
Multidisciplinary research into new technologies: Collaboration and Breakdown

Annamaria Carusi

Oxford University Computing
Laboratory

Scope of the project

- MIT/OII 2 day workshop to discuss research into new and emerging technologies
- Social shaping of technologies
- Which research, what methods, to what end?
- Representatives of social sciences, political sciences, computer science, futures studies, law, economics, new media, cultural studies, philosophy and other areas

The discussion

- Disagreement, misunderstanding, lack of a common language – to the expected extent for multidisciplinary discussion
- Less expected: attributable to underlying values?
 - Research values
 - Social values
 - Political values
- *Future* oriented: views of the good, utopic/dystopic visions

The analysis

- Focus on the interplay of values as underlying motivators for consensus, dissent or breakdowns in engagement;
- Aims:
 - Distinguish values and relations among them
 - Understanding of their role in a social shaping agenda
 - Facilitation of multidisciplinary research
- Hermeneutically inspired interpretation; mapping
 - uptake
 - engagement
 - breakdown

Implicit and tacit values

- what participants thought counted as ‘good’ research, and what they seemed to believe were the aims and justifications of research into technologies, both in terms of benefits to the research itself, to the technologies, and to broader social and political concerns
- Intended / tacit & implicit

I have been working on the Internet since about 1975, when there were twelve of us and we could do anything we wanted. Sometime in the 1990s, I had this revelation that we had in fact designed the Internet to try and deal with the unknown application, to try and optimize for change. But when I have tried to understand what direction we were going in, what was pushing back on us and what was happening, I realize the forces that were shaping the Internet were not the forces of technical innovation. The techies were not in charge. We had to look at issues of investment and industrial structure which we had created inadvertently. It had not been obvious to us in 1975, as much as it is now, that the modularity of its interfaces defines an industry structure.' (Dave Clark)

Engagement (1): orders of magnitude

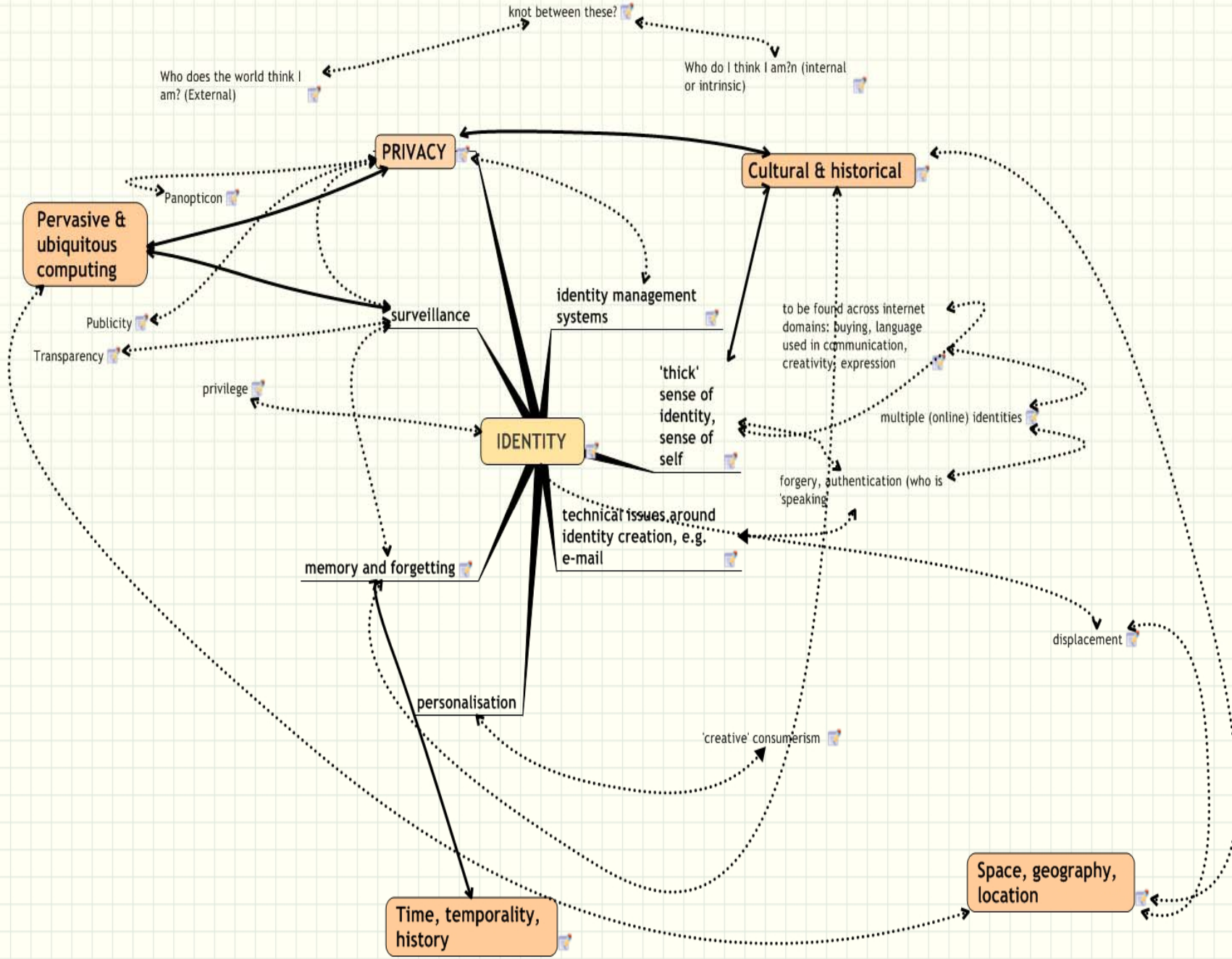
- ‘Anytime you get an order of magnitude in some technology, strange things are going to happen to the way it is used.’ [quoting prior speaker]. So I would say that one way of looking at or for emerging technologies is to look to see where those ‘order of magnitude’ changes are likely to be taking place over the next five or ten years or what ever range you have in mind. [...]

Engagement (2): technology spirals

- In response to that point, it seems to me is what you do seem to get, with your sniffer devices, is technology spirals. Some kind of innovation like that and you'd immediately have someone who is in the business of bomb-making, innovating with something that couldn't be detected by sniffer technology or some kind mask for bad smells, that is technological innovation in itself. Just as when the police first had radar guns in this country then you could buy a device that would detect the radar gun. You get a spiral which is actually sometimes not entirely productive or entirely counter-productive. It's a bit like your thing about the order of magnitude improvement, especially the storage thing. [...]

Engagement (3): synergistic technologies

- My main comment was really about orders of magnitude change and where we might be seeing them. A little bit on [the previous speaker's] point about spiralling technology, I think we are seeing lots of synergistic technology as well. In the work that I'm doing with [others], looking at identity management systems, looking at the way that CCTV is working with RFID, is working with smart cards. Or in a different application area, is working with big databases and all of this being pulled together. Not only that but the way a lot of masking is going on, so a lot of these synergistic technologies are being put into place for very good customer service reasons, high quality service provision. [...]



New Approaches to Research on the Social Implications of Emerging Technologies I

Social Implications

For whom? ⊕

elite 'we', technology designers

ordinary 'we'

'we' users of technology innovative, creative uses

'we' who don't use technology

'we' consumers inhabiting developed countries

'we' afraid of terrorism and other threats

'we' western/industrialised/consumeristic as opposed to India, sub-Saharan Africa

'we' Anglo-American as opposed to Central European

'we' researchers

What implications? ⊕

main issues ⊕

Prediction (1)

- ‘Rigorous imagining’ : creativity, activity, breaking down distinctions between individualism and collectivism
 - methodology:
 - o start with social concepts / start with specific technologies;
 - o theories of social change, disruption and discontinuity or co-evolution
 - ethical & political values:
 - o at whose cost?
 - o benefit?

Session 2: 'Blue sky' and buried gold forecasts: a useful exercise?: Prediction

Prediction: How to do it?

rigorous imagining based on specific projections of possibilities of production and consumption

- start with specific examples of technologies and work out social implications
- and a missing technology
- alternative points of focus:

Proposal (Participant 1) :

C: initial statement

- not linear; evolutionary leaps
- focus on specific areas, e.g. economic and social
- examples: banal creativity of goods, and sense of identity
- overcoming dualisms
- create societies that reflect our values (e.g. organise work for life rather than vv)

Challenge (Participant 2)

C: challenge

- what is unique, the idea or the commodity?
- mass customisation, not mass individuation
- what is being imagined?
- what is going to permit what is being imagined? i.e. what means of production will support this creativity?
- alternative: co-evolution

Challenge (Participants 3 and 4)

C: challenge

- social and global stratification
- banal creativity scenario at cost of inequalities of labour & resources
- exploitation involved in different trading relations based on more participation, interaction, etc.?

Challenge (Participant 5)

C: challenge

- does increasingly active role in producing goods lead to greater happiness?

Challenge (Participant 6)

C: challenge

- 'visions' are modernist; alternative: be more postmodern

Prediction (2)

- Near-future specific technology: work out possible scenarios both utopian and dystopian
- Whose utopia and whose dystopia?
- Values concerning individualism (methodologically and ideologically)

Session 2: 'Blue sky' and buried gold forecasts: a useful exercise?: Prediction

Prediction: How to do it?

rigorous imagining based on specific projections of possibilities of production and consumption

start with specific examples of technologies and work out social implications

encrypted, hidden, sensing devices embedded in children

Proposal (Participant 2)

C: initial statement

- what processes
- what norms?
- who would want it?
- what platforms to hold databases?
- add this to other technologies

Social implications

C: Elaboration

- informal to formal social control
- parent/child relations
- trust, identity, self-representation

Not isolated technology but interaction of technology and social structure

C: Elaboration

- Implications of a technology depends also on deeply embedded social structure
- does not always mean the same thing even in same social structure, e.g. tracking children and tracking butterflies

location: e.g. in shopping malls

C: initial statement

- capitalist values
 - control of who shops and what they shop for
- political values
 - put control in the hands of the buyer: pricing information, ingredients, or labour & trade information
 - shoppers as new political intermediaries

mediation

C: Elabor...

information provided by whom?

pervasive computing = ubiquitous internet access + embedded sensors + activators

C: initial statement

challenge (Participant 7)

C: challenge

- what's wrong with capitalism?
- not enough incentives for people to do political shopping
- intellectual ownership rights: who owns the data that would be used for informing buyers?
- privacy issues: info gained only by finding out what people want

challenge (Participant 2)

C: challenge

- control is not necessarily a good thing; info overload & attention deficit

challenge (Participant 8)

C: challenge

- how to arrive at non-centralist notion of good information?

challenge (Participant 9)

C: challenge

- choice in and of itself does not make us free, but is relative to the alternatives, consequences, counterfactuals that we are capable of considering

brain / body / mind

and a missing technology

alternative points of focus:

Engineers & social scientists (1)

Social science perception of priorities:

- Aggregated view of interaction between different technologies, rather than studies of particular technologies.
- Foregrounding social concepts rather than studies of individuals.
- Longitudinal rather than short-term studies.
- Start with what people are doing rather than ‘user requirements’.
- Multiple method approach to ‘construct’ the world of those who will be using the technology.

-
- Taking account of historical analysis of current technologies.
 - Highlighting how people are integrating different forms of technology.
 - Comparing old and new technologies.
 - Identifying different processes of ongoing social change tied to the use of technologies.

Engineers & social scientists (2)

Social science perceptions of engineers' expectations:

- Enhance specific technologies
- Proof of concept
- Short term studies
- Instrumental user requirements
- Smooth away negative social implications

Listening to the engineering voice

- We are more and more, as technologists, being pushed to say, ‘Look, it is no longer acceptable to invent something that is technologically cool.’ You actually have to ask why are you building it, what the purpose is and, in many cases, we are being pushed very hard to think about design for values and being told that it is a really important part of your job to be able to explain the values of what you do. On the other hand, I have never seen a paper in computer science which was publishable because it was explained by some artefact of higher value than some other artefact. It is outside the space of what we know how to publish. What is cool in our discipline is to say ‘Here is the goal, here is how I got that’... I came here listening to whether there were disciplines that were going to help us make value decisions... [but] when I came up with a social values question I was told [by people in other disciplines] that it is a values question not research. (David Clark)
- Untypical

Most common points of breakdown:

- the meanings of terms, in particular 'identity' and 'privacy', but also 'information', 'communication', 'mediation', 'individuals', 'users';
- the answers to the question 'who are we?' as researchers into new technologies;
- understandings of what constituted a research problem, and of the way to tackle research problems: for example, what are the starting points for research or intervention: the technology or the society in which it is embedded?
- divergence between engineers' and social scientists' expectations of one another, and mutual misperceptions of these expectations;
- the type of research or type of knowledge to draw upon: for example, how important is historical knowledge and understanding to making predictions concerning new technologies, and what kind of history to favour;
- appropriate research approaches: for example, between individualism and holism as a methodological approach;
- political and economic outlook, and what counts as a utopic or dystopic future development;
- attitudes towards cross-sector partnerships, for example, between academia and business, industry and government

Suggestions

- Seek to build on real engagements around mutually understood points of reference, even in the absence of perfect agreement and without necessarily seeking consensus.
- Attempt to be aware of the kinds of points and issues around which there may be value or meaning differences.
- Attempt to make explicit the values of members of the collaboration and their perceptions of the aims the research. For example, encourage interlocutors to make explicit what they mean by the terms they use, by:
 - Giving a definition
 - Listing examples of the items to which the term (as used by him/her) applies
 - Listing examples of items to which it definitely does not apply
 - Using concept maps or other kinds of mediating artefacts as ways of negotiating the meanings of terms.
- Attempt to establish realistic expectations for the kinds of input each partner is best able to bring to the partnership. Try to understand enough about other disciplines to grasp where there are overlaps, and where their main contributions may lie.
- In the long term: Enhance communication between disciplines and sectors through relevant training programmes and the provision of necessary ongoing resources and time allocated to improving communication skills.

Acknowledgements

- Bill Dutton & Malcolm Peltu
- Participants at the MIT-OII workshop, April 2005.

Dutton, Carusi & Peltu, 'Fostering Multidisciplinary Engagement: Communication Challenges for Social Research on Emerging Digital Technologies', *Prometheus*, vol 24, no 2, 2006.