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Internyet Nescience?

Self-referential upgrading of obsolete Internet conference processes inhibiting emergence of integrative knowledge

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Paper originally envisaged for the [1st International Conference on Internet Science](#) (10-13 April 2013, Brussels) held under the aegis of the European Commission, by the EINS project, the FP7 European Network of Excellence in Internet Science.

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Introduction

Exploration of the justification and possibility of applying the organizational and conceptual framework of a conference on Internet science to the conference processes in order to enable emergence of more integrative knowledge on the occasion of future conferences and in anticipation of the semantic web.

The exploration derives from early concerns with *Knowledge-Representation in a Computer-Supported Environment* (*International Classification*, 4, 1977, 2, pp. 76-81), and from the initiative of [Stafford Beer](#) and [Gordon Pask](#) in applying network analysis techniques to a conference of the [Society for General Systems Research](#) (SGSR) on *Improving the Human Condition: Quality and Stability in Social Systems* (London, 1979). This experiment was documented in *Metaconferencing: Discovering people / viewpoint networks in conferences* (*Transnational Associations*, 32, 1980, 10, pp. 411-420). It contributed to the elaboration of the [syntegration process](#) by Beer (*Beyond Dispute: the invention of Team Syntegrity*, 1994).

Related techniques, with which the author was associated, were subsequently employed in the development of a multimedia knowledge management capacity, with funding from the [EU Information Society Programme](#) from 1997-2000 (*Ecolynx: Information Context for Biodiversity Conservation*). This enabled a successful proposal to the World Bank *infoDev* programme (*Interactive Conceptual Environmental Planning Tool for Developing Countries*, 1999). This work enabled collaboration with Verisign in a [proposal to ICANN](#) (2002) to become the successor operator of the registry for the .ORG top-level web domain. Consideration of further knowledge visualization possibilities, of relevance to conference processes, was enabled through collaboration with the [German Research Center for Artificial Intelligence](#) (DFKI) in relation to the [Living Library](#) project of Dropping Knowledge (*Complementary Knowledge Analysis / Mapping Process*, 2006).

The case for self-referential application of such techniques follows from the work of [Douglas Hofstadter](#) (*Gödel, Escher, Bach: an Eternal Golden Braid*, 1979) as discussed in *Consciously Self-reflexive Global Initiatives: Renaissance zones, complex adaptive systems, and third order organizations* (2007). Related development of the aesthetic dimension was discussed in *Enacting Transformative Integral Thinking through Playful Elegance* (2010).

Internet science?

The possibility emerging from the above considerations is that the organizational and conceptual "template" of an "International Conference on Internet Science" could be applied to itself to determine whether obsolete and legacy processes merit (subsequent) upgrading. Independently of those considerations, the probability of opportunities for upgrading necessarily follows from the rapid innovation of web-related software and groupware technologies, and the development of associated mathematical tools.

Two major dimensions are evident from the [call for papers](#) for the 2013 event. These are a set of 11 disciplines (computer science,

sociology, art, mathematics, physics, complex systems analysis, psychology, economics, law, political science, epistemology) and a set of 24 themes. It is specifically indicated that submissions are not limited to those themes or from the perspective of those disciplines.

The most striking feature of both "dimensions" is the manner of their presentation as lists of the simplest possible structure -- in mathematical terms. There is no sense, as might follow from the early work of Stafford Beer and Gordon Pask (1980), and an extensive preoccupation with networks since then, that the elements of either call for a pattern of connectivity consistent with "Internet science". The two lists could, for example, be represented together in a matrix to establish the potential relevance of disciplines to themes. This is basic to "[matrix management](#)" as notably articulated by J. R. Galbraith (*Matrix Organization Designs: How to combine functional and project forms*, Business Horizons, 1971). Curiously a degree of matrix organization is evident in the temporal framework of the 2013 [conference programme](#).

As a relatively "ancient" technique (on the Internet timescale), it might be asked whether mathematically more complex modes of organization and visualization are now possible in order to elicit -- and render comprehensible -- higher orders of integrative connectivity. That said, it is evident that the presentation of results by most search engines takes the form of a simple list with very little attempt to explore other modes of organization. Should an "International Conference on Internet Science" reinforce that tendency or explore more integrative alternatives?

A further consideration and concern, for a conference within the EU institutional framework of an "EINS Network of Excellence", is the nature of the "template" under which such events are organized. What indeed are the provisions made for "upgrading" the template in response to innovations explored elsewhere -- to say nothing of innovations for which any network of excellence might be responsible? How is conceptual innovation inhibited by such "template obsolescence"?

Stated more bluntly, is there any feature of the template which would be unfamiliar decades ago, long prior to the emergence of the Internet? The "legacy" pattern of keynote speakers, panels, plenary sessions, poster sessions (a.k.a. workshops), programme committee, etc. calls for critical review as potentially inhibiting the fostering of creative dialogue and the emergence of integrative knowledge in anticipation of the [semantic web](#). For increasing numbers of Internet users familiar with frequent "upgrades" to operating systems, how might conferences as "operating systems" require equivalent innovation to enable and sustain appropriate development of Internet science?

As with the explicit history offered with regard to upgrades to computer operating systems, where is the history of the "upgrades" made to the EU conference "operating system"? As with a "version history" of computer upgrades, there is a strong case for distinguishing "new features", new feature "requests from users", bug "fixes" since the previous version, issues "known but as yet unresolved", and "[backward compatibility](#)". The latter is especially valuable with respect to conference communication in order to facilitate the participation of those familiar with the routines and features of previous versions. Given the conference preferences of participants habituated to the procedures of older versions, there is even a case for developing a form of "[emulator](#)" to operate within the new version such as to cater (virtually) for the habits associated with those earlier versions. Hosting "obsolete" routines of the past as "guests" within upgraded conference operating systems becomes increasingly easier with web-enabled multimedia technology.

A more fundamental question is the nature of the conceptual/organizational trap which inhibits any review which might enable more significant configuration of knowledge and access to it.

Methodological possibilities

Relevance of conference themes to functioning of conference: The announced conference themes are presented here with questions regarding their applicability to an Internet science conference:

- *Design, implementation, and analysis of network architectures and algorithms:* How might these preoccupations be applied to a conference on Internet Science -- and with what expectations for the improvement of its processes?
- *Techniques for Internet measurement and simulation:* How might such techniques be used to simulate the operation of the communication processes in a conference?
- *Economic aspects of the Internet:* How might the economic aspects of an Internet conference be clarified, especially given the degree of confidentiality and commercial sensitivity associated with such an event -- most notably the contracts in place and those foreseen?
- *Virtual communities:* Many of those associated with such an event already constitute a virtual community -- typically a subset of a wider community and potentially indifferent to other communities with related concerns. Many attracted to the event naturally aspire to participate in that community -- whilst some may be virtually excluded for a range of reasons. What are the relevant dynamics of such communities and how do they enable the emergence or inhibition of integrative knowledge?
- *Identity, Trust and Privacy:* How do these factors play out within an Internet conference? How is identity framed, promoted and protected? How is trust to be understood and sustained in that context -- and how is it undermined? To the extent that use is made of electronic facilities in the event, how is privacy ensured or undermined -- especially given possible competition for future contracts between various participants? The latter issue is of course of considerable significance in many conferences under the aegis of the EU.
- *Governance and legal policies:* How is the governance of an Internet conference rendered appropriately transparent? How could the governance of such conferences be improved, especially within the constraints of slowly evolving legal policies?
- *Security, Resilience and Dependability Aspects:* These issues follow from those indicated above with respect to identity, trust and privacy. How resilient is the conference in response to disruption? How is "resilience" to be re-assessed in the light of the arguments for "antifragility" made by [Nassim Nicholas Taleb](#) (*Antifragile: things that gain from disorder*, 2012).
- *Internet for Sustainability:* How to distinguish and interweave the technical organization of an Internet conference from the substantive content -- and the emergence of insights vital to its sustainability (especially as one event in an envisaged series)?

- *Analysis of human behavior and social interaction using data from social media, online networks and communities:* What provision is made for monitoring social processes -- preferably "on the fly" -- within an Internet event, using communication data engendered by the process? How might this be fed back meaningfully in real time to participants and organizers to enable "upgrading" during the course of the event? How might such analysis feed into simulations of options for re-configuration of the event and the associated knowledge processes?
- *Methodological challenges of analyzing Web-based large-scale human interaction and behavior:* Further to the previous point, what are the methodological challenges to such analysis?
- *Network analysis of the Web:* How can the efforts at network analysis of the Web be adapted to analysis of the networks within the conference? Can distinctions be fruitfully be made between the easier task of transaction analysis and the more problematic challenge of content analysis?
- *Microlevel processes and interactions on the Web:* What might be fruitfully considered as "microlevel processes" and interactions within an Internet conference? What are the potentially significant conference interactions which are only too easily ignored?
- *Collective intelligence, collaborative production, and social computing:* How should "collective intelligence" be understood as manifesting within an Internet conference? Given the questionable track record of the "collaborative production" of workshops within conference events, how might the quality of collaboration be enhanced? Given the extensive experience with "social computing" in other contexts, how might these be enabled with inn an Internet science conference
- *Networking issues for emerging applications:* What are these as they might apply to an Internet science conference?
- *Structure and organization on the Web:* Given that an Internet conference can be considered as a convenient Web laboratory (potentially even a simulation), how is its structure and organization to be considered (notably in the light of questions raised above)?
- *Web communities and online lifestyles:* How are the "Web communities" emerging in relation to an Internet science conference to be recognized? How is meaning to be attached to the "online lifestyles" of conference participants?
- *Web, society, and innovation:* Further to questions raised above, how is "innovation" expected to emerge and be detected within an Internet science conference?
- *Intellectual property and the commons:* Given the particular role that copyright plays in the publication of the contributions and results of an Internet science conference, how is appropriate consideration to be given to controversies regarding use of public funds for its organization -- potentially restricting dissemination of its results? How do such issues apply to content exchanged between participants which does not get incorporated into more widely accessible published form? Who has access to such content during the event and subsequent to the event?
- *Web access, literacy, and democracy:* How do these well-known issues play out within the context of an Internet science conference which may attract people of different skill levels and expertise?
- *Knowledge, education, and scholarship on and through the Web:* Further to the above questions, how are knowledge, education and scholarship to be understood within an Internet science conference?
- *People-driven Web technologies, including social search, open data, and new interfaces:* Within an Internet science conference, what scope is there for innovation by participants, potentially independently of the framework and processes provided by the organizers?
- *Using the digital records of user activity mediated by the Web:* Further to questions raised above, what use might be made, and under what conditions, of the digital records of participant activity mediated by the conference processes?
- *New research questions and thought-provoking ideas, emphasizing the intersection of design and social interaction:* How might the questions raised above fall within this category as being relevant to future Internet science conferences?

Relevance of conference disciplines to functioning of the conference: As an exercise, the disciplines themes announced as being primarily relevant to an Internet science conference could also be presented here with questions regarding insights from their application. Of greater interest is how those disciplines (computer science, sociology, art, mathematics, physics, complex systems analysis, psychology, economics, law, political science, epistemology) are variously relevant to emergence of knowledge in relation to the above questions. What disciplinary approaches are missing and why? Which disciplines might prove of relevance to the emergence of integrative of knowledge -- especially in with respect to the potential of a semantic web?

Representation possibilities

The use of a matrix representation was suggested above to clarify the potential preoccupations -- even in a form permitting its interactive development during the course of the Internet science event. There is considerable expertise, and software, for the articulation of concept maps, semantic maps, and the like. These could be applied both to themes and disciplines, but also to the content of papers presented. Given progress towards a semantic web, how does understanding of the initiatives to that end -- namely converting the current web dominated by unstructured and semi-structured documents into a "web of data" -- to be related to the structuring of documents of an Internet science event, and of the knowledge it represents?

Of particular interest is the possibility of using some of the visualizing techniques through which the Web is currently represented as a complex network -- applying them to the subset which the conference themes, disciplines and participants represent -- following the efforts of Beer and Pask (1980). Of greater interest, however, given the sophistication of the participants, is the use of more complex mathematical techniques to represent the conference content such as to highlight the emergence of integrative knowledge and "points of interest". A review of a range of possibilities is presented separately (*Interweaving Thematic Threads and Learning Pathways*, 2010). Of relevance to the networking potential of think tanks in any EU "Network Excellence", an earlier review, in the light of the above database initiatives, was presented to a "Conference on the Futures of Europeans in the Global Knowledge Society", held in partnership with the European Commission's DG Research (*Meta-challenges of the Future for Networking through Think-tanks*, 2005).

In contrast to a simple matrix, a spherical form could be used, especially with respect to the challenge of sustainability (*Spherical*

Configuration of Categories -- to reflect systemic patterns of environmental checks and balances, 1994). More complex forms, based on new metaphors, merit consideration in a global knowledge-based society (*Metaphorical Geometry in Quest of Globality -- in response to global governance challenges*, 2009; *From Information Highways to Songlines of the Noosphere: global configuration of hypertext pathways as a prerequisite for meaningful collective transformation*, 1996). Seemingly at variance with the conventional preference for visualization, are the possibilities of **sonification**, as notably employed recently at CERN -- the context from which the Web of course emerged.

Given the manner in which it is proposed to produce and disseminate the Internet science conference contributions, access to their content could be readily enabled at modest cost by the use of **text mining software**. One accessible package, with online variants, is **Leximancer** [video] now applied to Enterprise Search in collaboration with Elsevier and its ScienceDirect article data store. This enables the generation of maps and reports interrelating the content of the set of papers, and allowing drill down facilities in response to particular issues. Such facilities could be rendered accessible to participants as part of the conference process.

Whilst the themes listed above focus on "network analysis", there are of course many "network mapping" facilities available. One which is of particular interest is **Netmap Analytics**, as separately described (*Preliminary NetMap Studies of Databases on Questions, World Problems, Global Strategies, and Values*, 2006; *Challenges in Applying Mathematical Insights to Comprehension of World Problems and Communication amongst International Organizations about Strategic Responses*, 1999). This enables the highlighting of "points of interest" calling for special attention.

It is appropriate to note that Web search facilities have been slow to enable network representation of any kind, even in relation to social networking. On the other hand it is remarkable the speed of uptake of such techniques in response to intelligence gathering and security issues. The question might be asked as to why an Internet science conference does not frame its task to include the gathering of integrative intelligence from its participants -- with the aid of techniques considered vital in other contexts.

Conclusion

The fundamental question raised here in relation to Internet Science is the rate of innovation in the themes indicated with respect to the degree of innovation in conference organization over the period since the Internet has emerged -- with the possibility of an inherent consequential constraint on emergence of integrative knowledge. The point is typically raised in justifying the need for upgrading any computer operating system to increase performance.

How is integrative knowledge expected to emerge from a "laundry list" of themes and disciplines, and from a conference process with dialogue seemingly fostered without the recent innovations in enabling groupware -- or any reference to them as a feature of the conference organization? Is the reference made to "fostering dialogue" to be considered as exemplifying an obsolete understanding of dialogue processes -- which in computer terms would suggest the need for an "upgrade" of the "operating system"? How might the groupware and related facilities compare with those at the annual World Economic Forum for example -- or other EU conferences where greater use is made of such facilities? To what extent should an Internet Science Conference be designed as an exemplar of innovative use of such techniques?

Whilst emphasis is placed on the "multidisciplinary" nature of the event, there appears to be no understanding of multidisciplinary, as distinct from interdisciplinary, cross-disciplinary or transdisciplinary -- and their relative value and significance, as originally highlighted by **Erich Jantsch** (*Towards Interdisciplinarity and Transdisciplinarity*, 1972), and more recently by various authors (**Myra Strober**, *Interdisciplinary Conversations: Challenging Habits of Thought*, 2010; **Julie T. Klein**, *Interdisciplinarity: history, theory and practice*, 2001). For a "multidisciplinary" event, could the challenge of "multidisciplinary" have usefully figured explicitly as a theme? What do the variants of "multidisciplinary" mean in theory and in practice -- in terms of their implications for Internet science and the emergence of integrative knowledge within any semantic web?

From a methodological perspective, the concern expressed here is the relevance of a "self-referential" perspective (as initially highlighted by Hofstadter) and the "meta-organizational" approaches to which this might give rise. In later work Hofstadter reframes the paradoxical cognitive implications of the cybernetic processes under a title -- *I Am a Strange Loop* (2007). Its collective applicability merits consideration with respect to the Internet-enabled knowledge processes of any network of excellence, as discussed separately (*Sustaining a Community of Strange Loops: comprehension and engagement through aesthetic ring transformation*, 2010). Such possibilities relate to a 2nd Internet Science Conference, the management of any "network of excellence", or more generally for the much-debated issues of EU governance in the future.

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