Citizenship Engagement, Biotechnology and ICTs: Are There Any Inherent Problems?

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Introduction

Any type of citizenship engagement activity must be based, at minimum, on a clear communication from citizens to decision-makers and, ideally, on a clear dialogue between the parties. In this paper I present a brief analysis of how the *medium* (i.e., the use of information communication technologies or "ICTs") could affect the quality of the engagement of citizens in the biotechnology debate. I will conclude that this particular medium does not need to cause any inherent problems if, and only if, the process is managed carefully.

"Clear communication" is a difficult criterion to fulfill in the context of the biotechnology debate because key concepts are unclear. The lack of clarity can be caused by four distinct drivers: (1) a lack of willingness or an inability to clearly define a technical notion, (2) highly technical concepts that defy understanding by average citizens even if defined clearly, (3) the intrinsic value-ladeness of some notions and (4) purely metaphysical notions.

An example for the first kind of driver is the concept of 'biotechnology' itself – are we dealing with a novel or ancient technology? While it is possible, in principle, to clearly define biotechnology in a technical fashion, it is common practice to express one's ideological preference through the conception of the scope of biotechnology. On the one hand, an emphasis on biotechnology as an ancient technology (that includes agriculture and fermentation processes) goes hand in hand with the endorsement of the technology – it is implied that new regulatory hurdles may not be required. On the other hand, an emphasis on biotechnology as a novel high technology goes hand in hand with a critical stance towards its use – it is implied that strict oversight may be necessary.

Examples of highly technical concepts are 'gene,' 'stem-cells' or 'antibiotic marker.' It cannot reasonably be expected that all participants in a citizenship engagement process should want to learn, or are capable of learning, the precise meanings of such concepts.

A key concept that is intrinsically value-laden is 'safe.' To proclaim a particular biotechnological product as 'safe' is very imprecise and perhaps even meaningless. A safe product is simply a product that has been approved by a risk manager. Risk managers have to make decisions under uncertainty. One problem is that sources of uncertainty are diverse and include natural variability, measurement errors, extrapolation errors, possibly falsified data, unexpected effects and more – complex judgments are required. Further, in some contexts (e.g., environmental risk assessment) there are no commonly accepted standards that could serve as comparative measures for what is considered safe. Occasionally the notion 'safe' is used in a non-comparative, absolute way, which is void of any clear meaning.

Finally, some key concepts can be considered truly metaphysical. The notions 'dignity of persons,' 'intrinsic value of the environment,' or 'unnatural method of production' can serve as examples here. These notions are often used in the context of an absolutistic demand (e.g., the prohibition of a type of research) and, thus, will resist clarification from a scientific perspective, which can only inform the contingent rather than the absolute. The clarification of metaphysical notions, by their very nature, can only be partially accomplished.

The existence of unclear concepts renders the biotechnology debate an ideal case for testing the quality of the ICT medium – if ambiguous, value-laden and metaphysical concepts can successfully be "put through" this new medium then most likely one would succeed with any other debate as well. It is likely that the medium will have *some* effect (positive or negative) on the quality of citizenship engagement but it is not clear if the use of ICT *inherently* causes problems that cannot be managed. In this paper, I will list the potential problems associated with the use of ICTs but only pursue in more detail the kinds of issues that could render ICTs inherently problematic. First, however, I want to introduce a simplified model of citizenship engagement that will facilitate the systematic evaluation of the issues.

An "Information Pipe Model" of Citizenship Engagement

'Communication' is a rather complex concept. People communicate differently depending on the context. In terms of information throughput, all of the following will fare differently: one-on-one, groups, town halls, face-to face, telephone discussion, e-mail exchange. This variation is caused by group dynamics and by the fact that body language and tones of voice also carry information that is important in communication.

In the quest for inherent, potentially fatal distortions that could be caused by the ICT medium, however, I propose to start with a simpler analysis. I believe there is merit in starting with an "information pipe model" of citizenship engagement and then discussing the parameter outside of this simplistic model in a second step.

In an ideal democracy one can imagine that there would be direct connections, pipes for information flow, between citizens and decision-makers. In comparison to this ideal, a citizenship engagement process is more complex. Here the direct connections encounter two potential obstacles through which the pipes must be routed: the public service designing and carrying out the exercise and the medium they choose. The choice of the ICT medium renders the pipe model even more complex because it will typically require that technical facilitators mediate between the parties. Within this last model I want to inquire, "does this added complexity cause distortions that cannot be mitigated?" The following section provides a catalogue of factors that should be considered in the design and management of an ICT-based citizenship engagement process. At the same time I will attempt to identify inherent distorting factors that may be impossible to mitigate.

Potentially Distorting Factors Within the Pipe Model

At the top tier of the analysis, only two factors need to be considered. If both *access* and *reliability* are protected from distortion then the communication flow in the pipe model is not affected by the medium: there would be no distortions to the sending, transport, and reception of information (see **Figure 1** below for an illustration for what is meant by "top tier" of the analysis and for the lower tiers discussed later).

In an ICT context, access is a top-of-mind issue both on the sending and receiving end. Not only would one expect *physical barriers* preventing equal access to modern equipment but also more immediate barriers that one could

name "*familiarity barriers*." A familiarity barrier would exist if some of the parties would be less skilled in the use of an ICT medium than others and, thus, would become comparatively underrepresented. Unequal access to technical facilitators could enhance the effect of a familiarity barrier. Both types of barriers deserve close attention when setting up an ICT-based citizenship engagement process. However, it is also likely that problems are manageable if close attention is paid to the issues.

The reliability of the transport of information is a somewhat less obvious issue. One can distinguish three different potential problems: the external *extraction* of information, the external *infusion* of information, and the internal *fidelity* of the transmission. An example of the first is the *privacy* of the transmission. Experience to date has shown that the use of electronic media for communication is more likely subject to privacy concerns than traditional approaches. A perceived loss of privacy could be sufficient to distort the process because some participants may opt out of the process. An actual loss of privacy would be worse and could seriously distort the process if used in concert with an external infusion of information. *Impersonation* – the manipulation of the ICT process by an outsider to skew the information flow in the "pipe" would be an example of such a distortion. This could be particularly important in the context of an internet-based poll of citizens. Again it is likely that problems of this kind are manageable once attention is paid to them.

This leaves the internal fidelity of the transmission as the final candidate for distortion problems that could characterize the use of ICTs as inherently flawed. The fidelity of the transmission could be affected by the privileged access technical facilitators possess. Such a *facilitator effect* could involve technical manipulation and could also occur as a result of the guidance technical facilitators provide to the users of the medium (this could also be considered an element of the access issue).

Distinct from the effect of technical facilitators we have to consider the potential effect of the medium itself. Here we have to distinguish factors affecting the *quantity* or *quality* of the transmission. The best example of quantity is the possibility of lost transmission due to technical glitches – hardly a problem reserved to ICTs. As part of the evaluation of quality I want to distinguish two sub-categories: *accuracy* and "*translatability.*" ICTs can be expected to fare very well in terms of accuracy – little or no noise is introduced into the transition and it is easy to keep highly accurate and precise records. Translatability is a

measure for how well a transmission becomes coded by the sender into the medium and then de-coded by the receiver. Considering the lack of clarity of key concepts used in the biotechnology debate, the issue of translatability warrants special attention.

In all likelihood, content will matter to translatability – what is the nature of information transported in a citizenship engagement exercise? In most democracies, citizens are not decision-makers and the responsibility for new policies and regulatory frameworks lies solely with elected officials. As a consequence, elected officials and the public administration cannot and must not promise to make policy on the basis of decisions or consensuses arising from a citizenship engagement exercise (other than a referendum or a similar exercise). Therefore, content is advisory only. The upside of this limitation of the power of citizens is that they are at liberty to express their whole view - facts, traditional knowledge, anecdotes, beliefs, predictions, perspectives, fears, emotions, opinions, values, moral imperatives and limits. Some participants in the biotechnology debate may want to prohibit the use of some of these expressions and, thus, secularize the dialogue. In the context of citizenship engagement, however, such a severe constraint on dialogue is neither advisable nor justifiable - religious freedom is a human right, after all. Therefore, we need to evaluate all types of information in terms of translatability – including unclear concepts that resist definition, are highly technical, value-laden or metaphysical.

The worst-case type of an ICT in terms of translatability is probably the use of text-based Internet. One could argue, for example, that it is comparatively difficult to convey such emotive content over the Internet when compared to a face-to-face interaction. But we do have to acknowledge that e-mail "flame wars" are a reality. One could further argue that it is difficult to have sufficient iterations to expound and explore complex concepts, but this limitation could be even more pronounced in a workshop setting. Yet another concern is that the medium could force the secularization of content. Secularisation is an important concern because some participants use metaphysical concepts not because they are clear but because they allow for absolutist' demands – to "put one's foot down" so to speak. However, one could also argue that the pressures to secularize are even more pronounced in spoken communication.

Nevertheless, it is likely that any citizenship engagement process relying on written language (ICT-based on otherwise) could introduce distortions caused by limitations in translatability. The information transmitted in written

communication is a subset of the information transmitted in oral communication – some emotions and tones are hard to capture when one sits in front a keyboard. Ambiguous or metaphysical terminology cannot be earmarked and discussed with the same ease as in an oral communication. It is true, of course, that philosophers have discussed metaphysical concepts in written form since this medium became available. But the very existence of philosophy as a technical discipline suggests that much sophistication is required to do so. In citizenship engagement, these expressions often seem to be used as placeholders to express an absolutist stance that may be difficult to substantiate in a secular world. Nevertheless, the stance is real and deserves to be heard with the emotional force with which body language can provide it. We should also note in this context that religion, politics, and even philosophy still very much follow an oral tradition. Priests still want to be seen, politicians still debate in person in their parliaments, and philosophers ranging from Socrates through Wittgenstein to many current teachers have believed in the importance of direct dialogue. In the final analysis, one could argue that the problem of the translatability of absolutist, metaphysical concepts is yet another access problem – many people are skilled at oral rhetoric but fewer are skilled at the use of metaphysical concepts in a clear, written text.

Access	Physical barriers			
	Familiarity barriers			
Reliability	Extraction (e.g. privacy issues)			
	Infusion (e.g., impersonation)			
	Fidelity	Facilitator effect		
		User/Medium effect	Quantity	
			Quality	Accuracy
				Translatability

Figure 1: Potential problems caused by the use of ICTs in citizenship engagement within the "pipe model."

Thinking Outside of the Pipe

The pipe model leads the mind to think in a linear and simplistic way. It is suitable to describe how government can hear the voice of citizens (to improve the quality of decisions) and how it can inform citizens (as a means to satisfy transparency and accountability requirements) – but not much more.

A citizenship engagement exercise, however, can potentially achieve much more. An important motivation driving the current trend towards increased citizenship engagement is the hope that it will foster *trust*. It is extremely likely that the medium chosen will play a role in how well this particular goal can be achieved. Face-to-face interaction is normally a requirement in a trust-building interaction. ICTs that provide video transmission may approximate the quality of this interaction, but the use of text-based Internet certainly does not.

Another important goal is to improve the capacity of citizens to engage in important and complex debates including the current biotechnology debates (on genetically engineered crops, the use of stem-cells, etc.). One could consider this improvement in capacity a contribution to the building of social capital or one could conceive of it as the project to "*build a better activist.*" Such a capacity requires a rather complex support system. Relationships and networks of interactions are required for a full dialogue among citizens, and between citizens and government. Knowledge must be processed, transferred and grown interactively. Skills to argue and persuade, to accommodate other views and to analyze the strength of arguments must be fostered. The capacity to evaluate the concepts of risk and safety must mature. Again, it is not likely that ICTs currently provide the ideal medium to achieve this complex goal.

Discussion and Conclusion

This analysis illustrates the fact that it is difficult to identify inherent, potentially fatal problems caused by the ICT medium if, and only if, a citizenship engagement project resembles the pipe model described in this paper. The information pipe model satisfies the need for straightforward "listen and tell" that is, indeed, an important component of citizenship engagement. However, citizenship engagement may be undertaken for more ambitious goals: to build trust and to foster the capacity of citizens to meaningfully engage in political dialogue. In this latter case, the pipe model does not apply and ICTs can be considered less than ideal.

Even within the pipe model, the use of ICTs requires close attention to potential causes of distortions – a rather large number of factors need to be managed in this complex system. Further, the use of ICTs (at this early point of technological development) may increase the use of written rather than oral communication. This, in turn, could introduce distortions caused by

translatability problems – in particular in debates that heavily rely on unclear concepts such as the biotechnology debate.

At this point I want to emphasize the fact that the analysis presented here is quite limited. Intentionally, I have searched for problems and have not reported the potentially substantial benefits of ICTs. A key attraction of ICTs is potentially reduced costs. However, they could also provide less obvious advantages, for example the potentially *improved* access to citizenship engagement activities for citizens living in remote areas. Finally, some benefits may be surprising. A recent study revealed, for example, that people are twice as likely to lie over the telephone than by e-mail (Biever 2004, 23). A plausible explanation for this observation is that the automatic recording of e-mails leaves a trail that inhibits some speakers from lying. We have to ask, therefore, if the possible translatability distortions caused by a requirement to write, rather than speak, are not offset by the benefits the automatic recording of statements has on people's honesty.

As a result, this analysis provides merely a critical foundation for the empirical evaluation of ICTs in the citizenship engagement context that ultimately must be addressed empirically. However, it may aid in the design of such an empirical evaluation. And it provides an argument in a favor of full-cost accounting to evaluate the cost-effectiveness of ICTs. The consideration of the costs of all checks and balances required may render the traditional face-to-face dialogue comparatively more financially competitive than one may initially think – not to mention that the tradition provides some results "outside of the information pipe" that are worth noting.

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References

Biever, Celeste. 2004. “People lie more on the phone than by email,” *New Scientist*, 14 February, p. 23.