

EVOLVABILITY

NURTURE GENOMIC DIVERSITY AND GENERATIONAL DIFFERENCE

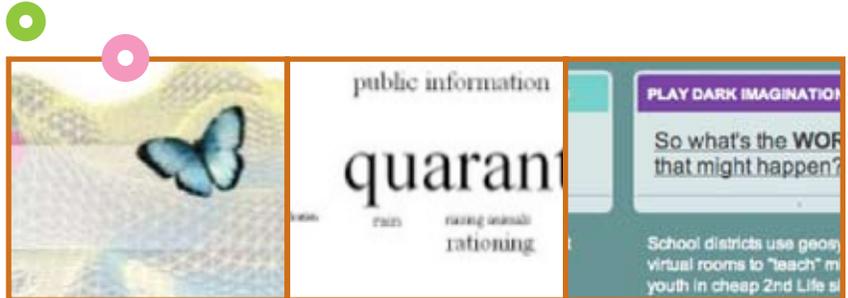


In the world of biology, *evolvability* is the ability to produce enough advantageous variation to allow adaptive evolution to occur. Evolvability emerges when local species achieve enough genomic diversity to discover new, adaptive traits. Multiple genetic variations have to compete for supremacy, making the next generation better suited to survive.

In superstructuring, evolvability is the key to getting stronger and more resilient as networks of people—whether they are corporate organizations or local communities—grow into a new reality. The success of the Internet in diffusing into so many aspects of so many human lives has certainly been the result of just this kind of evolvability. Social networking has extended this evolvability even further.

Perhaps the most explicitly genomic example comes from Pandora's Music Genome Project, which has identified the key patterns that make one piece of music feel similar to another. Recognizing these components, Pandora has superstructured music delivery, producing massively many different music streams and even building communities around these "genes."

Genes undergo millions or billions of mutations for every change that actually improves a species' survivability. In times of rapid environmental change, superstructuring organizations, markets, and institutions means experimenting with massively many minor genetic shake-ups that can compete to bring about the most benefit—over multiple short generations. Instead of seeking stability or reengineering an entire institutional structure in one major overhaul—superstructures gain resilience by promoting continuous cycles of massively many small-scale changes.



HOW TO WORK: EVOLVABILITY

Give others freedom to make independent improvements. The fastest way to discover the next, better generation of a platform or process is to allow multiple agents to experiment simultaneously. Evolution will either occur from the bottom up, as members migrate to the better environment or adopt the more adaptive behavior, or from the top down, as leaders officially endorse the next generation.

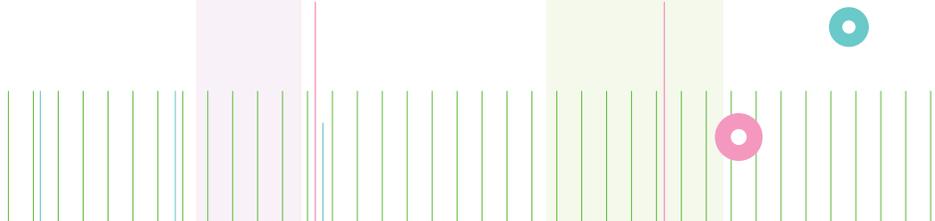
Make the genome visible. Pattern mapping, automated "feature stories," tagging and tag clouds, "whole world" catalogs—all these provide platforms for combining in new ways or mutating in new directions. By making the whole and its components simultaneously visible, you invite informed tinkering: you can't tinker with something if you don't know how it works.

Leverage soft law. The concept of soft law comes from the international community where the process of creating binding international laws is cumbersome and fraught with conflict. Soft law specifically targets evolvability: it aims at changing citizen aspirations, encouraging multiple informal adaptations and ultimately obligating formal governance structures to recognize and honor the best of these adaptations.

Remember—open trumps control. From open-source software and biotechnology development to participatory budgeting, open systems have demonstrated that "many eyes make all problems small." Open systems invite the greater variation and rapid iteration essential to superstructuring the kinds of mass-scale problems posed by the coming decade.



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EVOLVABILITY: WHAT IT LOOKS LIKE



Source: www.structing.com

Several weeks into the Superstruct experiment, a small group of players asked permission to “reconstruct” the community from scratch on a separate website. They wanted to try their hand at recreating the best features of the original Superstruct site, while also correcting usability flaws and adding key missing features. We opened the database and API to them, and after a week of entirely self-organized volunteer development, they had created an extremely high-functioning sub-community called Reconstruct. Although only a small portion of the original Superstruct community migrated to the new site (roughly 1 out of every 100 members), those players ultimately represented the highest functioning sub-community, largely as a result of the rapid organizational evolution they oversaw.



Source: http://superstruct.wikia.com/wiki/Whole_Superstructure_Catalog#Community

In an effort to superstruct the Superstruct game, a few participants mapped the Superstruct “genome.” One player created a “Whole Superstructure Catalog” that not only categorized all the superstructures but also provided direct access to them to overcome some of the search limitations in Superstruct. Another player generated a tag cloud for the game to give a more robust, bottom-up view of all the superstructures.



Source: <http://2019chipsdown.blogspot.com/2008/11/garden-in-cloud.html>

Experiment #1: FREE SPACE

Trial #1: What will you do when space is as cheap and accessible as the Web is today?

PLAY POSITIVE IMAGINATION CARD	PLAY DARK IMAGINATION CARD
<p>So what's the BEST thing that might happen?</p> <p>I linked-up disc of satellites with vast expanding skirts creates the first artificial solar eclipse. by <i>crisischaser</i></p> <p>Incremental resolution of as many legal issues across so many jurisdictions gradually transforms WTO IP team into a unifying global gov't. by <i>lily1984</i></p> <p>Cubehats have so much knowledge about their owner they can converse on their behalf without input making the owner contactable 24/7. by <i>Pigeon-space</i></p>	<p>So what's the WORST thing that might happen?</p> <p>School districts use geosynchronous virtual rooms to "teach" misbehaving youth in cheap 2nd Life sims (A dope them to the gills on earth). by <i>lily1984</i></p> <p>People begin using their outcasts to spot near-by alienoid bodies (like meteors, asteroids etc.) for resources and mine them. by <i>June</i></p> <p>Religions that suppress individuality find new purpose by promoting restrictions like burkas as the new anonymity.</p>

Source: <http://lab.signific.org/>

Building on lessons from Superstruct, IFTF's Sigtific platform for forecasting the future of science and technology has evolved the concept of massively multiplayer forecasting games to include gamelets—small thought experiments that invite players to share very short, Twitter-like ideas in response to a possible future development. Not only are the gamelets very lightweight, minimizing the effort to participate, they create a very rapid and visible map of potential adaptations.

OTHER THINGS TO CONSIDER:

Andrea Wagner's *Robustness and Evolvability in Living Systems*
<http://press.princeton.edu/titles/8002.html>

Richard Dawkin's essay "Evolution and Evolvability" in C.G. Langdon, editor, *Artificial Life, The Proceedings of an Interdisciplinary Workshop on the Synthesis and Simulation of Living Systems*. Addison-Wesley, 1987.

EXTREME SCALE

LAYER MICRO AND MASSIVE SCALES FOR RAPID ADAPTATION



“Collaborate or perish” has become one of the defining calls to action of the 21st century. But one boundary that has proven particularly resistant for collaboration is the boundary between different scales of actors. A defining feature of a superstructure is that it fosters and gives form to collaboration across scales.

Superstructuring works both up and down the scale. *Crowdsourcing* is a catch-all term for reaching down the scale. It outsources tasks traditionally done by a few designated experts to a large undefined and open community. Crowdsourcing harnesses the activities and ideas of people working at small, local scales and uses them to drive innovation at a large scale.

No popular term exists yet for sourcing up the scale. We propose *supersourcing*. Supersourcing taps the activities of institutions or networks that are working at a large scale and links them to smaller local activities—for example, translating Google Earth data into local visions of the future.

Both crowdsourcing and supersourcing engineer participation opportunities at two different extreme scales simultaneously—micro and massive. In both cases, each individual actor is making a micro-scale contribution that many other individuals or groups will also be capable of undertaking successfully on their own. These micro-scale contributions add up to massive-scale collaboration results: collective outcomes that are much larger than any single group or organization could previously have produced.



HOW TO WORK: EXTREME SCALE

Push both up and down the chain of scale. Find actors operating at both smaller and larger scales and invent ways for them to participate in your project.

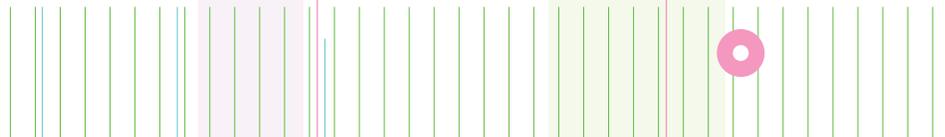
Offer 15 minutes of contribution. Society-wide, we are witnessing a rapid rise in desire to contribute to a larger good. Increasingly, individuals may value a small opportunity to be of service over a small window of personal fame. As one Superstruct player wrote: “Superstruct is my favorite vision of the future, because it’s one I can actually contribute to.” How can your project provide 15 minutes of contribution to someone who would otherwise have no opportunity to engage?

Optimize participation bandwidth for different levels. Participation bandwidth is our individual and collective capacity to contribute to one or more participatory networks—at every level. Design participation at different scales to maximize ability to participate. Groups at smaller scales may have more participation bandwidth to offer, but fewer resources or capabilities; organizations at larger scales may have exactly the opposite combination of availability and capability.

Guard carefully against the “nothing-to-do syndrome.” If you find potential allies, make it a top priority to design concrete actions that they can take on behalf of the superstructure. No offered participation bandwidth should be wasted.



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EXTREME SCALE: WHAT IT LOOKS LIKE



Source: <http://superstruct.wikia.com/wiki/Visitation>

Superstruct, at its core, is an experiment in extreme scale. Its goal was to superstruct forecasting by engaging as many people and organizations in the process as possible. The game site and the game itself were designed to engage people with different amounts of participation bandwidth and different levels of motivation. At a minimum, players were asked to provide a simple profile of their own lives in 2019. The goal of this profile, however, was to engage them in the activity of superstructuring by focusing their attention on real-world skills and networks they currently have. Some players brought extensive networks to the game: for example, the American Association of Museums shepherded dozens of organizations into the game, and leveraging the Superstruct stories, discussions, and superstructures, created a rich vision of the role of museums in the Superstruct world of 2019, including new models of museum visitation, illustrated here. The models themselves superstruct museums by reenvisioning the scales at which they operate.



Source: <http://www.facebook.com/group.php?gid=50607186328>

Social networking is all about leveraging scale, and external social networks played a huge role in engaging people in the Superstruct project. Even before the game was launched, gamemaster Laura Hall launched a Facebook group for Superstruct, which had nearly 1000 members by the time the game actually launched. In fact, Facebook remained a key forum for Superstruct activity throughout the game.



Source: <http://www.indymedia.org/en/index.shtml>

The Independent Media Center is superstructuring journalism by engaging grassroots journalists, supported by a collective of independent local media organizations. Describing itself as a “democratic media outlet for the creation of radical, accurate, and passionate tellings of truth,” it scales from individual journalists to local outlets to what is effectively a global superstructure.

OTHER THINGS TO CONSIDER:

Jane McGonigal's report "Engagement Economy"
<http://www.iff.org/node/2306>

Jeff Howe's crowdsourcing book and blog:
<http://crowdsourcing.typepad.com/>



AMBIENT COLLABORATION

LEVERAGE STIGMERGY WITH ENVIRONMENTAL FEEDBACK

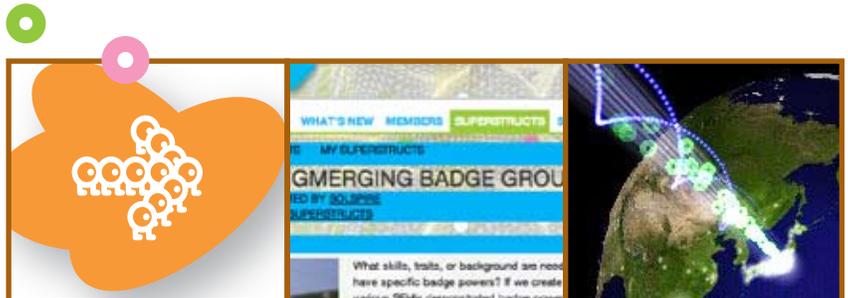


The bigger a collaborative community gets, the more important it is to provide ambient tools that support real-time self-organization—in other words, to design for *stigmergy* in your superstructure.

Stigmergy is a term first coined by biologists and later adopted by network engineers and computer scientists to describe the ability of individual agents in a shared environment to leave trace signals for each other—signals designed to cue collaborative behavior. In social computing environments, stigmergic systems often take the form of text-based data feeds, real-time visualizations, and persistent iconography that help individuals signal opportunities for coordination and cooperation.

Some stigmergy streams are automated, such as activity feeds that publish a complete list of every activity any member of a social network takes. Other stigmergy streams are actively created by users who decide when and what to publish about themselves and their work. Stigmergy can also unfold as a result of special superstructuring agents whose primary task is to “hang out” in the environment and communicate the right calls to action to the most fit collaborators. The total effect of these three kinds of stigmergy streams is to increase real-time awareness of available collaborators, their needs, and their strengths.

In the physical world, stigmergy can serve the same function of supporting collaboration, even at the scale of megacities. Again, the same three possibilities exist: automated streams of context-aware information, bottom-up tagging of environments, and superstructuring agents as diverse as artists and security guards can all increase the potential for collaboration in the great anonymous spaces of urban life.



HOW TO WORK: AMBIENT COLLABORATION

Offer both “blanket” and “opt-in” collaboration feeds. These feeds should include information about location, current activity, skills, and current collaboration needs. One effective approach is to “blanket” the entire community with data, such as with a complete RSS “activity feed” that publishes the real-time actions of every member in the community. Another method is to encourage members to “opt-in” to stigmergy streams from their favorite groups and individuals, such as is the custom on micro-blogging platforms, like Facebook updates, Twitter, and Yammer.

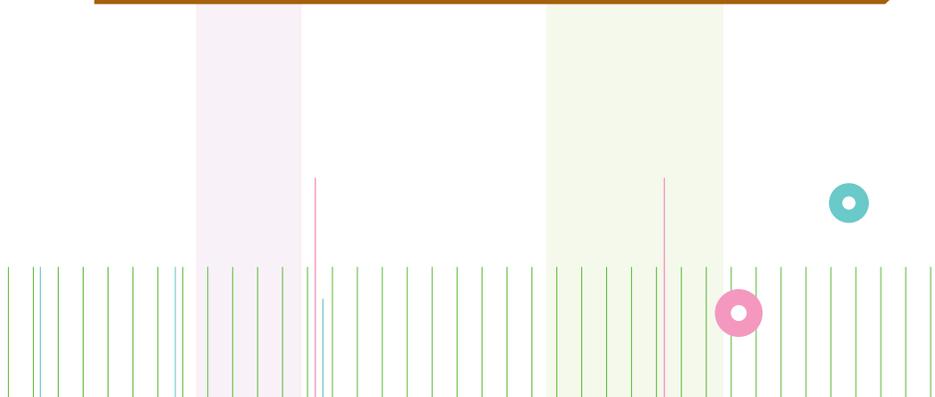
Enlist live superstructure spotters. Their job is to spot opportunities for collaboration and to play collaboration matchmakers. Spotters work locally to connect micro-communities, but they also work across communities with one another to ensure consistency across the entire superstructure. By working directly with your spotters, you can influence the self-organizing tactics of your community without having to directly manage them.

Give would-be collaborators visual tools for broadcasting their personalities, their concerns, their talents, and their resources. Avatars, profiles, and even email signatures can be customized with icons, badges, and other graphic treatments that help others quickly identify who is good at what and how they are willing and ready to contribute. These visuals become part of the “collaborative genome”—which can quickly recombine and reorganize to signal new forms of organization.

Re-envision physical environments to support collaborative tagging. To embed your superstructures in the physical environment, re-envision your environment as infinitely taggable. Create spaces, materials, and morés for signaling shared visions and pressing needs. Allow some of these to be encoded and even secret—and then engage SEHIs in discovering the streams of collaboration they represent.



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AMBIENT COLLABORATION: WHAT IT LOOKS LIKE



Cooperation Radar



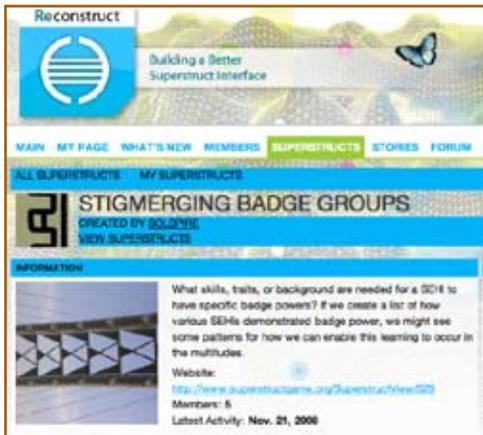
Mobbability



High Ping Quotient

Source: Superstruct, IFTF, 2008

We embedded ten stigmergy agents, or collaboration guides in our Superstruct network. Their primary mission was to spend as much time as possible logged into the social network to communicate real-time calls to action and to publish weekly updates around emerging trends and upcoming collaboration opportunities. The guides also had the ability to add any combination of ten “collaboration superpower” badges to individual player profiles. These visual badges were designed to help players spot particular collaboration strengths in one another as they browsed the database of super-empowered hopeful individuals.



Source: <http://struct.ning.com/group/superstructview526>

The superstruct community grew bigger, and faster, than we had expected, topping out at over 7,000 members and more than 500 superstructures in less than six weeks. In order to effectively manage the flow of ideas and participation, our players built their own bottom-up ambient collaboration systems on top of what we had developed. These included:

Facilitators: “What we need are people to search through the superstructures others are creating, looking for ways to work together, and then get the parties in contact with each other.”

Jobstruct: “There are growing numbers of individuals. We want to help place them at Superstructures that match their skills and interests quickly and efficiently.”

SuperSearch (Superstruct Search): “Data mining chat logs, Blog-Struct, the Superstruct wiki, the Superstruct site, SEHI profiles, and (soon) JobStruct to visualize Superstruct organization.”

Stigmerging Badge Groups: “Analyzing the skills needed to develop collaboration superpowers. When we create a list of how various SEHIs have demonstrated superior powers, we might see patterns for how we can enable the development of these skills.”

These “meta superstructures” became essential to the daily operations of the Superstruct community. Without them, it is likely that allies would not have found each other and like-minded ideas would have been lost in the “noise” of so much participation.



Source: <http://ocarina.smule.com/>

Smule's Ocarina application for the iPhone not only turns your phone into a musical instrument that you can use to jam with others in the same room (see all the YouTube videos), but it is also a stygmeric device that provides real-time visual and audio feedback from around the world—sharing music of one Ocarina musician at time, mapped to the globe.

OTHER THINGS TO CONSIDER:

Mark Elliott's blog on Stigmergic Collaboration:
<http://stigmergiccollaboration.blogspot.com/>

Real-time global mapping of Twitter tweets:
www.twittervision.org

“True Skill” game feedback for matching Xbox Live players:
<http://support.xbox.com/support/en/us/xbox360/xboxlive/playxboxlive/matchmaking/matchmaking.aspx>

REVERSE SCARCITY

USE RENEWABLE AND DIVERSE RESOURCES AS REWARDS



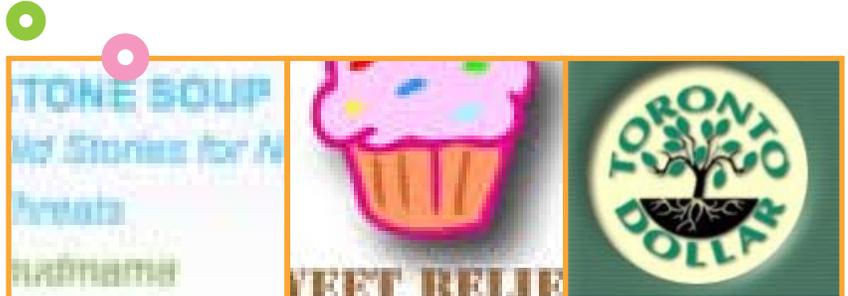
Scarcity of resources has shaped much of the current institutional landscape worldwide. Superstructuring creates reverse scarcity by leveraging a diversity of values and rewards and focusing on renewable resources.

In any community, different members value different rewards. In the massively connected world of superstructures, these may include social network access, increased reputation, performance feedback, intellectual property access, micro-payments, the promise of future participation bandwidth, public gratitude, fame, or recognition. Instead of competing for equity, superstructuring expands the definition of equity to include these diverse values.

For example, one way to reverse scarcity is to create new measures of every possible reward. Bernard Lietaer, a leading expert on community currencies, argues that in order to offer a useful alternative to traditional money currencies, you simply need two things: a standard of measure and a medium of exchange that is more efficient than bartering. Thus, “100 mental hours” could be a concrete measure of participation bandwidth; those hours could be banked in the superstructure so that individuals don’t need to trade one-to-one for any specific 100 hours.

Key superstructuring resources are also infinitely renewable. Satisfying emotions like *fiero*—the pleasurable combination of dopamine and adrenaline produced when we succeed at a difficult challenge—can be produced reliably, and at little cost, by challenging people and providing an objective measure of success. Social capital is subject to the law of increasing returns: it tends to grow exponentially.

There’s no need for any scarcity of potential pay-offs in a superstructure. By diversifying the rewards and emphasizing renewable rewards as much as possible, superstructures create win-win scenarios on a massive and previously unthinkable scale.



HOW TO WORK: REVERSE SCARCITY

Increase your social capital.

Social capital is a measure of the *good will* and *community trust* you develop when you do things for the better good—or in service of others. Social currency is most often cashed in with a community call to action; it’s a bit like calling in a favor, but on an extreme scale. Social currency is often a more powerful method of provoking participation and support than financial compensation.

Use improved reputation, rather than financial compensation, as a scalable reward. Cognitive scientists recently demonstrated that getting a good reputation is processed by the same part of the brain that registers monetary reward—and that the stimulation is equally powerful. Instead of increasing your budget, give away status in the form of honors, awards, elite status, and reputation metrics.

Create egalitarian opportunities for success.

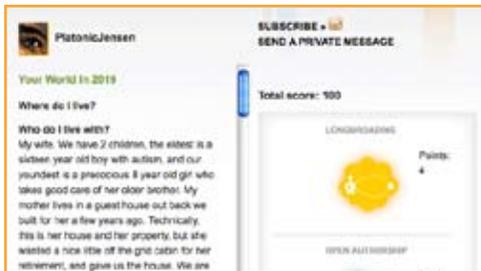
Don’t set an artificial cap on success. Instead of having contests or promotions that recognize the success of only a few, create “levels” of success that everyone can achieve on their own schedules.

Enable multi-capitalism. Don’t try to funnel all compensation and reward through a single form of currency. Encourage superstructure members to suggest exchange rates across different kinds of capital. Consider using multi-capital facilitators to set standards, enable fair trades and maximize win-win outcomes.



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REVERSE SCARCITY: WHAT IT LOOKS LIKE



Source: Superstruct, IFTF, 2008

In Superstruct, a diverse set of rewards offered chances for everyone to succeed. Beyond the immediate payoff of seeing their stories and ideas tally up on a collective scoreboard, individual contributions could receive raves, superpower badges, super badges, and even celebrity honors. In addition, superstruct members could build their social capital by joining other members' superstructures. A SEHI directory displayed profiles of all the members, making their contributions and awards visible to themselves and the community.



Source: <http://www.studiomudio.com/web/superstruct/p2p-badges.html>

In spite of our efforts to create an open reward system in Superstruct, an artificial reputation and reward scarcity emerged. We intended to use badges as an unlimited potential resource for rewarding outstanding contributions and increasing individual SEHI reputations. But we were relying on just ten community guides to award badges to a community of thousands. Although the actual resource wasn't limited, our ability to put the resource into circulation was extremely limited. Our SEHIs independently proposed a way to reverse this scarcity: they formed their own superstructure within the game, tasked with awarding badges to deserving players who had gone unrecognized by the official badge-givers. They even invented their own "P2P"—or peer-to-peer—badges to augment our initial set, collectively putting more reputation rewards and *fiero* into community circulation.



Source: <http://www.torontodollar.com/content/links.php>

Alternative currencies are superstructures that, by definition, use diverse (and often renewable) resources. A strong alternative currency movement is emerging in response to the current economic downturn, but these experiments extend beyond stop-gap measures to include real efforts to rethink how to capture value, extend individual equity, and enrich local communities. Toronto Dollar is an example of one type of alternative currency, the local exchange trading system (LETS). By exchanging Canadian dollars for Toronto dollars, local citizens and merchants invest 10% of all spending in community projects.

OTHER THINGS TO CONSIDER:

Online service to measure and track happiness:
<http://happier.com>

Bernard Lietaer's *Community Currencies: A New Tool for the 21st Century*
<http://www.transaction.net/money/cc/cc01.html>

"Processing of Social and Monetary Rewards in the Human Striatum," by Keise Izuma, Daisuke N. Saito, and Norihiro Sadato
10.1016/j.neuron.2008.03.020

"For Love or Money: A Common Neural Currency for Social and Monetary Reward," by Rebecca Saxe and Johannes Haushofer
Neuron, Volume 58, Issue 2, 24 April 2008, Pages 164-165

ADAPTIVE EMOTIONS

CONFER EVOLUTIONARY ADVANTAGE WITH AWE, APPRECIATION, AND WONDER



Neuroscientists have discovered that key positive emotions—such as awe, appreciation, and wonder—confer evolutionary advantage because they increase our ability and propensity to serve the common good.

Whenever we witness or directly engage in pro-social behavior, we produce opiate-like neurochemicals that relax us and amplify our cooperative tendencies. Dopamine levels spike, for example, whenever we see someone smile, laugh, or express gratitude. And dopamine has been shown to spur collaboration by increasing creativity in problem-solving and reducing social anxiety. Meanwhile, oxytocin is produced when we synchronize our behavior with others. Oxytocin has been shown to make us more likely to trust someone and to be more generous with our resources. These chemicals not only make us *feel* good—they help us *be* good.

Extreme-scale cooperation provokes more intense positive emotions. When we recognize with pleasure that we are in the presence of something much bigger than ourselves, we experience “pilo-erection,” or goosebumps. This is our limbic system’s positive response to awe and wonder—an intense physiological reaction that shifts our frame and helps us focus on the larger, common good.

As evolutionary psychologist Dacher Keltner puts it, “Evolution has produced a mind that evolves toward an appreciation of the vastness of our collective design, and emotions that enable us to enact these loftier notions. We are wired for good.” By deliberately stimulating these highly adaptive emotions in ourselves and others, we are tapping into our neurological hard-wiring for good. When our positive emotions are provoked, our brains and bodies are primed to superstruct.



HOW TO WORK: ADAPTIVE EMOTIONS

Cultivate a high *jen* ratio.

Evolutionary psychologists use the Chinese word *jen* to describe simple, selfless interactions that express a sense of humanity toward others, such as congratulating someone or offering a helping hand. The more acts of *jen* in a given environment, the higher the *jen* ratio and the more stimulated we are to trust and collaborate. Create environments that are as “positive-feedback rich” as possible. Give your Superstruct members as many different ways to directly express their support, gratitude, appreciation, and care to one another.

Unleash your *vagal superstars*.

The choked up feeling we get in our throats when we are particularly moved is the result of vagus nerve stimulation. Psychologists have demonstrated that certain speakers, writers, artists, and leaders are particularly effective at triggering the vagus nerve, which leads to feelings of awe and wonder

in their audiences. Identify your vagal superstars and give them opportunities to provoke extreme-scale positive emotion among your superstructure members.

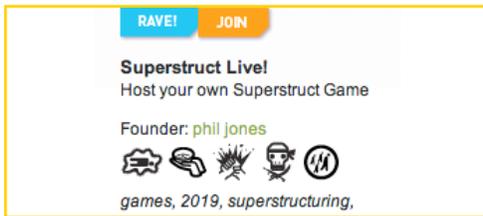
Develop your positive emotional radar.

Martin Seligman, a leading researcher of positive psychology, argues that our emotions have evolved to serve a powerful survival purpose. Positive emotions such as love and hope alert us to potential win-win scenarios and signal us to adopt a cooperative strategy. Negative emotions, such as fear and jealousy, alert us to likely win-lose scenarios and signal us to defend and compete or to cut our losses and escape. In this way, emotions can serve as a kind of intuitive game theory that we can use to guide our decision-making. We can learn to gauge prevailing emotions and use them as signals that we are heading in a more or less cooperative direction—and then decide whether to stay or change course.



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ADAPTIVE EMOTIONS: WHAT IT LOOKS LIKE



Source: Superstruct, IFTF, 2008

In Superstruct, players were invited to “rave” ideas and comments that they appreciated. Raving was as simple as clicking a button; raves were tallied up and totals displayed next to every story and discussion. Unlike many Web 2.0 sites, there was no “anti-rave” feature. By limiting participants to positive feedback or no feedback, the Superstruct community developed an extremely high *jen* ratio that stimulated positive emotions and increased the overall trust among participants.



Source: Superstruct, IFTF, 2008

To provoke adaptive emotions from the start, we created a series of six video trailers, each featuring the powerful combination of music, imagery, moving text, and fast-paced editing that is well-known among positive emotion researchers to be one of the most reliable ways of stimulating the vagus nerve. These trailers served to cue potential players that Superstruct was an opportunity to participate in something bigger than themselves, and to shift their mindset toward higher levels of cooperation and collaboration.



Source: Shepherd Fairey, 2008

Evolutionary psychologist Dacher Keltner points to Barack Obama as the biggest “vagal superstar” of our generation. The effectiveness of Obama’s campaign rested largely on the willingness of people who didn’t ordinarily participate in the political process to get involved. The videos, speeches, and art associated with Obama’s campaign were well known to stimulate the vagus nerve of even the most cynical or apathetic crowds—tapping into their hard-wired instinct to work for a cause larger than themselves.

OTHER THINGS TO CONSIDER:

Dacher Keltner’s *Born to Be Good: The Science of Meaningful Life*:

<http://www.wwnorton.com/catalog/winter09/006512.htm>

Martin Seligman’s Authentic Happiness website:

<http://www.authentic happiness.sas.upenn.edu/Default.aspx>

AMPLIFIED OPTIMISM

LINK AMPLIFIED INDIVIDUALS AT MASSIVE SCALES



Super-Empowered Hopeful Individuals, or SEHIs, are the bottom-up engine of any superstructure. SEHIs are network natives who feel more than just optimistic about the future. They feel *personally capable* of changing the world for the better, thanks to Internet technologies that amplify and aggregate individual ability to contribute to global-scale outcomes.

Superstruct scenario director Jamais Cascio coined the term SEHI in 2008, after witnessing an explosion of bottom-up, citizen efforts to tackle problems like climate change and pandemic outbreaks. (SEHIs are counterpoints to the super-empowered angry individuals that many military analysts see as the real threat of the coming century.)

Using online, mobile, do-it-yourself, and crowdsourcing technologies, SEHIs invent, spread, and track the progress of their own world-changing missions—without the assistance or permission of traditional humanitarian organizations. They combine individual skills and talents into a broader social network capable of both collective intelligence and collective action.

Small bands of well-connected SEHIs may be able to do more good with smaller numbers and greater speed than large, traditional organizations that move more slowly, or adopt a more cautious attitude toward risk. But without any top-down organization at all, Cascio warns, SEHIs can wind up impeding or simply duplicating each others' efforts—or biting off more than they can chew. To harness their own super-empowered hope, SEHIs need more than just grassroots amplification. They also need institutional and large-scale organizational amplification to augment their bottom-up optimism with experience, reach, and resources.



HOW TO WORK: AMPLIFIED OPTIMISM

Turn your colleagues, constituents, and customers into SEHIs. Jump-start your superstruct community by helping others adopt a SEHI mindset. Create forums, like wikis or Twitter streams, where individuals can share and develop their SEHI identities. Pose questions that encourage them to respond with information about their unique skills, abilities, and resources for the next decade. Provide feedback systems that clearly show their collective resources—graphs and charts or animations that show how their personal skills are amplified by those in their network. Then ask them what they can do with that amplified ability that they can't do alone.

Look for ways to amplify SEHI missions. SEHIs are a new kind of *self-identifying, self-initiating* stakeholder. They are willing to “opt in” to your mission despite having no previous institutional affiliation or organizational allegiance. You should be constantly scanning

for SEHI missions that align with your own—missions that you can augment and amplify to create a potential innovation and participation pipeline for your own projects. Whatever your mission, it will be better served when massively more individuals decide to accept a stake in it.

Aim for massively many returns-on-investment. Amplified optimism can lead to a higher and faster return-on-investment (ROI) for everyone in your network. Define multiple measures of ROI that match the expectations of your SEHIs—which almost always range far beyond traditional bottom lines. Find ways to link the personal capabilities in your SEHI networks to these measures. By practicing amplified optimism with as many individuals, groups, and organizations as possible, you can discover new common areas of long-term investment and pool resources to get bigger results, faster.



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AMPLIFIED OPTIMISM: WHAT IT LOOKS LIKE



Source: Superstruct, IFTF, 2008

Real-time metrics are an important way to both track and amplify network activity. In particular, a continuously upward-bound score signals positive progress and generates an appetite for more. For Superstruct, we designed a real-time scoring system that measured players' participation in terms of how many years they were adding to the human survival horizon. It was explicitly hopeful: "The higher each number gets, the better our future will be." It was also implicitly super-empowering: "How high will the Superstruct score go? It's all up to you."



Many Superstruct players ended the game wondering, optimistically, if they could translate their best ideas into real-world action. We wanted to amplify their optimism with expert feedback from aspirational figures. Drawing on IFTF's extended network of affiliates and allies, we brought together a team of ten real-life superstructuring specialists to write "fan letters" to the creators of their favorite superstructures. In their letters, the experts gave rigor to the players' optimism, identifying which aspects seemed warranted and which deserved more scrutiny, as well as providing key ideas for testing and developing their superstruct strategies further.

Jimmy Wales on Trustnet: "I loved this idea and the way you fleshed it out! ... Once I have my Trustnet tag, and once my friends have theirs, we might end up using them in all kinds of innovative ways that none of us can think of today."



Bruce Sterling honoring TerraPerma: "Forget the ancient 'think global, act local' ... Redeem the planet by becoming inherently planetary."

Tara Hunt on The Exchange: "The exchange of favors and the basic needs of people is an incredible way to unite community and ensure collaboration towards a better future. Great use, also, of geo-tagging and mesh networks. HUGE Whuffie points to you!"



Source: www.un.org/millenniumgoals/

The Millennium Development Goals, agreed to by all the UN member countries and major development institutions set very aggressive targets for 2015—and have galvanized "unprecedented efforts to meet the needs of the world's poorest." Cascio has suggested that these could be a checklist for an emerging group of self-defined SEHIs using the network technologies to carry out socially beneficial actions at a scale that would have required the resources of a large NGO or business in decades past.

OTHER THINGS TO CONSIDER:

Jamais Cascio on "Super-Empowered Hopeful Individuals":
http://openthefuture.com/2008/03/superempowered_hopeful_individ.html

"Amplified Individuals, Amplified Organizations"
by Jane McGonigal and Mike Love:
<http://www.iftf.org/node/2604/>



PLAYTESTS

CHALLENGE EVERYTHING AND EVERYONE IN FUN, FIERCE BURSTS



In a time of major institutional upheaval, play may seem to be the last strategy you would want to adopt. But as the Superstruct strategies for adaptive emotions and amplified optimism suggest, the positive emotions that result from play may be the most effective way to mobilize collaboration and inspire innovation.

One Superstruct player put it best: “The only way to study a structure is to test it.” Superstructures develop and work differently from other kinds of organizations—so they need to be tested and challenged every step of the way. *Protovation* and *playtesting* are two key ways to prepare for and discover the capabilities of a new superstructure.

“Protovation” is prototyping in rapid, iterative cycles. It’s one of the most important Superstruct practices because it allows new structures to fail quickly and cheaply, so its participants learn faster. Protovation lowers the risks that come with innovation.

One way to master the art of protovation is to develop a playtesting culture, which, to date, has been practiced most effectively by the game development industry. There, the rule of thumb is: playtest with a large *beta* community no later than 1/3 of the way through your initial budget and development schedule.

Playtesting can continue throughout the life of a superstructure, through fun “proof-of-concept” demonstrations that challenge the network’s capabilities. By presenting tests as game-like missions or challenges, you can push your Superstruct members to try harder and raise their own expectations of what is possible. Playtesting, done well, also embodies many of the Superstruct strategies—it leverages adaptive emotions, amplifies optimism, builds in evolvability, and experiments at multiple scales.



HOW TO WORK: PLAYTESTS

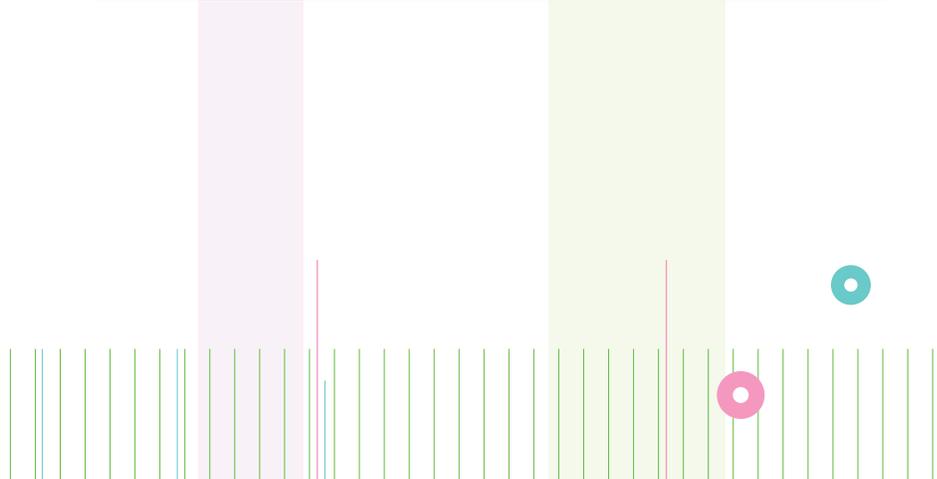
Plan for failure early and often. Pursue a low-risk course by conducting multiple, low-cost experiments. Challenge your assumptions about what will work with early playtests. Make low investments at first, and expect that most experiments will fail. Only funnel significant resources toward things that are working. (You can also share the risk by engaging your network in micro-investments.)

Launch open proof-of-concept demonstrations. To test your new superstructure, invent and attempt a task that would have been previously inconceivable. Then invite everyone else in your superstructure to do the same. Make sure you can objectively measure whether or not you have succeeded. Create a central wiki or database for reporting successful demos and gathering feedback on those that failed. Be open to discovering new capabilities from the bottom-up.

Use awe-inspiring challenges, with metrics, to get seemingly impossible things done. Asking a community to do something that is clearly possible often inspires less passionate participation than asking them to do something that is, on the face of it, impossible. Intentionally design challenges that seem out-of-reach. A clearly stated epic goal, presented with amplified optimism, has an unparalleled motivating force. Be sure to develop metrics that can be updated regularly to show superstructure members that progress is being made, even if the final goal is still a long way off.



TEN-YEAR FORECAST
Perspectives 2009
www.iff.org



PLAYTESTS: WHAT IT LOOKS LIKE



Source: <http://ponyexpressions.blogspot.com/2008/10/new-ponyexpress-small-parcel-delivery.html>

Our SEHIs designed their own playtest challenge: a SEHI-to-SEHI relay to deliver three physical objects from the East Coast of the United States to the West Coast, without using any official delivery or postal services. Although they ultimately failed to meet this highly aspirational goal, they learned a lot along the way as they debated different strategies and identified gaps in their network capabilities. The online record of this attempted playtest, including videos, stories, blog posts, and discussion forums, serves as valuable feedback on the current and potential capabilities of the Superstruct network.



Source: www.lab.signtific.org

At IFTF, we learned this lesson a bit of the hard way. Before we launched Superstruct, we made our best guesses about what players would want to do and the tools that they would need. We invested most of our budget in building those tools before we invited anyone to participate. In our next big project, Signtific, we actually re-thought the forecasting game altogether, replacing the big game platform with a series of gamelets. We playtested these gamelets several times, but the gamelets themselves are, in effect, playtests of innovative ideas.



Source: <http://agilemanifesto.org/>

Agile software development is a set of development methodologies (and tools) that embody the principles of playtesting, even though they do not use games per se. A key principle is to offer working software frequently—every couple weeks to a couple months. This strategy leads to larger changes in the way organizations work together—changes that look a lot like superstructuring.

OTHER THINGS TO CONSIDER:

Basic tutorial in game design and playtesting:
The Game Design Workshop, by Tracy Fullerton

Playtesting as a way to address larger social issues, like sustainability:
http://www.sustainabilityed.org/who/our_mission/index.html
<http://sustainability.publicradio.org/consumerconsequences/>

