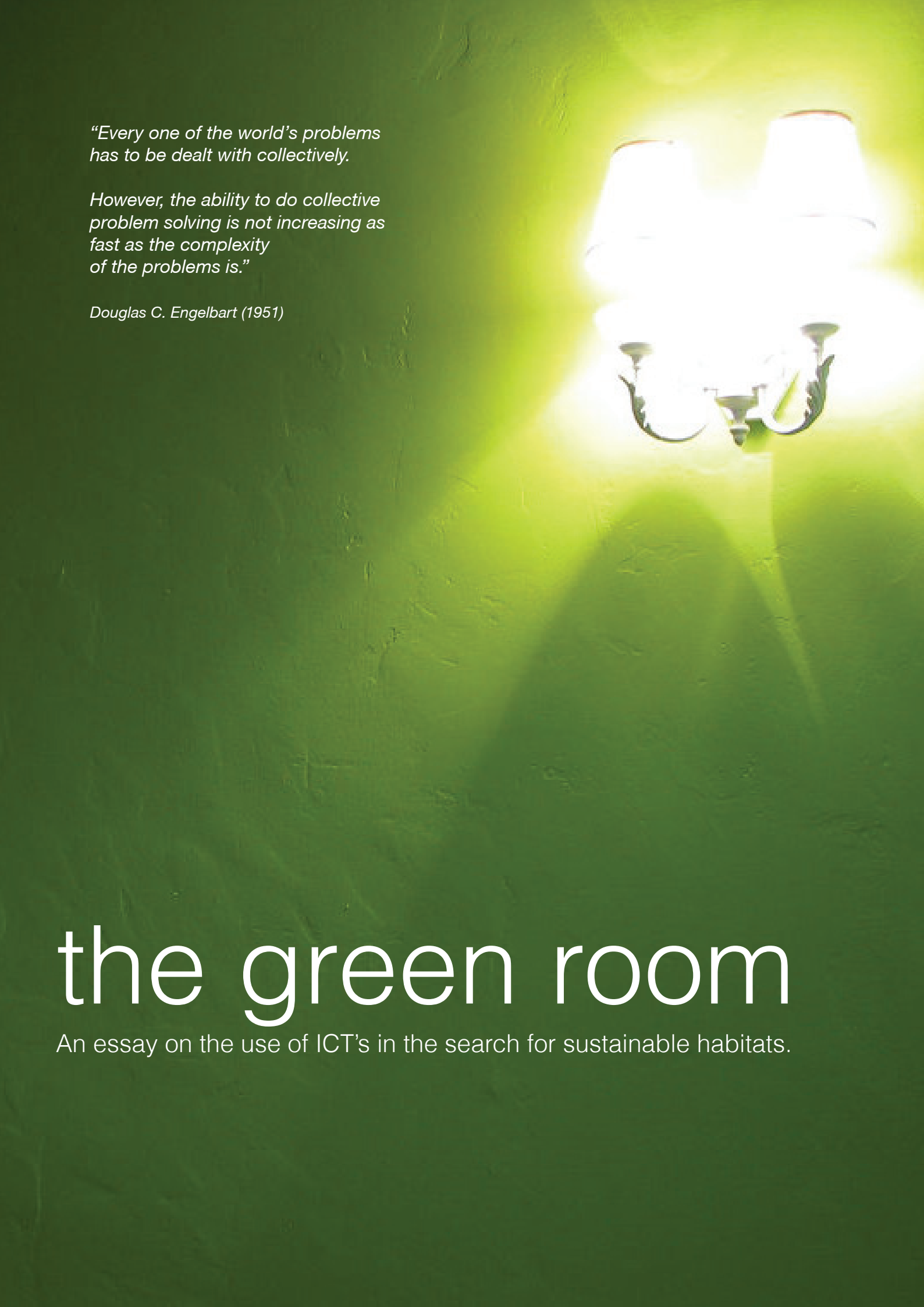

“Every one of the world’s problems has to be dealt with collectively.

However, the ability to do collective problem solving is not increasing as fast as the complexity of the problems is.”

Douglas C. Engelbart (1951)

the green room

An essay on the use of ICT’s in the search for sustainable habitats.

by Erik Berg
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The 20th century was full of contradictions. During the same century as man reached new heights in his ability to tame and use large amounts of energy, applied new sciences to leverage his welfare and made the shift to representative democracy, he also started two world wars, and continued to put ever greater pressure on the biological systems viability. Man gave the impression that he was tossing with powers he was not yet ready to handle.

Our society has constantly become more and more complex. Our cities are built on a growing number of dependencies, layers of infrastructures, stretched supply chains and evermore intricate product life cycles. However, the tools we use to facilitate administration, participation and governance has a very limited scalability. This relationship led urbanist **Jane Jacobs** to the following observation in her seminal work Death and Life of Great American Cities (1961):

> "...urban administrative organization has failed to evolve at the same rate as urban size and complexity. ... an administrative system that has lost the ability to understand, manage and evaluate an infinite number of vital, unique, intricate and interlocking details" (translated back from swedish)

For a long time this seemed to be an almost unsolvable paradox. There was a growing understanding for the need of holistic and integrated approaches in the 60s and 70s, but most attempts at creating a more adaptive and inclusive government failed due to the lack of efficient enough tools. Instead both private enterprises and public departments continued to focus on their particular corners of the universe – vertically organized as downpipes – each one further becoming an expert in his field, but less and less aware of the great picture. Science as well as politics retreated back into well-known Descartian habits of reductionism.

Around the same time as Jacobs book hit the shelves, inventor and computer scientist **Douglas C. Engelbart** was in the midst of preparing a paper to the American Air Force Office of Scientific Research, titled Augmenting Human Intellect: A Conceptual Framework. Engelbart started off

with the same observation as Jane Jacobs:

> "Man's population and gross product are increasing at a considerable rate, but the complexity of his problems grows still faster, and the urgency with which solutions must be found becomes steadily greater in response to the increased rate of activity and the increasingly global nature of that activity."

In his visionary paper Engelbart proposed a solution to this dilemma. Drawing inspiration from the american linguist **Benjamin Lee Whorf**, he argued that at any time in history human intelligence and thinking is limited by *the depth and width of our language*. And our language in turn is limited by our means for *symbol structuring*, i.e. how we are able to store, manipulate and interact with information. He exemplified this with tying a heavy brick to a pencil. Imagine, he said, that mankind would have evolved in a less favorable environment, were this was the most efficient tool for writing we were able to develop. As a consequence our use of symbols – and with that our thinking – would have been equally cruder.

Engelbart argued we need to enhance our "individual and collective intelligence" in order "to gain a useful degree of comprehension in a situation that previously was too complex". The way to do this was through "the digital computer as a tool for the personal use of an individual", that in time would enable a "network augmented intelligence". Engelbart got his funding and went on to invent the computer mouse and developed a number of other concepts central to modern personal computing and the Internet, such as the hyperlink, video conferencing and groupware tools.

Since then the millions has built upon what was created by the thousands. The latest wave of what is popularly deemed web2.0-technologies is standing on the shoulders of giants. And the tools that are now beginning to emerge enable us to truly engage in problem solving through holistic and collective approaches as well as new levels of participation and collaboration around other complex tasks. We are already way beyond what Engelbart and his team in the 60s could imagine in their wildest dreams.

This is itself food for thought.

The toolbox available today can be used to bring together actors, stakeholders and civil society around our collective challenges, sustainable

development being the most urgent one. We can mash up data from different sources – such as state and municipal departments – to visualize the interdependencies between different areas, and then present the results in any number of views, as diagrams, maps, tables, flow schemes, trend graphs, link trees etc. We can bring every issue on debate in the city council on the table for open discussion and even open voting, we can break old and contra productive barriers between service provider and user, we can revitalize local communities through enabling isolated neighbors to find each other on the net, and so on…

Later in this article we will check in on a more comprehensive list of the tools available and what they enable us to do, but first we shall dwell for a while on why – at all – we should do all this. What's really so important and useful about participation and collaboration?

What we could learn from Linus

In 1991, the same year as **Tim Berners-Lee** began to install the World Wide Web on the Internet, **Linus Thorvalds** released the first kernels of what was to become Linux, the now well known open source operative system. Linux was not in any way the first open source software, but it was the first to be developed on such a grand scale. In the years to come its growth came as a surprise to almost everyone. Literally thousands of developers scattered all over the planet contributed, resulting in an efficiently written, comparably stable and continuously evolving operating system that could very well compete with - and even beat - proprietary products, such as Microsoft Windows. But what was even more astonishing: this was all done without any central organization or any paid full-time developers.

In his widely entertaining essay The Cathedral and the Bazaar **Eric S. Raymond** analyzes the success of Linux and concludes that it had to do with instant rewarding: "Linus was keeping his hacker/users constantly stimulated and rewarded—stimulated by the prospect of having an ego-satisfying piece of the action, rewarded by the sight of constant (even daily) improvement in their work."

The mere number of developers gave Linux an advantage over proprietary systems with paid developers, as Raymond summarize in a now classical

thesis: "*Given enough eyeballs, all bugs are shallow.*" He goes on:

> "Linus demurred that the person who understands and fixes the problem is not necessarily or even usually the person who first characterizes it. "Somebody finds the problem," he says, and somebody else understands it. And I'll go on record as saying that finding it is the bigger challenge."

In a way this represents a turning point in history. The community of Open Source developers demonstrated a working model for decentralized collaboration around complex problem solving. And maybe for the first time ever was it possible to find an absolute positive relationship between the number of participants and the outcome. *The more chefs, the better the soup.*

This powerful – yet counterintuitive – idea took hold way beyond the realms of program development. One of the more influential projects based on the same line of reasoning is Wikipedia, the free online encyclopedia with – at the moment of writing – 2.8 million articles, over 9 million registered and around 200 000 active editors – this being only in the English version.

Internet theorist **Kevin Kelly** has noted that "If you think about Wikipedia, it was impossible in theory, but it turned out it was possible in practice." This is something that was often said from a conservative perspective about representative democracy as well before it was established as a fact. As it turns out people develop a sense of responsibility when they are invited to participate, they *grow with the task*. The open source philosophy carries with it a particular *ethos* - sharing of information, encouraging others to improve it – just as democracy itself implies a particular ethos in its people. The *destructive protest* is the tool of the powerless – a last resort – where as the more constructive *counter proposal* is the tool bestowed to someone him/herself allowed to participate in the decision making.

Wikipedia works because the entry bar is lowered to a minimum. The doors to participation are swung wide open. Anyone may add his or her small piece to the project. It may be correcting a misspelled word, revert an article to a previous version or adding a lengthy article on a new subject. The levels of participation are many. As with global sustainability

it works perfectly well to live by the thesis *think globally, act locally*. The point is: however you contribute, it *feels* good, as a contributor you are instantly being rewarded with being part of creating something *useful* and *beautiful*.

In its essence Wikipedia and any other wiki system can be described as a *system for negotiation*. Every page in a wiki is an ongoing negotiation, reflecting the currently standing consensus – or standstill – on the subject at hand. Behind what is displayed as the official article the user can always jump to the discussion page or the history page to follow up on the underlying debate between contributing editors, as well as comparing the current version of the text to previous versions. In fact, this means that the best articles may sometimes even be the ones on heated subjects, where thousands of edits have been made back and forth. What remain in the version on display are only such things that both sides can accept as facts.

A similar user driven project is Open Street Map (OSM). The aim of the OSM-project is to *map the entire world*. Bold enough. The reason for this neck-breaking crusade being that much of the geographical data held by municipalities and private organizations are not free to use. The mapping is all done through the participation of volunteers – or rather, users, since the contributors themselves can use the data gathered to make analyses and build applications. It is all going quite well. In some areas in Europe and United States OSM is now up nose to nose with municipal datasets, whereas in some third world countries OSM maps of sites such as informal settlements are the only maps that exist at all.

The history behind OSM is rather one of *emergence* than of *planning*, since it really builds upon a number of previous open source efforts; the development of free spatial databases (such as PostGIS), free Web Map Server Software (such as GeoServer), and a free client to display maps online (OpenLayers) . Each one of these projects was initiated with its own purpose, but together they all established the necessary infrastructure for OSM to emerge upon. And while each one of the underlying projects had a couple of hundreds active participants, OSM, oriented as it is around something much more accessible to the public than program coding, grows much more quickly: last year (2008) the number of regular contributors quadrupled to 20 000.

GeoServer

We saw previously that a wiki is a system for negotiation around content.

To that we may add that a Wiki is also – like any open source platform – a way to *distribute the workload* - the result being an enormous increase in productivity.

When media becomes conversation

Wikis is one of the powerful new tools that enable us to augment the "collective intelligence" that Engelbart went looking for in the 60s. There is no reason why its power could not be used to influence or fundamentally improve/change governance and decision making as a whole. When it comes to the issue of sustainable development, the Habitat Agenda and other documents are very clear about the central relevance of a broadened participation and more holistic approaches. And wikis facilitates both. It does perhaps not in an instant pave the golden and trouble free road to a full fledged direct democracy, but it does away with a lot of bad excuses and creates a completely new set of opportunities.

As we've seen, wikis are tools for *negotiation* and *distribution* of the workload, but they are not the best tools for *conversation* – debate and discussion being a vital part of a living democracy and broadened participation. Luckily there are other tools that have been just as – or even more – enhanced by the wave of web2.0-technologies: social media; social forums, blogs and microblogs.

As the name implies social media differs from mass media. Whereas mass media was fundamentally a *monologue* from *few to many*, or a conversation with a very high quota between participants and bystanders – and a high entry bar to that conversation – social media instead allows for a conversation from *many to many*, with practically no entry bars at al. As the conversational space is no longer limited and the distribution cost approaches zero, anyone can become his or her own publisher. A new blog is born every second.

Again, this does not mean that social media does not come with problems of its own, but a significant number of these are successively being ironed out. For instance some have feared that the lack of editors will turn social media into a pudding where the small bits of quality gets lost in the massive jelly of the mediocre. As it turns out, this is not what happens. Instead aggregation services such as Digg, Technorati and Swedish Knuff.se provide the same – user-generated – value sorting as the traditional editor. Search engines rate content based on both historical rankings and

the number of incoming links – a good indication on quality and originality. Still, of course, the reader must herself know and chose where to start looking. In that sense it does not differ from the market segmented world of mass media.

Without going into much technical detail it's worthy to note that the emergence of social media and services built upon it was made possible through the separation of content from presentation. This allows content to be tagged, indexed, broadcasted, aggregated, mashed-up and re-presented in new contexts, mixed with other sources. In theory this means that I as a reader can "zoom in" on relevant content from almost any angle. Say for instance that I'm looking for information grouped around a particular geographic place. As more and more of the published information get a geographic tag (the geoweb – information tagged with a geographical location – added another 300% in 2008) I can use a tool such as Google Maps or GeoTwitter to find the information based on distance from the point I pick. Within the returned result I can then do a further sorting based on topic, search term, media type, authors reputation etcetera. Without much programming knowledge building complex combinations of services and searches like this can be done with Yahoo Pipes. As I zoom in and build my view I have in fact created a new and unique channel, which in turn can be turned into a broadcast and aggregated in another service.

In this way, if I was to run a website on participatory planning in my home town, Gothenburg, I could automatically aggregate all published content related to the topics *environment*, *architecture* and *urbanism*, for instance, within a 50 km radius of Gothenburg – and show it as a feed on my website.

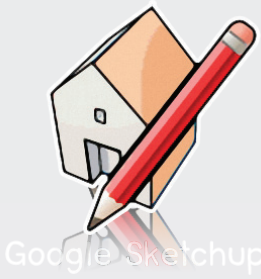
Professional challenges in the age of augmented amateurs

The rise of social media causes a shift in mass media. Who is the real journalist today? There are more hours of unique television produced on YouTube every hour than on all commercial networks together . In Swe-

den, teenagers spend more time reading blogs than reading news papers according to surveys.

Almost every receptive profession can feel it today: the “threat” from the amateurs.

Some 80 years ago the modernistic movement in architecture – in Sweden the “new empiricism” or “functionalism” – emerged very much as a response to the needs expressed by an awakening working class. Suddenly architects started to care about creating apartments that were better suited to ordinary peoples every day life. Needless to say, this represented a huge change in the role – and self image - of the architectural profession.



A similar shift is coming our way today and I would argue it looks something like this: Today anyone can learn free’n’easy 3D-software programs such as Google Sketchup in a few hours and – with some talent – express his/her ideas as good as a professional in a couple of days. Kids create architecture on a daily basis in virtual worlds such as Second Life and MMORPG:s, they practice as interior designers in The Sims and they excel as city planners in Sim City. They experience worlds full packed with impressive and stunning architecture that no architect’s hand has ever touched, and few architects will ever see.

Today people can *train themselves* using the same – or better – tools as the craftsman. And this they do.

But it takes a lot of training to see solutions like an experienced architect can, the profession argues. That is true. But in certain situations experience can be replaced by insight and local knowledge. People are less and less content with an external “expert” doing something insensitive in their local environment, they are increasingly ready to argue and are doing so by using more powerful tools than ever. The amateurs are augmented.

In order to stay relevant planners and architects must learn to turn this into an advantage and *use* it. Of course a truly participatory planning and drawing process where users and other actors are brought right in to

the decision making from the beginning leads to a changed role for the planner/architect. She needs to become more of a Visionary, a Guide, an Enabler, the goal no longer being to produce and present her own finished plans but to initiate, guide and inspire a collectively researched and negotiated processes. I believe this will even be a more stimulating role for us. And there is much to gain from it: As more people are included in the process right from the start, problems surface early rather than in the end. And better solutions will follow.

More tools

Turning our focus more specifically to planning, public sector and the handling, sharing and use of public information, modern ICTs can achieve a number of things that would positively affect the possibilities for building a more sustainable society:

a) Increase public transparency and responsibility

The value of shining light in every corner of public decision making cannot be stressed enough. If all is well in there, there is nothing to fear in transparency, right? If there is something to hide, on the other hand, it must get out. And as the open source movement shows, the light itself is vitalizing, it forces the participants to think sharper and act more thoughtfully. Direct feedback results in decisions that are better informed about the realities.

To provide a public database with a defined way – an API – of querying it via the web is in theory a job that is done in 30 minutes. Still the bulk of public data remains locked up and therefore not put to use at full extent. As an in-between a number of services today try to make government data available to the public anyway, with the British foundation MySociety as an inspirational front runner. MySociety build websites, such as WhatDoTheyKnow and TheyWorkForYou that aggregate or scrape data from municipal and government systems and present them in an understandable and accessible manner, at the same time themselves providing the data with an API that others can plug into easily. MySociety also runs the popular service FixMyStreet where anyone (provided they live in the UK) through the interface of a map can ask their local authorities to fix problems in the local environment, and follow up on the outcome.

Another set of websites aimed at the private sector have started to shift the balance from businesses marketing departments to consumers. These are sites such as GetSatisfaction (US), Fair Shopping (SE) and Patient Opinion (UK) – all very similar, all being user driven. Here a complaining customer gets instant publicity in the spotlight of thousands of other customers, and a company that doesn't care about it responsibilities towards its customers has its reputation lowered.

b) Enable participation

There is a lot to do in this area. As noted by ***Steven L. Clift*** in his essay Sidewalks for Democracy Online Today "the typical e-government experience is like walking into a barren room with a small glass window". He writes from an American perspective but unfortunately the same description could be extended to Sweden:

> "There is no human face, just a one-way process of paying your taxes, registering for services, browsing the information that the government chooses to share, or leaving a private complaint that is never publicly aired. You have no ability to speak with a person next to you much less address your fellow citizen browsers as a group."

There is a lot to do, but luckily today there are no technical hinders standing in the way. For instance: thanks to the development of online mapping tools it is now perfectly viable to invite a wider and broader participation in the city planning process. Citizens could be engaged, through the Internet, from the very first SWOT-analysis. Surprisingly this possibility has been very little explored

c) Facilitate and stimulate (or force) collaboration

There is an endless river of valuable new tools that facilitates sharing of information, some worth mentioning here might be Slideshare, to publish, share and embedd presentations online, and Scribd which is about the same thing but for publications.

Debategraph is an experimental tool for building iterative "maps" over arguments and counterarguments in a debate. CommentOnThis allows readers to have detailed discussions around specific parts of public documents published online.

ICT's can build bridges between research areas. One example of how

this works is Innocentive, an enterprise driven network site that brings together solution seekers with problem solvers, where the incentive for the problem solver is a price sum on providing a working solution. What's new here is the scale in which these kinds of connections can be established, and work totally across fields. A similar tool for establishing connections between provider and seeker is Amazon Mechanical Turk, not to mention more speculative examples of crowd sourcing such as Fold It that harnesses the power of the masses to find patterns in how proteins fold and unfold themselves.

d) Visualize effects of different actions

How does a decision in one area affect the development in another? The inability to keep track of these kinds of connections or even take them under consideration is perhaps the biggest deceit in today's decision-making processes, effectively undermining sustainability efforts. Therefore, tools for visualizing complex relationships provide a great support to better decision-making. To millions of viewers online **Gapminders** Trendalyzer has proven the power a good visualization as it shows existing data in a new relational way.

A data visualization tool that hooks into the social web is Swivel, where users can upload data sets, compare, sort, map and build graphs. A lot of innovative ways of contextualizing information is being explored within the MIT project SMILE, who also makes the source data available for further development online.

Seemingly unable to themselves construct visualizations such as these a first step for governments is to make the – publicly owned – source data available in ways that makes it possible to use it in external services. In part this is what the European PSI Directive – although having focus more on commercial use of data – pushes governments to do.

e) Reenergize the local

Contrary to what one might think, the Internet can be a positive force in connecting people with their geographical neighbourhood. In the modern city there's a lack of places where one can meet the neighbours randomly for a chat. Platforms such as Swedish geo-community MyBlock makes it easy to engage with (at least the connected part of) the neighbourhood online. Another interesting platform is the Front Porch Forum (US) and

street-local news services such as Everyblock (US) and StreetWire (UK). Meetup is a widely used social networkingplattform to organize meetings in groups and associations face-to-face.

The British service Landshare is another service that hooks into another unfilled void, bringing together local landowners, and land-spotters with growners to achieve a better match between the use of land and the needs of land to grow on.

A Green Room

Finally, let me summarize the reasoning and examples I've put forth in this article with a proposal.

In times of war every leader is faced with the overwhelming task of navigating through- and acting upon a complex and chaotic stream of information. In historical times this gave rise to the concept of the *War Room*, a place where the centralised command resided. In the middle of the room was a large map, depicting the current standing on the battlefield. The air was usually filled with smoke from too many cigars. Ties – or their historical equivalence – were loosened. Everything that happened on the field had to be reported here and every strategic decision to be made was to be made here.

In a sense we are at war. A lot is at stake. And in a sense we are entrenched, at the moment, in the same situation as the general grasping for the last shoestring to get back in the game.

So we could make use of the concept of the War Room. Emulate it as a *Green Room* – in a virtual sense of course – for the planning of the local/regional cityland. Built around a map it would be a spot where information from a multitude of sources, actors and stakeholders would be aggregated and distilled, where all important decisions in the local municipality should take place, *forcing* every stakeholder to engage *there*. All in full fledged transparency open to counterpropositions from the public, open discussion and open voting. This is of uttermost importance. If there is no power vested in the Green Room the participation will be thereafter:

limited to the ones who tend to like a discussion for its own sake.

Furthermore, the Green Room should be a place where anyone could raise an issue, define a problem (or "*file a bug*") and become a stakeholder. A place where presentations could be made, by anyone on equal terms. An engaged citizen wanting to show the consequences of allowing the establishment of a shopping centre would be given the same right as the original stakeholder to reach the public. Her presentation filed as part of the basic-data in the matter together with the official files.

And just as NASA:s Flight Control has backrooms where teams of expert aid "their" mission specialist, the Green Room could use forums and social networks as its backrooms, aiding and informing the decision making. When in doubt – ask the network.

Surrounding it all – plastered to the virtual walls – should be the outer framework: the medium and long term goals for the local and global society. In ways of graphs, visualizations and written analyses every proposal should have to be compared with these goals and evaluated in light of the question "does this put us on track to our goals as a society, or does it lead us somewhere else?"

The Green Room would be the place where people meet with information and power to form a collective intelligence. The brain of the local society. It should begin small at first, working only with some well-defined issues. Let's be modest. But give it time, a year or so, then who knows what it will look like, and how it could start to transform decisions.

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