions, and playtests—for strategies that leverage participation at both very small and very large scales. These strategies also begin to reframe our thinking in terms of designing ecologies rather than managing organizations.

Neurosocial systems leverage social networking

For the past decade, social network platforms and social media have laid the foundation for a new level of collective intelligence that leverages individual human contributions to remake social structures from the bottom up. Over the next decade, these structures will very possibly get connected at the neurological level—either directly, through digital monitors, or indirectly, through neuro-targeted messages and media. We'll be able to experience one another's bodies directly. We'll develop techniques and even drugs to enhance those engaged in certain academic or engineering disciplines. And the metaphor of a planetary nervous system will become less metaphorical, more literally an "organism" of collective intelligence that scientists will study as a self-sustaining entity.

DIY medicine creates new health care ecologies

Even as societies struggle to restructure the existing health care delivery systems to meet the needs of more impoverished and aging populations, the practice of health care—and indeed medicine—is being de-professionalized as people become their own experts in both diagnosis and treatment. Moving from DIY health practices focused on wellness and complementary medicine, a segment of the population will begin to tap over-the-counter diagnostic tests and even home compounding of open-source pharmaceuticals to create their own personalized care (and perhaps a new gray market of community health services). Traditional and DIY practices are likely to mix and match in different ways across the globe, creating diverse ecologies of medical innovation and risk. At least some of these ecologies will promote a culture of "fun" health care.

ECONOMY:
ALTERNATIVE WEALTH

Networked giving redefines philanthropy

Where a few large foundations have shaped the agenda of global giving—and also of local government priorities—over the past few decades, shrinking endowments and new models of micro-contributions coordinated by networks of giving will decentralize and democratize philanthropy over the coming decade. Networks of surge donors, who give small amounts of money, carbon credits, phone credits, and even ideas in a kind of reverse pyramid scheme will create large-scale micro-philanthropy events that may lead to so-called "happiness" bumps, leveraging the insights of positive psychology to boost economies of well-being.

Multi-sector solutions create multi-capital wealth

As societies struggle to meet the compound challenges of climate change, economic collapse, the integration of the Global South into the larger world economy, and rapid enhancement of human cognitive capacities, new kinds of institutional partnerships and networks will emerge. NGOs will superstruct their capacities by creating regional NGO-to-NGO networks, and in the Global South, in particular, these networks will bring a new level of coordination with new multi-capital benefits. Perhaps more importantly, these efforts will also be linked to cross-sector alliances that naturally leverage multiple capitals.

Open source drives global development

Open-source strategies will extend well beyond media and science to include everything from open-source manufacturing to open-source infrastructure and open-source logistics. Particularly in the Global South, countries that have struggled with the debt of large-scale infrastructure investments and burdensome licenses for technology developed abroad will turn increasingly to open source as a political and economic strategy for development. They will form alliances that promote open-source solutions and leverage global peer-to-peer networks to grow local capacity.

Alternative currencies formalize new wealth

The budding alternative currencies movement will get a boost from economic disruptions as local currencies, various kinds of exchanges, and new carbon trading markets monetize new kinds of value both locally and globally—and create new wealth in unexpected places. In addition, watch for efforts to link national currencies to new ecological measures, such as renewable energy use or other ecological services, rather than traditional gold standards or GDP.

Media filters become the new brands

As media production explodes, and production and distribution becomes increasingly decentralized, media filters will become the new big brands. Think Amazon and Google.

ENVIRONMENT:
SUPERSTRUCTED ECOLOGIES

Green health creates a new ecology of health practices

Recognizing that today's health threats emerge increasingly from the environments in which people find themselves—whether it's the work environment, the urban environment, or even the hospital—individuals and organizations alike are making the connections between personal health and sustainable ecologies. They are looking for ecological as well as individual interventions, and they will use tools that range from maps that show which places are healthy and which are not to personal profiles that plot the measures of individual daily life against collective measures of the "quantified healthy self."

Translocalism links local places worldwide

From food to currency, from institutional innovation to governance, people are turning to local communities as the focus of reinventing the systems that no longer seem safe. At the same time, global mobility and the global nature of issues like climate change and financial collapse make it clear that communities exist in larger ecologies. So the emerging *localism* will not be localism, so much as *translocalism,* with new structures for local places to connect with other local places. This new translocalism will highlight the emergence of new "global" cities that have an impact far beyond their regions. Watch for new and unexpected translocal alliances, many based on new geo-identities that emerge from the growing importance of alternative energy resources and biomass for carbon sequestration.

Geoengineering tries to remake large-scale ecologies

In the face of unrelenting climate change—and growing economic, political, and social costs—some will advocate for large-scale interventions: ocean iron fertilization to pull CO^2 out of the atmosphere; injections of sulphate particles into the atmosphere to increase its reflectivity; and more. These are likely to be very controversial proposals, as governments weigh the risks of unintended consequences as well as the relative benefits for some geographies and economic sectors. (For example, Russia views climate change as net positive, while many parts of the Global South will experience either inundation or desertification.)

Space becomes the next networked ecology

As several nations turn their sights on outer space, small-scale technologies—especially sensor networks and small satellites—are likely to make Space the next frontier for networked communication. CubeSat miniature satellites have already been deployed for academic research, and could increasingly be used to study not only Space but Earth ecologies. Current pricetags are within the range of university academic projects but are likely to drop over the next decade, suggesting that CubeSats could be used for new commercial applications, amateur science networks, cooperative monitoring, and even collective art projects. The obvious downside: orbital debris.

INFRASTRUCTURE:
MEGA-STRUCTURES

Networks remake the health infrastructure

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Sustainable urbanization rescales the city

As rural populations continue to flock to urban areas, cities will redefine the scales at which places can be organized to support life—pressing the limits of sustainability with both massive slums and very small-scale, networked technologies for supporting life and commerce. They will innovate local food production as well as distribution to make small-scale gardens add up to large-scale food systems. Cities will rebuild their waste and power systems with household-scale waste-to-energy conversion technologies, networked to provide resilience. Even as they challenge our ability to provide clean water and clean air, cities will also be places to go to achieve healthy lifestyles, sustainable aging, and even augmented human capacity.

Participation redefines production

This decade will be the beginning of a major restructuring of our manufacturing systems as we begin to see very small-scale fabrication move production out of large factories into small-scale production facilities and possibly even our homes. These local—and perhaps even mobile—fabrication systems will achieve scale through open-source peer-to-peer design networks, repurposing designs to leverage local natural and recycled resources.

Economic shifts repurpose infrastructure

Changing real estate values, shifting patterns of production and distribution, and even changes in health care will leave much of the built environment primed for reinvention. Top structures like to be repurposed: retail buildings, very large manufacturing plants, and hospitals.

Server farms become economic and political hubs

As server farms grow to support supercomputing applications—and as more organizations outsource computing capacity to commercial server farms—the centers where the server farms are housed will grow in importance and impact on local economies, environments, and the Internet itself. As a result, control of these hubs will become a source of economic and even political power.

POLITICS:
A GOVERNANCE RENAISSANCE

Connected consumers become networked citizens

In the 1990s, the Internet connected people to a vast network of commercial services and production information, turning them into so-called "smart consumers." In the 2000s, these same people have become smart networkers, using social networks to leverage their collective interests, whether for fun, for economic benefit, or more recently, for political goals. Over the next decade, we will see them emerge as networked citizens, not just of their communities and nations, but of the planet. They will engage in collective online behaviors to influence both global and local issues.

Cosmopolitanism defines a new common sense

As global mobility increases and the world's population congregates in ethnically diverse urban areas, the global community has taken shape on a scale previously impossible. The result is a growing cosmopolitan ideology—and indeed a new cosmopolitan law as a way to superstruct the multitude of national laws and the too-slow processes of international agreements. This ideology will increasingly find itself doing battle not only with traditional isolationist strategies but also with a new generation of young nationalists, especially in the Global South. It will also need to bridge the gap between cosmopolitan elites, who have traditionally enjoyed the best that geographic mobility has to offer, and a new generation of networked worker cosmopolitans leveraging connections across nations to find commonalities in goals of social justice and ecological security.

Democratic experiments aim at a post-Newtonian governance

As electronic media changes the context for governance, a proliferation of experiments in so-called post-Newtonian or quantum governance will emerge. Rejecting old forms of representative democracy as out of touch with our current scientific thinking, scholars are striving to define what a new post-Newtonian governance might look like. At the same time, practitioners are experimenting with new forms, from participatory budgeting and participatory legislation to citizen juries. Over the next decades, these experiments will likely define surprising new practices ranging from mesh citizenship based on network membership to trust tags that confer trust on strangers to the emergence of the systematically "surveilled state."

Superstructed realities retool governance

As virtual and physical realities become more tightly integrated, as diverse virtual worlds become more unified and persistent, and as many people opt to spend time in "better-than-real" worlds, reality itself will be the object of superstructing. We'll use our experiences in virtual spaces to pretest social experiments and monitor real-world patterns. As we use these multiple realities to organize our lives, governance will increasingly be about designing, managing, and monitoring our experiences across realities.

HOW TO USE THE 2009 MAP OF THE DECADE

The next decade challenges us with a collapsing economy, a landscape-clearing shift in the world's climate, a rapid integration of the Global South into a planetary economy, and a new capacity for biological engineering that challenges our basic ideas of species. The *2009 Map of the Decade* is all about superstructing these challenges. Here's how to use it:

Start at the top
Scan the columns for the five big shifts that point to the scale of change we face. These tell us where to focus our attention as we look for opportunities to work at new scales.

Then focus on the rows
In the rows, you'll find our **forecasts.** Five of these forecasts suggest flashpoints for superstructing—in our personal well-being and relationships, the practices and projects that animate our lives, or the tools and knowledge that we tap into during the course of those activities.

GEOENGINEERING

Next, take a look at the signals scattered across the map
These are the details of change, and they add up to the forecasts. They also add up to possible strategies for reinvention, for remaking careers, organizations, communities, and even nations.

green = safe

Finally, go the heart of the map
Here you'll find five **superstruct ecologies:** combinations of superstructures imagined by more than 7000 players of the Superstruct massively multiplayer forecasting game. These ecologies point to new ways of organizing everything from food to government. They give us an ecological view of the future.

START SUPERSTRUCTING NOW

The map highlights seven Superstruct Strategies—strategies for reinventing practices, products, and projects at extreme scales. Use them to start superstructing now:

SUPERSTRUCT ECOLOGIES

Make a play in the superstruct ecologies
Imagine your organization or community in the world depicted by the Superstruct Ecologies. What's your first play if you want to collaborate at extreme scales to win in this world? How would you playtest an innovation in these ecologies? What does that tell you about strategies for the future?

SUPERSTRUCT STRATEGIES

Use the signals to build a strategy
Choose a Superstruct Strategy and find all the signals you would draw on to implement the strategy. For example, which signals support ambient collaboration or reverse scarcity?

Create a superstruct mission. Choose a forecast and give your team a 10-minute mission to superstruct the forecast. For example: find 10 ways to use amplified optimism to promote Urban Sustainability.

Be sure to check out the *Superstruct Handbook* for details on Superstruct Ecologies and Strategies.

SOCIETY:
EXTREME-SCALE COLLABORATION

Organizing beyond the scale of nations and global organizations, humans are developing new skills and patterns for cooperating across the scale from micro to macro—leveraging not only digital technologies but also, more and more, their own neurologies.

ECONOMY:
ALTERNATIVE WEALTH

From alternative local currencies to an alternative basis for national currencies to new ways of generating and distributing wealth, the next decade will see mass-scale experimentation with new economic forms—driven, in many cases, by open-source strategies.

ENVIRONMENT:
SUPERSTRUCTED ECOLOGIES

As organizational structures evolve beyond corporations, communities, and nation-states, humans are beginning to think ecologically about both natural and built environments—and to superstruct sustainable local and global ecologies.

INFRASTRUCTURE:
MEGA-STRUCTURES

Using the Internet as a template and starting from small, lightweight technologies, infrastructures will grow into mega-structures that have the resilience of distributed systems, the customizable nature of component systems, and a new energy efficiency.

POLITICS:
A GOVERNANCE RENAISSANCE

After several decades of neglect, the art and science of governance will undergo a renaissance in which both the Global North and the Global South experiment with new forms of democracy—and seek to bring politics into alignment with 21st century science and technology.

PEOPLE & NETWORKS

PRACTICES & PROJECTS

TOOLS & KNOWLEDGE

BEYOND FOXP2: CROSS-SPECIES COLLABORATION
non-human knowledge
human-animal communication
new ocean research partners: pelagic mammals and big fish
non-human partners in eco-monitoring
guide animals: more diversified, more accepted
cross-species politics
Asia: monkey labor
sentient landscapes
empathy breeding

NETWORKS OF GIVING
micro-philanthropy networks
decentralization & democratization of philanthropy
South-to-South collaborations
NGO-to-NGO networks
local clean-industry ventures

MULTI-SECTOR SOLUTIONS
happiness "bumps"
surge waves
seed networking
distance solutions = new value

GREEN HEALTH
healthy place maps
eco-health for workers
health localism
health metrics for schools
from issues of health coverage to issues of capacity

NETWORKED HEALTH
global health care labor force
green = safe
collective measures for personal health
the quantified healthy self
p2p health management
distributed chronic care networks
remote e-health
young cosmopolitan networks
migrant health networks
urban farming networks
household-scale waste-to-energy conversion
neighborhood museums of the future
suburban slums & ghost towns

SUSTAINABLE URBANIZATION

NETWORKED CITIZENS
automated smart-object networks
global bootstrapping networks
networked objects as interest groups
new epidemiologies: poverty, crime, happiness

COSMOPOLITANISM
bottom-up health surveillance & safety nets
cosmopolitan law = a new common sense
post-peak driving patterns
cosmopolitan identities
cosmopolitan science

SUPERSTRUCT ECOLOGIES

THE APPLESEED ECOLOGY
FOOD AS DISRUPTIVE ECONOMY

Source: H. Bornstein, 2007

Games simulate real urban farm production + "bright green" high-tech sustainability solutions + alternative currencies—with open-source values

THE COMMUNITY WORKS ECOLOGY
BUILDING EMERGENT LOCAL AND GLOBAL INFRASTRUCTURES

Source: asha-india.org/Healthcare

Community innovations scale to regions, nations, the world + new human pattern language for energy generation + distributed education networks—with a value on local solutions to global problems

THE QUANTUM GOVERNANCE ECOLOGY
BRIDGING DIVERSE REALITIES

20th century science leads to 21st century governance ideas + trust tagging + rich media ecology + local food security + meta-networks—with a value on relational interdependence

Source: engadget.com

THE NATURAL CURRENCY ECOLOGY
LINKING SUSTAINABILITY TO SOCIABILITY

Natural currencies get linked to renewable energy capacity + other eco-values + alternative exchange platforms + new structures for families—with a value on sociability

Source: numismondo.com

Source: fabathome.org

THE OPEN FAB ECOLOGY
REMAKING THE MATERIAL WORLD OUT OF POVERTY

Personal fabbing devices create regional fab task forces + new fabbing disciplines + mobile fabbing + open-source science and education—with cradle-to-cradle values

SUPERSTRUCT STRATEGIES

Evolvability: nurture genomic diversity & generational difference

Extreme Scale: layer micro & macro scales for rapid adaptation

Ambient Collaboration: leverage stigmergy with environmental feedback

Adaptive Emotions: confer evolutionary advantage with awe & wonder

Reverse Scarcity: use diverse and renewable rewards

Amplified Optimism: link amplified individuals at massive scales

Playtests: challenge everything and everyone in fun, fierce bursts

OPEN-SOURCE DEVELOPMENT
open pharma
open food
open-source science
open media

NEUROSOCIAL SYSTEMS
personal data auras
cognitively enhanced disciplines
digital body swapping
shared emotional matrix
cognitive self-discipline
brain imaging = reading thoughts: end of Fifth Amendment
neuro-biological Buddhism
Asia: neuro-tech in business
"collective intelligence" as organism
designer aging

DIY MEDICINE
over-the counter medical testing
medical ATMs
music therapy for neurological disorders
"fun" health care

FILTERS AS BRANDS
new search engines: multimedia, social, "human flesh"
urgency filters on drugs
digital labeling & packaging

ALTERNATIVE CURRENCIES
social stock exchange
philanthropy credits
academic recognition/rewards crisis
multi-capital metrics
social networking tools for gift economies
non-zero-sum currencies

SPACE: THE NETWORKED FRONTIER
space as market

TRANSLOCALISM
leaders in recovery: Brazil, South Africa, Vietnam, Rwanda
reverse diasporas
local & translocal alternative currencies
mobile phone minutes as currency
carbon accounting
new global cities
translocal alliances
waste liabilities
new resource-based geo-identities
ubiquitous cubesats
orbital debris

GEOENGINEERING
new flood plain commons
sulphate injection of stratosphere
agricultural waste sequestration

PARTICIPATORY PRODUCTION
mobile fabrication
self-programming materials
mashability = key literacy
a service in every product
preview & redos
big data media
cradle2cradle
clean coal renaissance
people as infrastructure
disappearing hospitals
rooftop farming
international scramble for farmland
governance = environmental management
"Medea Hypothesis"
global conflict over climate goals & impacts
ocean iron fertilization

REPURPOSED INFRASTRUCTURE

SUPERSTRUCTED REALITIES
persistent & unified virtual world
virtual world epidemiologies, medical simulations
"better-than-real" worlds
management consultants for digital pasts
the surveilled state

SERVER FARMS
persistent automated server farms
server farms as political & economic hubs
server farms = new nation states

POST-NEWTONIAN GOVERNANCE
cross-border constituencies
democratic feedback systems
Europe: instant synchronous democracy
mesh citizenship
local civil communities
trust tags
private governance products
neuroscience of governance
supercomputed governance
non-human citizens

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Changing real estate values, shifting patterns of production and distribution, and even changes in health care will leave much of the built environment primed for reinvention. Top structures like to be repurposed: retail buildings, very large manufacturing plants, and hospitals.

Server farms become economic and political hubs

As server farms grow to support supercomputing applications—and as more organizations outsource computing capacity to commercial server farms—the centers where the server farms are housed will grow in importance and impact on local economies, environments, and the Internet itself. As a result, control of these hubs will become a source of economic and even political power.

POLITICS:
A GOVERNANCE RENAISSANCE

Connected consumers become networked citizens

In the 1990s, the Internet connected people to a vast network of commercial services and production information, turning them into so-called "smart consumers." In the 2000s, these same people have become smart networkers, using social networks to leverage their collective interests, whether for fun, for economic benefit, or more recently, for political goals. Over the next decade, we will see them emerge as networked citizens, not just of their communities and nations, but of the planet. They will engage in collective online behaviors to influence both global and local issues.

Cosmopolitanism defines a new common sense

As global mobility increases and the world's population congregates in ethnically diverse urban areas, the global community has taken shape on a scale previously impossible. The result is a growing cosmopolitan ideology—and indeed a new cosmopolitan law as a way to superstruct the multitude of national laws and the too-slow processes of international agreements. This ideology will increasingly find itself doing battle not only with traditional isolationist strategies but also with a new generation of young nationalists, especially in the Global South. It will also need to bridge the gap between cosmopolitan elites, who have traditionally enjoyed the best that geographic mobility has to offer, and a new generation of networked worker cosmopolitans leveraging connections across nations to find commonalities in goals of social justice and ecological security.

Democratic experiments aim at a post-Newtonian governance

As electronic media changes the context for governance, a proliferation of experiments in so-called post-Newtonian or quantum governance will emerge. Rejecting old forms of representative democracy as out of touch with our current scientific thinking, scholars are striving to define what a new post-Newtonian governance might look like. At the same time, practitioners are experimenting with new forms, from participatory budgeting and participatory legislation to citizen juries. Over the next decades, these experiments will likely define surprising new practices ranging from mesh citizenship based on network membership to trust tags that confer trust on strangers to the emergence of the systematically "surveilled state."

Superstructed realities retool governance

As virtual and physical realities become more tightly integrated, as diverse virtual worlds become more unified and persistent, and as many people opt to spend time in "better-than-real" worlds, reality itself will be the object of superstructing. We'll use our experiences in virtual spaces to pretest social experiments and monitor real-world patterns. As we use these multiple realities to organize our lives, governance will increasingly be about designing, managing, and monitoring our experiences across realities.