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Procedural Rhetoric Meets Emergent Dialogue: Interdisciplinary perspectives on persuasion and behavior change in serious games for sustainability.

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Abstract

In this paper we discuss several different perspectives on persuasion and behavior change and consider how they may be used to inform the design of serious games and other digital media for sustainability. These perspectives include the classic "information deficit" model of persuasion, as well as two more recent perspectives: "procedural rhetoric", and "emergent dialogue". We discuss how these approaches to persuasion also lead to new approaches to the design of serious games, and also consider how games and simulations may be integrated into a process of public engagement.

Keywords

Sustainability; Public Engagement; Serioius Games; Procedural Rhetoric; Emergent Dialogue

1. Introduction

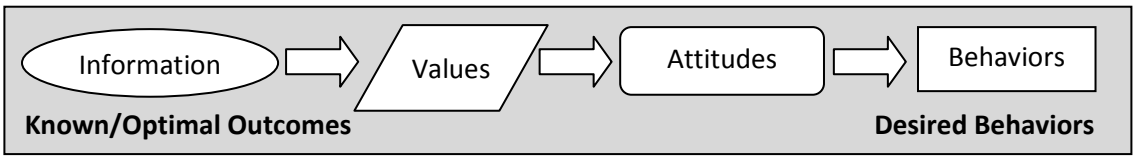
Greenest City Conversations is a collaborative interdisciplinary research project aimed at fostering and evaluating multiple channels for public engagement on sustainability policies. Its two main goals are (1) to facilitate discussion, solicit and analyze public attitudes and opinions on, and support for, a variety of sustainability policies; and (2) to provide a comprehensive understanding of the content and impacts (both qualitative and quantitative) of different modes of public engagement ("channels"). This paper is written from the perspective of the channel primarily concerned with the design and use of digital games for public engagement in sustainability issues.

In this paper we discuss several perspectives on persuasion and behavior change and consider how they may be used to inform the design of serious games and other digital media for sustainability. Traditional models of behavior change operate on an "information deficit" model. The philosophy underlying this approach holds that unsustainable behaviors are the result of a lack of "correct" information, and that motivating behavior change is a matter of educating an individual about more correct behaviors (He, Greenberg, & Huang, 2010). We present a brief discussion of the models involved in this approach, and then propose two additional approaches to persuasion: *procedural rhetoric* which is derived from Ian Bogost's work on persuasive games (Bogost, 2007, 2008), and *emergent dialogue* which is derived from John Robinson's work on engaging communities in sustainability issues (Robinson, 2004; Salter, Robinson, & Wiek, 2010). We discuss how these two recent approaches lead to different approaches to the design of serious games, and consider how they can be combined in a unified approach.

2. Information Deficit Models of Behavior Change

Many current approaches to sustainability are based on an 'information deficit' model of behavior change. This model posits that providing information changes *values*; value change drives changes in *attitudes;* attitude change drives changes in *behaviors* (He, et al., 2010). For example, it is common for local governments and organizations to run community workshops and lectures intended to educate participants in the benefits of recycling, conservation, reuse,

and other environmentally friendly practices[1] . These types of workshops work on the model that unsustainable behaviors arise from a lack of education.



This model assumes a top-down model of sustainable behavior where some entity or organization (such as a national government, NGO, educational institution, or other authority) already has determined what the optimal behavior is for the individual to adopt. There are five common motivational models that conform to this approach: (1) Attitude, (2) Rational-Economic, (3) Information, (4) Positive Reinforcement, and (5) Elaboration Likelihood Model.

The Attitude model assumes that changing an individual's attitudes will result in changes in behavior. The Rational-Economic model assumes that financial factors alone will motivate positive changes in resource use behavior. The Information model, similar to the Attitude model, assumes that providing information to energy users will encourage improved behavior, reasoning that, "once you know what to do, you will do it." (He, et al., 2010) Positive Reinforcement encourages desired behaviors through positive feedback stimuli. Finally, the Elaboration Likelihood technique uses a more sophisticated approach, combining logical arguments and emotional persuasion to motivate behavior change. All of these models have been implemented using networked technology for a variety of applications (e.g. online energy consumption dashboards, informative art). All of these persuasive models depend on the intellectual commitment that what the public is largely lacking is information. These information-centric models assume that by using best new media practices to design and communicate the right information, behavior change will follow. However, if the last few decades of sustainability education are any indication, this approach alone is insufficient for widespread behavioral change. John Robinson points out that this is due in no small part to the fact that:

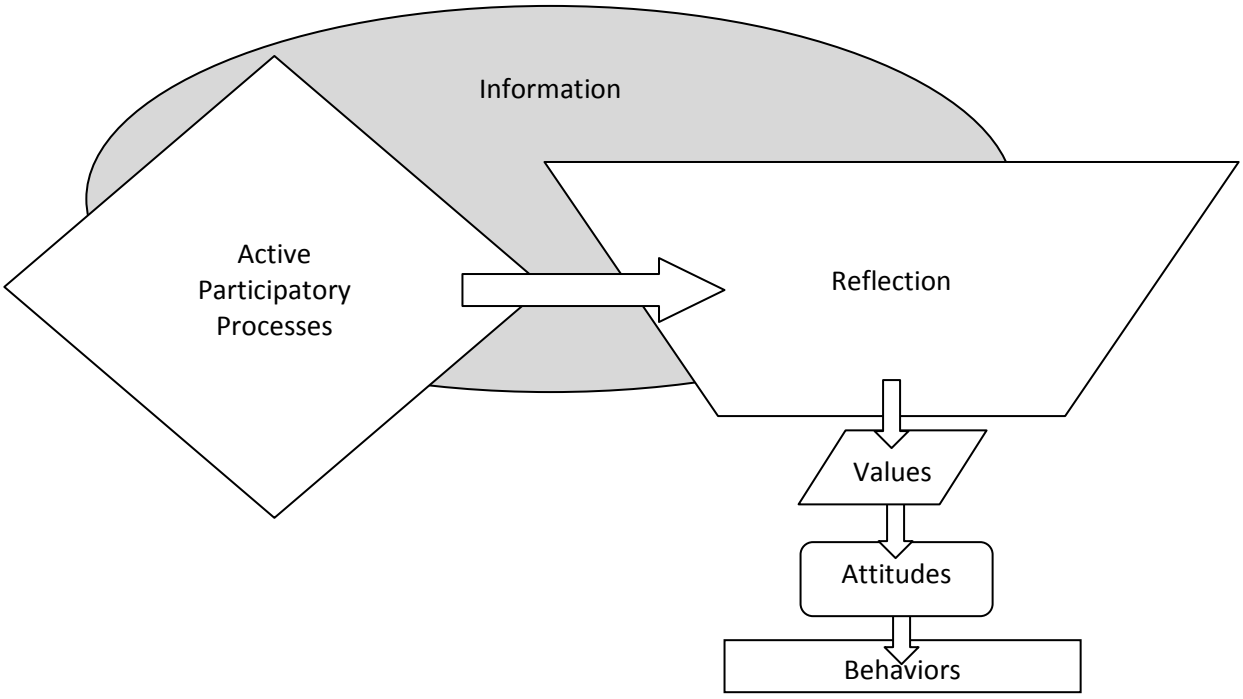
> "Multiple conflicting views of sustainability exist [that] cannot be reconciled in terms of each other. In other words, no single approach will, or indeed should be, seen as the correct one. This is not a matter of finding out what the truth of

[1] In British Columbia, for example, it is common for local governments to support community education programs such as the Abbotsford Community Services Recycling Program. http://acsrecycling.ca/home/education-programs/#community

sustainability is by more sophisticated applications of expert understanding ... Instead we are inescapably involved in a world in which there exist multiple conflicting values, moral positions and belief systems that speak to the issue of sustainability." (Robinson, 2004)

Given this, we must instead look at other models of behavior change and persuasion for public engagement in sustainability issues. The first model we consider comes from research into persuasive games.

3. Procedural Rhetoric



In the field of Serious Games, one of the biggest areas of interest is sustainability and environmental issues. The *Games For Change* website, for example, lists 24 games in the "environment" category, released between 2007 and 2010, compared to only 9 games each in "education" and "economics" and 15 games in "civics", "conflict", and "health" (Games For Change, 2011). As interest in serious and persuasive games has risen, new models of persuasion in games have evolved. The current leading theory for how games persuade their players is Ian Bogost's concept of *Procedural Rhetoric* (Bogost, 2007). Procedural Rhetoric is based on the notion that the processes and activities that participants engage in during play are more persuasive than the information that is layered on top of those processes.

> "Procedural rhetoric is a general name for the practice of authoring arguments through processes. Following the classical model, procedural rhetoric entails persuasion—to change opinion or action. Following the contemporary model, procedural rhetoric entails expression—to convey ideas effectively…its arguments are made not through the construction of words or images, but through the authorship of rules of behavior, the construction of dynamic models." (Bogost, 2008)

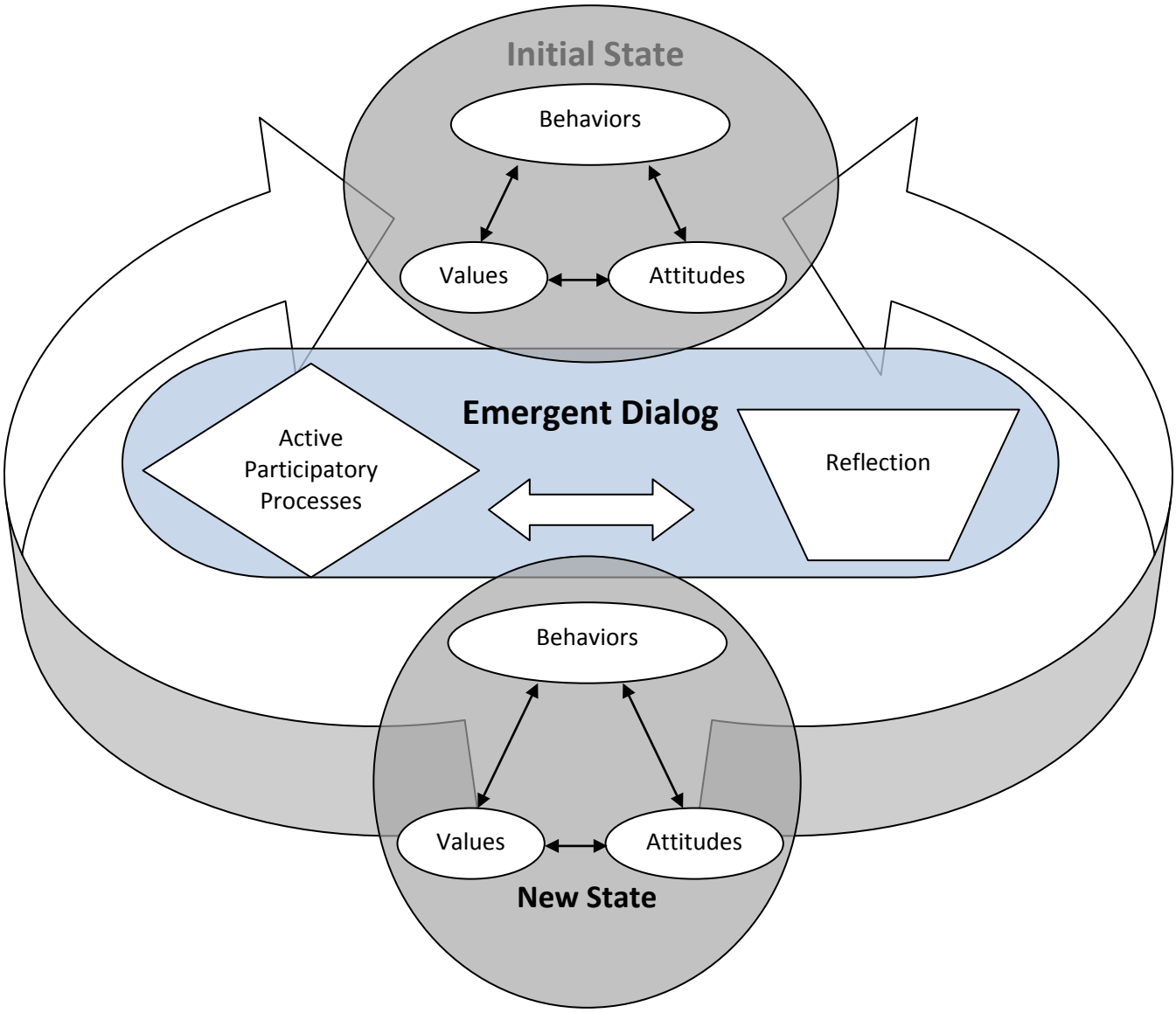
Unlike the information deficit model of behavior change, the procedural rhetoric model grounds itself in an active process of experience and reflection. Information is still present in this model, but it is not the basis for behavior change. Instead, information underlies the design of a set of active processes, but it is the experience of these processes and the reflection on them that motivates any changes in values, attitude and behavior. Although for different reasons, procedural rhetoric and the information deficit model both employ a top-down approach. For procedural rhetoric this emerges out of the necessarily asynchronous medium of communication: an author or designer must encode a procedural system with a set of potential activities which are then enacted by the participant. In the third model we consider this particular limitation is avoided by positioning behavior change as an outcome of an emergent participatory dialogue.

4. Emergent Dialogue

The final model of behavior change that we will look at is a relatively new one from within sustainability research, based on the extensive critiques of the information deficit model mentioned above. As articulated, for example, by Robinson and his colleagues (Robinson, 2004, 2008; Salter, et al., 2010) this model suggests that what is needed is not information but participation in meaningful processes exploring sustainability issues. Robinson's group argues that the previous conception of a unidirectional flow from values to attitudes to behaviours is inaccurate. Instead, they contend that information flows in a bi-directional manner, and that often the flow is in reverse: that people bring their attitudes in line with the behaviours they are already accustomed to.

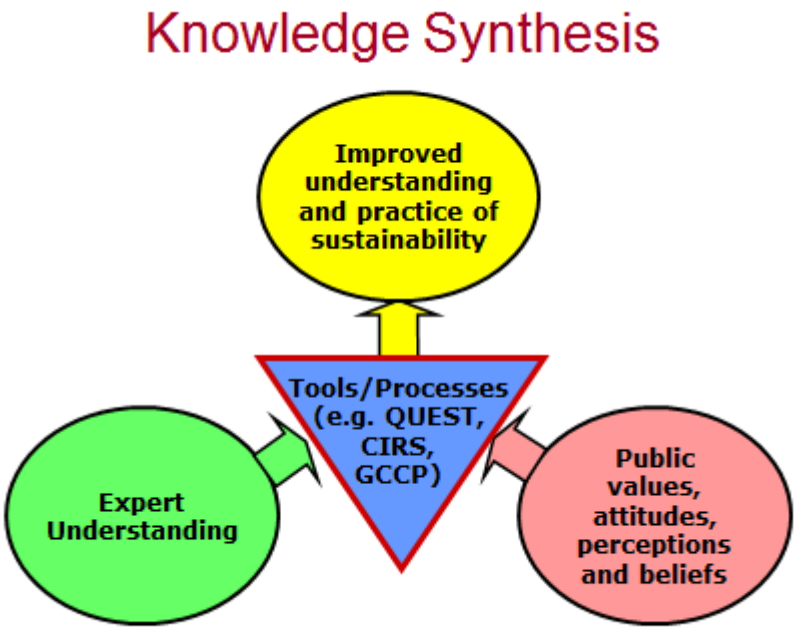
In participatory processes, the information content is not predetermined: instead it emerges through dialogue. This then leads to new understandings, which then feed back into the loop in a hermeneutic process of ongoing negotiation and reevaluation. From this perspective, the goal of public engagement is not to educate people about correct or incorrect

behavior but instead to motivate people to generate their own views about the type of world they want to live in. Unlike the previous two models, which focus on the decision making process of individuals, Robinson's Emergent Dialogue model positions people as social actors, collectively negotiating a shared vision of their desired future. The emergent dialogue model is not focused on individual behaviour change but instead on social mobilization in support of collective behaviour change. This emerges from the judgement that the most important changes are those (like land use, density, urban form, settlement patterns, transportation infrastructure, energy and water systems) that do not occur at the individual level but at the collective level (and indeed deeply constrain individual behaviour change).



This illustration shows one way of conceptualizing the Emergent Dialogue Model, highlighting the hermeneutic processes of feedback and reevaluation that it introduces.

Robinson has also used a slightly different model (Robinson, 2008), which highlights the nature of relationships between different stakeholders and processes of dialogue in this exchange as a more social process:



Unlike the Information Deficit model, which is communicating a preset story about sustainable practices, the Emergent Dialogue mode asks people to imagine their own story for the future. The potential benefit of this model is that participants recognize the complex, multi-level nature of ecological, social and economic problems, and the consequent need for innovation, creativity and adaptive response.

Unlike the procedural rhetoric model, which is limited by what can be encoded within a computational system, the emergent dialog model operates under the assumption of multiple human participants, all of whom are capable of creating new information through the process of engagement. This model is thus the only one of the three that fully supports the creation of new outcomes and information about sustainable practices. However, this strength also limits the approach, as the applicability and viability of these outcomes is a function of the commitment and effort of the participants. We consider this approach alongside the other two in the

following section, and discuss the implications of these models for the design of serious games. How can we use these models and approaches to facilitate meaningful emergent dialogue?

5. Designing Serious Games for Behavior Change

Each of these models has certain advantages and disadvantages for the design of serious games. For many years the Information Deficit model dominated educational game design, which resulted in many games where the content and the mechanics of play were only proximal to each other rather than interrelated. Our biggest critique of the Information Deficit model is that it has historically failed to result in behavior change. From the perspective of Emergent Dialogue, this is because the Information Deficit model does not provide any avenue along which the recipient may arrive at her own conclusions about sustainable behavior. Both the Procedural Rhetoric and Emergent Dialogue models provide participants with opportunities to experience the issues through an active process and to arrive at their own conclusions about what is required to move themselves, their community, and their culture towards a more sustainable future. While Procedural Rhetoric still relies on a top-down asynchronous model of information, it does have the distinct advantage of being more easily communicated and transmitted via procedural systems such as games and simulations. Where Emergent Dialogue really stands out is in its ability to reincorporate personal and local approaches to sustainability back into the dialogical process, however the conditions for productive emergent dialogues to occur are difficult to create and sustain. Emergent Dialogues can benefit from new methods of facilitation that don't require large scale community events in order to succeed.

We thus see these three models as existing along a spectrum from the most authoritarian top-down approach on one end (the Information Deficit mode) to the most participatory and bottom-up approach on the other end (the Emergent Dialog Model) and Procedural Rhetoric in the middle. Procedural Rhetoric represents the current limit of our ability to design and conceptualize computational systems that support participatory meaning making processes.

The Greenest City Conversations project is currently working on techniques for the design and implementation of digital games that can be incorporated in a process of Emergent Dialogue. We contend that games utilizing procedural rhetoric can be used as part of a larger process of public engagement, by contextualizing them within a broader conversation about sustainability. Games and simulations provide configurable tools that can serve as shared points of reference and negotiation for intergenerational conversations, and small scale workshop

participation. If a procedural rhetoric is made sufficiently entertaining it has the potential to engage members of the public who might not otherwise be motivated to participate in a dialogue about sustainability issues. In spite of their limitations, we see serious games as playing an important role in an emergent process of public dialog, which we see as essential to a process of behavioral change.

Each of these three models has different implications for the design of serious games. For example, games that incorporate the Information Deficit model can provide participants with detailed access to facts, opinions, and other materials related to the issue, but may not provide the participant with an experience that is similarly relevant. Games designed using the Procedural Rhetoric model may not include as much factual information; however the activity of playing them should create a state of mind in the participant that communicates a message about the related issues. Finally games designed with Emergent Dialogue in mind need to provide the participant with the ability to create her own models and potential outcomes by configuring different variables within domain of concern. Any one of these approaches is going to incorporate elements of the other two: a game rooted in Emergent Dialogue will still require information to manipulate, and any interactive system is going to include a Procedural Rhetoric of some sort. By incorporating an awareness of these modes of engagement into our designs we are able to create game experiences that more specifically serve a particular approach to facilitating public engagement.

Acknowledgments

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