"Tools for Participation" as a Citizen-Led Grand Challenge

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Twenty-one years in Seattle at the first DIAC conference in 1987 I presented a "Civilian Computing Initiative" (CCI), an admittedly (then and now) naïve vision of a suite of citizen-led and citizen-oriented research and development "grand challenges" that promoted sustainability, human understanding and peace (1989). The project was intended to be in stark contrast to the deeply trod ruts that inevitably lead to exploitation, environmental degradation, and war. What value does a vision like this have when the chances of its adoption are so slim. And, assuming there is a value, (1) can the "Tools for Participation" theme of this conference provide the inspiration for a suitable "grand challenges" project? And (2) what would or could the project look like?

The value, then and now, of such a vision goes beyond the prospects of actually having the fruits of the work suggested by the initiative available for use. One rationale is personal: a tacit rejection of business as usual. In the case of the circa 1987 CCI the "business as usual" was the militarization of computing and computer science (see, e.g. Thompson, 1986 and Winograd, 1987) as exemplified by the Strategic Computing Initiative (DARPA, 1986) that served as the oppositional "mirror image" to which the CII was conceptualized. The SCI was an ambitious research and development program based on the use of Artificial Intelligence for the rationalization, mechanization, and management of waging war.

Another reason for a proposal of this nature is that it can serve, as a minimum, as a proxy for an alternative agenda that people can pursue independently of any official approval or, indeed, any coordination among its proponents. A document or declaration that was abandoned by the powers that be can still serve as a reminder that another approach is possible. It can be retrieved from virtual limbo as a way forward if and when new political opportunities present themselves. The Solução Integrada (or "Integrated Solution"), a democratic plan for water management in the São Paolo (Brazil) watershed, "remains to this day a remarkable example both of the power of ideas and of the symbolic role they can come to play. Because the Solução Integrada existed, it was possible for non-technical social and political actors to challenge public authority on water policy" (Keck, 2002). Keck also points out the potential persistence of a plan like the Solução Integrada if there is adequate public awareness of its existence: "Like a shadow government existing in counterpoint to sitting ones, the plan has functioned as a shadow sanitation plan for São Paulo for more than a quarter century, making critical action more possible."

The SCI supplied an ideal foil for CPSR's early attempts to introduce computer scientists to the theater of responsible computing since the initiative explicitly advocating moving decision-making in battles from humans to machines. The initiative provided one application for each major branch of the U.S. military, one for waging war in each of the broad elements of the physical environment: the sky, the land, and the sea. The Air Force would benefit from the Pilot's Associate, the Army would be the recipient of an Autonomous Vehicle capable of fighting wars with minimum human intervention, and the Navy would obtain a Battle Management system (a similar system, the Aegis, was aboard the U.S.S. Vincennes from which an Iranian commercial jetliner was accidentally shot down over the Persian Gulf resulting in the deaths of all 290 passengers).

The CCI, on the other hand, was conceptualized as a manifesto for research and development that was not concerned about the improvement of war. The CCI was more-or-less a thought experiment to define what a research and development agenda might look like if it were designed entirely to meet the needs of people and the planet, not the agendas of corporations and government agencies who have sufficient funds to determine in a broad way what research and development is promoted and what is ignored. Then, as now, "pursuing alternatives based on human needs is often regarded as infeasible or impractical" (Schuler, 1989).

Like the SCI that served as the counter-model, the CCI was divided into three areas or viewpoints:

"The first viewpoint, Communication, Language, and Literacy (CLL), is designed for individuals and small groups. CLL focuses on basic communication between computer "naive" groups, including illiterate people, disadvantaged people, and others with neither the opportunity, skills, or inclination to deal with computer technology as it exists. It is intended to help teach written language and to facilitate communication across national and cultural boundaries through other means…."

"The second viewpoint, Resource Management (RM), is designed for larger groups and organizations. RM focuses on using the power of a computer to simulate or model scenarios that are important to the user. This could include water distribution or crop allocation in developing countries rural areas, or industrial uses such as factory scheduling. It is intended to help groups manage enterprises more thoughtfully through increased awareness of the character and availability of resources…"

"The third viewpoint, Arbitration and Conflict Resolution (ACR), is designed for nations and transnational organizations. This area falls into the realm of "participant systems" (Chang, 1987), a class of computer system where the computer actively participates with two or more human users in solving difficult problems. An ACR project could focus on the development of negotiation software which supplied bookkeeping and other useful negotiation functions. Using legal expert systems and arbitration models, computing systems would be designed to facilitate peace through conflict resolution. Simulation and artificial intelligence concepts could be employed in this area as well."

Much has changed since 1987. Some indicators are positive while many are not. On the positive side, the threat — or at least the *perception* of the threat — of nuclear war has receded over the years. On the other hand, the world's nuclear arsenal is not appreciably less deadly, several nations have joined the nuclear club, and the "Doomsday Clock" of the *Bulletin of the Atomic Scientists* has scarcely moved. And although the Soviet Union has fractured into a handful of republics and the decade's long "cold war" has run its course, the world's resources (such as food, potable water, and, of course, oil) are in higher demand, a situation which has led to recent wars and is likely to lead to more (Homer-Dixon et al, 1993). The population has also grown considerably as has the consumption per capita putting more pressure on the Earth's resources. And climate change, arguably the large collective challenge ever faced by humankind, remains the largest and least tractable problem that belongs on the big problems list.

The potential of civil society to play a positive role in charting the future has also changed considerably since 1987. This is due in large measure to the Internet which allows, for example, scientists to make their findings on climate change more widely available. It also provides a fertile infrastructure for the creation of new collaborative networks for large-scale, distributed research activities. In fact, if these networks (which to a large degree are international in composition and often place principles and values over

parochial interests) were to expand their reach to include and integrate civil society organizations and individuals, that would begin to approximate the appropriate agents needed to address the type of "grand challenges" discussed here. The idea that taking action in ways that are consonant with the values, standards, and norms of the community is an absolute necessity that must be integrated into the norms of the network. Finally, developing guidelines for action as well actually taking action for the public good and integrating them seamlessly into the paradigm is also needed.

The ability of civil society to engage in joint projects has increased dramatically in the same period. The construction of Wikipedia, for example, which would have been a naïve grand challenge in 1987 is now just another aspect of everyday life. The Wikipedia success has demonstrated that people who are unpaid and distributed all over the world can collaborate on large, integrated intellectual tasks. The two questions that come to mind in this regard are: (1) How portable are the factors that led to Wikipedia's success and (2) Can intellectual work of this nature expand to include policy work and political pressure — and in general, translate into changes in the "real world" of people's physical and social environments and the way that their lives are led? Also, it's too irresistible not to mention that a collectively constructed encyclopedia envisioned and advocated in the 1930's by noted historian and author H.G. Wells (1971) would provide the necessary support for the collective intelligence that he believed humankind desperately needed. And although the encyclopedia that Wells recommended was not feasible at the time he recommended it (Schuler, 2001) it sprang into existence within a relatively short period of time once the technology and the social imagination and engineering supported it.

Another Audacious Proposal

Audacity is defined in at least two ways. One is "the willingness to take bold risks" and the other is "rude or disrespectful behavior; impudence." At the 2005 Online Deliberation Conference / Directions and Implications of Advanced Computing Symposium at Stanford University I made another somewhat audacious proposal (2008) to begin working "Toward a Global Peoples Assembly" based on concepts developed by Richard Falk and Andrew Strauss (2001). To this end I presented a "Draft Statement from this Assembly," from which the following two paragraphs were drawn.

> "In many places attempts are being made to trivialize citizenship and reconstitute citizens as (everyday) consumers and (sporadic) voters. Real power is in many ways being transferred to large corporations and other unelected organizations such as the World Trade Organization. We, the attendees of the Online Deliberation Conference / Directions and Implications of Advanced Computing Symposium at Stanford University, May 22, 2005, hope to help counter that trend with this project.
>
> Realizing the growing and critical importance of citizens and civic society in addressing humankind's common problems, we the undersigned propose the initiation of a "Grand Challenge" whose ultimate objective is the development of a Global Peoples Assembly. We realize that this is an extremely complex project that will require years of complex, nuanced, creative and thoughtful negotiation and collaboration. We are aware that this project will have to address an extremely broad range of social and cross-cultural factors. We, however, believe that beginning this discussion in an explicit and open way is preferable to many other varieties of globalization that lack this transparency."

The general idea is that people around the world would generally fare better under circumstances that I've outlined here than if the existing forces and general paradigms are not significantly challenged. The idea

also is that by identifying a "real-world" goal, the research is more likely to be somewhat random and less-focused.

If I were to update the grand challenges for 2008 I would still concentrate on research objectives with a focus on information and communication. I would let stand the ideas of the 1987 CCI plan as well as the 2005 proposal for a Global People's Assembly as reasonable provisional targets. The topics of this conference, of course, contain the seeds of many of the projects that are so desperately needed. The themes of this conference are directed towards addressing shared problems through cooperation, not through the blunt, disruptive forces of military force or the "market," the conveniently convivial and prosaic term for global projections of force and dominance. And although technology of various types is likely to play a role, these projects are not intended to be viewed as purely — or even primarily — technological projects. If the social context is not an omnipresent factor, the products of the effort are likely to be unusable or, worse, dehumanizing and illegitimate. In fact, I would suggest that the actual goals should actually be a product of incremental design and development of the people working on the enterprise and the people for whom the project is ultimately intended. I would also stress that certain principles be enmeshed into the project. This includes abandoning the idea that one solution or approach will work for everybody, everywhere, and the ideas (often submerged) that "developed" countries are inherently better and know better than less "developed" ones or that "experts," with little or no public involvement, should do the designing and the decision-making in relation to technological development.

The remaining paragraphs of the "Draft Statement from this Assembly" provide more information on the character of a grand challenge and additional motivation for the civil society orientation.

> Moreover, we realize that precisely defining an ideal system in advance is impossible. For that reason, we propose to begin a principled, long-term, incremental, participatory design process that integrates experimental, educational, community mobilization, research and policy work all within a common intellectual orientation: specifically to provide an inclusive intellectual umbrella for a diverse, distributed civil society effort. We realize — of course — that this is an audacious proposal. However, we agree with Richard Falk, that a parliament or forum like this is critical for the future of humankind and our planet.

> Civil society historically is the birthplace of socially ameliorative visions. This effort is intended to help build a more effective platform for these efforts, to help address humankind's shared problems — such as environmental degradation, human rights abuses, economic injustice and war — that other sectors — notably government and business — are seemingly powerless to stem.

What was Once Audacious Must Become Commonplace
The era of the compartmentalization of knowledge, inquiry, and responsibility may now be outliving some of its usefulness. This approach was useful precisely because it made the world seem less complex. At this point in time, however, this capability is no longer a virtue. It blinded people to phenomena that didn't fit into a single box. It also allowed people to not see the implications of their world. This not to say that rigorous thinking is outmoded. But rigorous thinking by itself can't trump other important human values and intelligences or hide the powerlessness it has in many commonplace situations.

Many prior links need to be re-connected, but in different ways than before. The lines between research and activism, between academic disciplines, and between "town and gown" all need to be redrawn, not as fences or boundaries but as interfaces or conduits. There is no guarantee that the research will be used

well — *or at all* — to solve the very real problems facing the world. No academic discipline rules over the others and no major issue or problem falls only within a single discipline. And academics without connections to actual community may lose sight of real life through their focus on abstractions. At any rate, a concerned, informed, and resurgent citizenry is called for and the research and development community can play a key role. The new meta-science merged with public philosophy should still engage with corporations and governments, but it must continue its engagement with increased courage, scrutiny and resolve. We need to examine and retool the activism / research ecology and take another look at what are *legitimate* acts within social roles whose definitions and limits, not set by us, are considered sacrosanct. And what socio-technological infrastructure (that includes but transcends independence from military funding) do we need for the social learning that we need today?

It's increasingly obvious that following the paths inscribed by "business as usual" lead to bad ends for the society that is unwilling to break self-destructive habits, or to be mindful of, or countenance the necessity of self-criticism. Changing the meaning of business as usual will not be easy. It's not, however, naïve or unnecessary. The main point that I would make twenty years after the first proposal is that this project along these lines should not become just a project but *the* project.

Elements of an Effective Grand Challenge
In addition to a deep commitment to the necessary human values such as diversity, humanism, economic justice, environmentalism, and strong participation in governance, a grand challenge for a research and development program for civil society must have several important attributes to be effective:

- Goals and objectives — both short and long term — which resonate with potential practitioners. The goals must be seen as both desirable and attainable.
- Ideas, web sites, organizations, theoretical models, technologies, patterns (Schuler, 2008), etc. that act as "seeds" that can grow in interesting ways and make it easier for people to get involved
- Articulation across boundaries, projects. The actions must "add up" in meaningful ways.
- Information and communication resources to support the project
- Appropriate incentivization. The traditional "carrot and stick" approaches don't tell the whole story.

Audacity — or Common Sense?
It was during the last century that humankind first demonstrated that it was possible to destroy a good portion (if not all) of itself as well as much of the natural world. Although one generally thinks of nuclear and other life-denying technologies first and environmental devastation second, the economic systems that exist to perpetuate wealth and now act as massive, visible and invisible puppeteers, can spin apart and unravel the giant, deeply interconnected economic web when it's least expected. Indeed, many economic indicators are revealing the possibility of a nation imploding because of its own greed and inflexibility. With the possibility of the "perfect storm" of unchecked systems erupting without notice, breaching their banks, the idea of citizen-led, non-military projects takes on increased urgency. And while it may be the case that the forces of cooperation have prevailed in some situations, it's clear that without strong, rapidly developed, conscious evolution of the collaborative nature of these forces, there will be no staving off disaster: the human side of the human race will find itself again, a day late and a dollar short.

Writing these words on the fifth anniversary of the ill-fated and illegal invasion of Iraq by the world's most militarily powerful country reminds me of the consequences of widespread citizen apathy and cynicism in democratic countries. And, of course, if citizens who are free to dissent cannot rein in illegal

activities of their leaders, what can be expected of citizens of countries for whom dissent carries much harsher penalties.

Appearing naïve is not the same as being naïve. Gramsci's oft-quoted comment about "pessimism of the intellect, optimism of the will" is germane here. In that spirit, I acknowledge that these ideas are unlikely to be embraced. What I won't acknowledge is that they are truly infeasible or that they are unnecessary. In fact what appears to be naïve or audacious is neither. The truth and the urgency of this assertion is bolstered by the findings of Jared Diamond, the prominent researcher and author, who studies how societies face challenges that have potentially catastrophic consequences. Somewhat incredibly, Diamond's research (2005) reveals that the "commonest and most surprising" of the four ways in which societies fail to address their problems is their "failure even to try to solve a problem that it has perceived" —even one which ultimately results in that society's collapse.

Much has changed since 1987 and much has remained the same. The following paragraph, the last one in the 1987 paper is still sufficiently accurate to warrant repeating: "Technological research and development will continue with or without us. As scientists and technologists who are concerned about the future, we must help determine its direction. The policies of the next generation are being debated today."

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