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Abstract Castro and Batel's (2008) study points to some important strategies of resistance to social change in the transformation of transcendent to immanent representations. We contextualize this study within a broader cyclical model of social change, in which their focus is one of the four phases in the cycle. The expanded model is exemplified in the shifting representations of science communication in the UK from the 'deficit model' of public understanding of science to the dialogic representation of 'public engagement'. Within each of the four proposed phases, the dialectic of adoption/rejection is central, although it is modulated by strategies of resistance and the selective distribution of resources.

Key Words practice, public engagement, Public Understanding of Science, representations, resistance, social change

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A Cyclical Model of Social Change

Castro and Batel (2008) develop an innovative and thought-provoking argument about the nature of social change, drawing on a case study of expert decision-making and public protest in Portugal. They describe new laws as 'societal proposals', innovation or 'transcendent representations' (Harré, 1998), which eventually become interwoven in practices or 'immanent representations'. It is implied that transcendent representations will inevitably yield immanent representations, except when there is 'active resistance'. Much of Castro and Batel's article then examines 'the repetitive arguments and discursive strategies people use to resist new norms' (p. 481). Specifically, they analyse experts' strategies of resistance to new European laws mandating public participation in neighbourhood redevelopment. What emerges is a progressive model of social change in which resistance strategies create a situation in which 'practices lag behind' (p. 477) new norms.

We commend the authors' empirical work on representations in action and transformation, treating representations as dynamic social processes rather than static things. However, we take issue with the implicit claim that the introduction of new laws necessarily leads to

'norms', which ultimately change practices (even if slowed by resistance). There are numerous examples of legal 'innovations' being repealed after failing to change norms and practices within society. The American Prohibition on alcohol in the 1920s famously failed to curtail alcohol consumption, instead merely shifting alcohol revenues from legitimate businesses to organized crime. Abortion as a practice has been resilient to legal prohibitions and the powerful social stigma associated with the procedure. More recently, the Croatian government introduced an anti-smoking bill in 2006 that was so unpopular it was quashed before even becoming law. These examples suggest that social change is highly contingent, non-linear and culturally bound. In this essay, we outline a general model of social change that incorporates these features, identifying four phases in a cycle of social change between transcendent to immanent representations. These phases are internally defined by the dialectical processes of adoption and rejection wherein an inchoate change can move forward, undergo revision or reverse course completely at each phase. We give particular attention to the phase addressed by Castro and Batel, where the adoption/rejection dialectic is most salient.

The Four-Phase Cycle of Social Change

Elaborating the distinction between transcendent and immanent representations (Harré, 1998), we arrive at a general model of social change with four distinct phases (see Figure 1). We call them 'phases' to emphasize the processual nature of representations over their static form; this equates to the difference between asking 'by what processes do social representations transform?' instead of 'what are the social
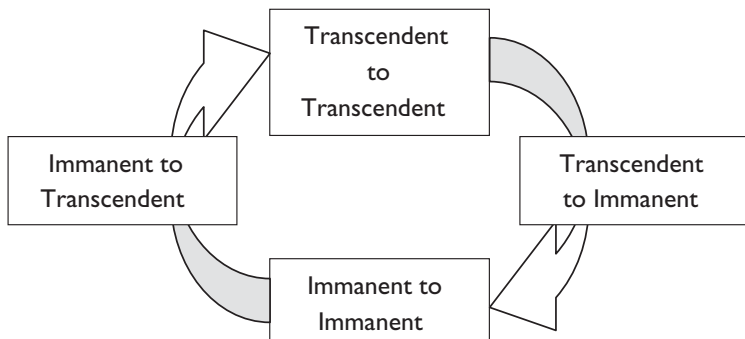

Figure 1. Four-phase cycle of social change

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representations of *x*?' Inside of the general four-phase model we see invention, innovation, resistance, adoption and reversal occurring as part of a more continuous long-term process.

Each phase provides unique opportunities for research. The transformation from transcendent to immanent representations skilfully studied by Castro and Batel is but one phase of a four-phase cycle. Let us briefly describe each phase individually here before going on to explore them in more depth:

- *Transcendent to transcendent representational change* [T→T]: These processes involve intellectual, rhetorical and discursive struggles over how something should be represented. Moscovici's (1976/2008) description of the 'culture battle' over the status of psychoanalysis is the classic example of this. Liberal, Catholic and communist presses all advanced their own representation of psychoanalysis which fitted into the larger project they had for themselves. For example, the communist press slotted psychoanalysis into the bad column of their dichotomized view of the world. The word 'psychoanalysis', for this group, would simultaneously evoke 'American', 'bourgeoisie', 'capitalist' and 'pseudo-science'.
- *Transcendent to immanent representational change* [T→I]: This is the phase studied by Castro and Batel. Here institutions and organizations are mobilized to create norms and practices that align with the ascendant transcendent representations. If a transcendent representation is successfully encoded into professional norms and practices, then the putative social change will enter the next phase.
- *Immanent to immanent representational change* [I→I]: Here representations change through repetition or meeting of behaviours. Numerous actors must frequently coordinate their activities together. Conflict often arises in situations in which actors have different interests and habits. These dramatic confrontations often lead to further change in practice.
- *Immanent to transcendent representational change* [I→T]: This is the initial phase of reform, where practitioners recognize the contradictions inherent in a practice and begin to articulate both how it is problematic and alternative ideas that overcome its difficulties. The cycle then returns to Phase T→T for renewed debate, re-framing, reconstruction or complete termination.

Of course, this conceptualization is itself overly linear, but it offers us a helpful heuristic to identify research foci and contextualize them within a broader framework. Still, it is important to remember that more than one phase of social change will frequently operate simultaneously in a

complex and sometimes incoherent web of meaning-construction and -reconstruction.

The continuous, long-term and cyclical nature of social change is evident in the history of public engagement with science in the UK. This domain of norms and practices corresponds well to Castro and Batel's discussion of new norms regarding public participation and the resistance of expert systems to their implementation. The relationship between UK science and its publics has undergone significant transformations mediated through law (transcendent representations) and science communication practices (immanent representations) from the late 1970s to the present. In the following sections, we explicate the dynamic interplay between transcendent and immanent representations of science–public relations as they move through the cycle one and a half times.

T→T: The Rise of 'Public Understanding of Science'

Because social change is cyclical and continuous, there is never a single starting point or event that inevitably yields durable social change. Therefore, the selection of a starting point will always be somewhat artificial and arbitrary. For example, the development of the transcendent representation of 'Public Understanding of Science' (PUS) within the UK and US is inextricably tied to earlier events and immanent representations in science communication. An important aspect of this historical backdrop for transcendent deliberations over PUS is the raft of scientists' concerns about falling test scores in scientific topics, declining university enrolment in certain scientific disciplines and a perceived increase in the public's scientific ignorance. These concerns within the scientific establishment, as well as Anglo-American politicians' anxiety about the economic implications of 'falling behind' in science and technology, developed from Phase I→I and Phase I→T processes, but they soon became the *raison d'être* for new transcendent representations and concomitant changes in government policy. A defining moment in the struggle over the transcendent representations in Phase T→T was the Bodmer Report (1985) published by the Royal Society. This report declared that scientists had a 'duty' to communicate and raise the 'public understanding of science'. Notions of 'scientific literacy' accompanied the 'Public Understanding of Science' (PUS) representation. Within this representation, the public was deemed deficient in knowledge and perceived as increasingly hostile towards science. The assumption within PUS was that public scientific knowledge could be measurably increased through educational means. Moreover, it was believed that such an increase in knowledge would

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have direct effects on attitudes towards science, making publics more supportive of scientific research across the board.

T→I: Structuring the Field

The processes described by Castro and Batel centre on the attempt to transform transcendent representations into immanent representations that guide practice within a field. Because this is the subject of Castro and Batel's study, we give this phase the most extensive treatment. Indeed, within Phase T→I we would like to broaden the scope of analysis from just 'resistance strategies' to also considering the processes of 'adoption'. The dialectic of norm adoption/rejection involves both active and passive modes, which develop in relation to the existing structure of a field. In our account below, we emphasize the role of resource distribution and common-sense understandings within the field. These factors shape the adoption/rejection dialectic at a fundamental level, although discursive and behavioural strategies are also important.

Resistance Strategies

Castro and Batel identify several discursive resistance strategies, including the 'abstract/concrete distinction', the 'citizen/expert distinction', 'blame the Other', 'we have already changed' and the use of conflicting definitions of public participation. Other work on resistance strategies has been developed by Erving Goffman (1961). His study explores recurring patterns of resistance and acquiescence in totalizing institutions such as prisons or hospitals. Totalizing institutions exemplify both the power to impose norms from above, and the inevitability of resistance from below. Goffman enumerates four resistance strategies under the category of 'playing it cool' exercised by inmates when suffering 'mortification of the self' or loss of face: He identifies (1) 'situational withdrawal', wherein inmates seek to mentally remove themselves from the identity threatening situation through daydreaming and fantasy; (2) 'establishing an intransigent line' beyond which outright non-compliance will be employed; (3) 'colonization', in which the inmates accommodate themselves to the humiliation by unrealistically comparing the institution positively with the outside world; and (4) 'conversion', which involves inmates at least appearing to fully adopt the institutions' definition of reality. Paul Willis (1977) found similar patterns of unstructured resistance to the implementation of transcendent values in his classic ethnography of a working-class youth counter-culture in Britain (cf. Gordon, 1984).

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Entering Fields of Practice

Phase T→I in our model includes such strategies, while maintaining an important role for the institutions and organizations sponsoring a new transcendent representation. Our understanding of the mechanisms by which the adoption/resistance dialectic operates is led by cultural sociologist Pierre Bourdieu, who argues that fields of practice are governed by a structured logic. Through the selective allocation of resources, both symbolic and economic, the rules of the game in a particular field become real to the players within it. Bourdieu (1986) notes that 'the social order is progressively inscribed on people's minds' through the struggle for these resources (p. 471). That is, the 'objective limits' of the field become part of a practitioner's 'sense of one's place' that is 'acquired by experience' (p. 471) as a result of structural constraints which demand of individuals 'a proleptic adjustment to the demands' of the field (Bourdieu, 1990, p. 66).

   The common-sense assumptions within the field stem from 'the fact of being caught up in and by the game [within a given field], of believing the game is . . . worth playing and that the stakes created in and through the fact of playing are worth pursuing' (Bourdieu, 1998, pp. 76–77). The 'unthought presuppositions that the game produces and endlessly reproduces' become the immanent representations, or the basis for action, within the field (Bourdieu, 1990, p. 67).

> The economy of the field is the basis of 'sensible' practices, linked intelligibly to the conditions of their enactment . . . and therefore filled with sense and rationality for every individual who has the feel for the game. (Bourdieu, 1990, p. 66)

Over time, the 'system of presuppositions inherent in membership in a field' (Bourdieu, 2005, p. 37) becomes embodied in the practitioner. The accumulated personal experience 'turned into nature' is what Bourdieu labels *habitus*; this embodied phenomenon operates as a 'generative principle of regulated improvisation' for practitioners (Bourdieu, 1977, p. 78). The *habitus* then becomes the fundamental unit of adoption or rejection when a new transcendent representation seeks acceptance within the immanent domain. To be successful in reshaping practice within a field, new norms must be imposed through the re-formation of systems of reward and punishment tied to distribution of symbolic, cultural and/or economic capital within the field. The dialectic of adoption/rejection is moderated within Phase T→I by such institutional and/or organizational restructuring of resource distribution to correspond to the new transcendent representation. This kind of structural change must be instituted for a successful T→I transition.

However, structural change alone is not sufficient to ensure the implementation of a new transcendent representation. New norms must contend with the common-sense assumptions about the field, which are embodied in the *habitus* of individuals. A new transcendent representation must be able to accommodate itself to the 'universe of the tacit presuppositions that we accept as the natives of a certain society' or a certain field of practice (Bourdieu, 2005, p. 37). A transcendent representation that is wildly out of step with existing common-sense notions held by practitioners in a field is unlikely to be fully accepted as an immanent representation, especially in the short term. Of course, if the restructuring of resource distribution is fully and permanently implemented, T→I social change is still possible in the long term as new beliefs and assumptions are developed over time. Thus, Bourdieu's theory of practice points to two main fulcrums shaping social change: (1) restructuring the distribution of capital within a field and (2) the level of coherence between the new transcendent representation and pre-existing assumptions about the field inscribed on the *habitus* of practitioners.

Phase T→I in the Field of PUS

As indicated above, the goals of PUS were to increase knowledge and appreciation of science amongst the general public. In Phase T→I, this transcendent representation was encoded into practice through the distribution of economic capital to professional science communicators and science educators, as well as symbolic capital granted to scientists who entered the public sphere to educate the public. The transition of PUS from transcendent representation to professional norms and practice was aided by the pre-existing belief structure inside the scientific and educational fields favouring didactic modes of relating with publics. Given the elective affinity between old norms of 'teaching' and new norms of 'fostering knowledge and appreciation', PUS was easily accommodated into immanent representations of 'science education' and 'science outreach'.

However, there was some resistance by 'ivory tower' academic scientists accustomed to a degree of insulation from publics. Ultimately, the primary resistance to Phase T→I of PUS was amongst these academics, who pointed out that they were not rewarded with economic or symbolic capital for seeking to increase public understanding of science (Holliman & Jensen, 2009). Indeed, in some cases scientists felt they would be handicapped in their career progression if they accepted PUS as an immanent representation guiding their daily practice (Holliman, Jensen, & Taylor, 2007). This partial rejection in

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Phase T→I was a result of many academic institutions not restructuring their system of resource distribution to align with the transcendent representation of PUS. At the same time, PUS did not fully cohere with the aforementioned 'ivory tower' self-perception within some academic departments. These factors limited the implementation of PUS as an immanent representation amongst most academic science departments, even as the professional science communication community adopted the approach wholeheartedly.

Phase I→I: The Immanent Failure of PUS

Once implemented, a new professional norm—or immanent representation—will typically come into contact with public stakeholders. In the present case, high-profile controversies involving wholesale rejection of the assurances of the scientific establishment made it clear that new immanent PUS representations, guiding didactic science communication practices, were not improving knowledge of or appreciation for science in the UK. This series of scientific crises included the BSE/CJD 'mad cow' outbreak in which UK government scientists and officials issued unqualified assurances to the public saying that it was impossible for the disease to cross the species barrier to humans. When these assurances proved false, both the UK government and scientific establishment were excoriated by the press, while suffering concomitant reductions in public trust. When the genetically modified (GM) foods debate arrived a few years later, the sweeping scientific safety assurances were rejected by the tabloid press and large segments of an increasingly sceptical public. Protests soon drove supermarkets to announce they would not stock GM foods, with government then initiating a temporary and partial hold on GM crops in the UK pending further evidence. Scientists viewed the GM debate in particular as a clear example of an irrational public overreaction to hyped fears fuelled by an irresponsible tabloid press. Yet the strength of public opposition startled the government and scientific establishment, moving them to re-assess and develop new strategies and ways of thinking about the problem of public attitudes towards science. This propelled the immanent representation of PUS into Phase I→T for re-evaluation in advance of a return to the transcendent state (T→T) for complete rebuilding or termination.

Phase I→T: Social Science Enters the Fray

In Phase I→T the (at least partially) rejected norm is renegotiated.[1] The failures of the norm's immanent representation are analyzed to facilitate the subsequent process of re-formulating it into a new

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transcendent representation, which begins the cycle anew. In the present case, PUS's failures were recognized by a wide range of actors and institutions. Significantly, social scientists began drawing on empirical case studies to criticise PUS as promoting a 'deficit model' of the public that ignored 'lay expertise' and practical knowledge of scientific processes (Wynne, 1996). This social scientific work helped to explain the failure of PUS to prevent scientific crises such as those surrounding BSE/CjD and GM crops.

Phase T→T: Public Engagement with Science

Phase T→T draws inspiration from the (at least partial) rejection of the previous transcendent representations within Phase I→I. Powerful institutions are the most common actors in this sphere, even if the ideas are drawn from grassroots protest movements. In the present example, the new transcendent debate was inspired and given its urgency by the high-profile rejection of averred scientific certainties in the foot and mouth, BSE and GM crises of the 1990s. In many ways these examples of the failure of the immanent representation of PUS were mediated through social scientific expertise. Indeed, social scientists were invited to give testimony in government hearings, which culminated in the widely heralded House of Lords 'Science and Society' report in 2000. This report and others from within the UK scientific establishment called for a new two-way 'dialogue', also known as 'public engagement'. No longer should science employ the 'deficit model' of the 'failed' PUS approach. Rather, the new transcendent representation of public engagement promoted a more humble science that would listen to public concerns, not dismiss them or attribute them to scientific misunderstandings. In sum, the new transcendent representation of public engagement was explicitly constituted as a rejection of the previous PUS representation when it first gained acceptance in government policy discourse.

Phase T→I: Partial Adoption of the New Public Engagement Model (Current)

A recent study by Holliman and Jensen (2009) has shown that the new transcendent representation of 'public engagement' has only been partially accepted within the practitioner community (also see Jensen & Holliman, 2009). They found only a minority of their sample of scientists with experience communicating with publics defined 'public engagement' in 'dialogic' terms, as defined in Phase T→T above. A majority of participants perceived public engagement in the same manner as PUS. Thus, while some practitioners have genuinely

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adopted the new transcendent representation of public engagement into an immanent representation that guides their behaviour, others have at least implicitly rejected this transition. Rejection of this putative social change frequently takes the form of what Goffman might call 'conversion', wherein practitioners maintain the appearance of compliance with the new transcendent representation by paying lip service to the words 'public engagement'. However, these 'rejecters' then completely reconstruct the practical meaning of 'engagement', creating an immanent representation that is effectively the same as the immanent representation of PUS. Because the system of resource distribution in the field of public-science communication has not been restructured to demand that public engagement be instituted as an immanent representation that guides practice (see Bourdieu, 1977), practitioners are able to satisfy their sponsors that they are 'converted' to the new norm of 'public engagement' while maintaining an immanent representation that aligns with PUS practice. For many practitioners this passive form of norm rejection stems from the lack of coherence between the Phase T→T transcendent representation of public engagement and a *habitus* encoded with pre-existing 'deficit model' attitudes and worldviews.

Conclusion

Castro and Batel (2009) have raised a number of interesting questions with their application of Harré's (1998) concepts of transcendent and immanent representations to the complex arena of social change. In large part we endorse their application of this framework to the empirical case of a neighbourhood redevelopment in Portugal, as well as their analysis of its implications for the process of transforming laws into practice. In this essay, we have proposed a cyclical model of social change, drawing on Bourdieu's theory of practice and the case example of science–public communication in the UK. Clearly, the four-phase model we propose is simplistic. There are many facets of the four phases we have identified and undoubtedly further complexities still need to be elaborated for each: in particular, we have devoted much of our attention to elaborating Phase T→I because it is the focus of Castro and Batel's study, and, indeed, a pivotal dimension of social change. The key point we wish to stress in this analysis is that social change is not unidirectional or inevitable, even with the full backing of repressive and ideological state apparatuses (cf. Althusser, 1971). Partial adoption, resistance, conflict over resources, dynamism and contingency have always defined social and cultural change. In the era of globalization,

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agonistic struggles to control transcendent and immanent representations are growing all the more intense and unpredictable

Notes

1. Note that an immanent representation that has not been rejected by stakeholders in Phase I→I will not continue to Phase I→T. It will remain in Phase I→I as the ascendant representation guiding practice.

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