

Flushed with success? A Constructivist Approach to Environmental Technology

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Abstract

This paper explores the relationship between social constructivism and environmental action. More specifically, it uses one particular - and perhaps, to some, humorous - case (the toilet) in order to consider the relationship between social/cultural factors, specific technologies and environmental response. In so doing, we aim both to improve our theoretical understanding of environmental concerns and to seek out new practical approaches to environmental action. Rather than presenting the relationship between 'culture and nature' as an interesting but subsidiary issue, we argue that this relationship is central to environmental response. Whilst the toilet can be represented as an unchanging - and indeed universal - technology, we will suggest that its environmental evaluation is actually transformed within shifting sets of social and cultural relations.

Introduction

Sustainable development has been a policy buzz-word for over a decade. However heavily contested, this notion has nevertheless been introduced as a goal or guideline for environmental policy in most industrialised countries. With the policies in place, the next question that invariably comes to mind is, what is their effect? Although there are some instances where policies appear to be working - such as when it comes to ensuring air quality improvements in a number of European cities - there are a number of areas where the success rate of environmental policy is perceived as much lower, e.g. attempts to curb carbon-dioxide emissions represents one notable area where most would claim that the existing policies are not working. In light of this, the obvious next question to ask is why these policies are not working.

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This is the point where the social scientists usually come in - to identify and analyse the behavioural reasons as to why different forms of policy are not working or have 'failed' in achieving the desired outcome. Thus, the role of social sciences in environmental issues is often presented as being essentially instrumental in character, i.e. a matter of finding out why the 'solutions' aren't working and then socially engineering the transition to sustainable development (Macnaghten and Urry, 1995). From this perspective also, social scientific analysis plays an important but secondary role within environmental policy-making. The issues are defined by scientists and policy-makers. The role of, for example, sociology is then to deal with the 'human' dimensions of environmental change and to examine the 'social resistances' to sustainability. In that sense, the task of sociologists is to work as the 'underlabourers' within the agenda set by scientific and other institutions (Hannigan, 1995).

Rather than simply accepting this predetermined role as 'underlabourers', we will argue that it is appropriate to consider the manner in which various environmental solutions are conceived. From the perspective of this paper, what is defined as a solution depends to a large extent on how one defines or conceptualises the problem.

The social sciences offer differing perspectives on the causes of environmental degradation. Generally speaking there are two main lines of argument - economic and sociological - both of which offer structural accounts of the causes of environmental degradation. Economics offers two main perspectives: that of mainstream environmental economics and that of political economy. According to the former, environmental degradation is a question of market failure, and something that can be corrected if only government could 'get the prices right'. The latter perspective offers a far more critical account of the status quo and links environmental degradation to the inherent contradictions of capitalism (O'Connor, 1994). Similar reasoning is found in the sociological critique of the treadmill society (Schnaiberg, 1980). Other sociological perspectives focus on the rampant consumerism of the Western, industrialised countries, and still others link environmental degradation to issues of technological development and the industrialisation processes, and to the development of the risk society (Beck, 1992).

When it comes to identifying solutions, the perspectives are even more divergent. There are those who argue that capitalism has to be dismantled, and focus on using the environment as a means to this end. Others favour structural solutions prompted by e.g. changing tax-systems so as to promote eco-modernisation. There are also those who point to the importance of local action and of developing more democratic modes of regaining control over one's life.

However intriguing each of these 'solutions' may be, they all have their drawbacks. The first 'solution' seems in many respects to be counter-factual given the evidence that the rich have never been so rich (UNDP, 1998), that capitalism has never been as widespread as it is today with the developments in Eastern Europe and Asia, and that the power of several important institutions in the industrialised countries such as labour unions, governments, political parties appears to be eroding. The second 'solution' is widely acclaimed but also problematic - governments have not generally introduced policies that could promote the development of more eco-efficient production and consumption patterns so as to offset the environmental degradation created by increased growth. With regard to the third type of solution, the environmental improvements achieved in such instances can readily be

belittled in comparison to the scale of negative environmental ramifications being created by globalisation processes. Put in those terms, we are being offered some very partial solutions to highly structural problems.

In this paper we will make the case that partial as the third type of solutions or initiatives may be, this has to be the way 'forward' - at least in a democratic society. This, however, is not an easy route to follow and in this paper we will highlight some of the reasons why. In so doing, the paper will seek to develop a fresh perspective on the nature of sustainable development, and, closely linked to this, explore the issue of 'environmental sense-making' and the social construction of environmental concerns/solutions. The basic premise here is that nature is not separate from society, but that more complex interactions are at work within the particular settings of everyday life (Irwin et al, 1994).

The paper uses one case to explore this issue and focuses on the cultural and political conditions for the development of less environmentally damaging technologies. Thus, what constitutes an environmental problem is linked to the social and cultural conditions in which it is embedded. Equally, the technologies proposed to solve these very same problems cannot be detached from the social settings of their development, implementation and use. In making this argument, we draw both upon the sociology of scientific knowledge but also more cultural approaches to environmental problems and concerns. At a practical level, we see a constructivist approach as arguing in favour of a more de-centralised and locally-based perspective – at least in this case. More generally, the argument in terms of the social construction of nature supports a much greater degree of attention to the local conditions within which 'environmental solutions' are enacted.

In order to develop these points, we have chosen to consider what must be one of the most taken for granted of all modern technologies - the toilet. Put in slightly grandiose terms, the toilet can be seen as representing a powerful symbol of Western civilisation and modernity. Clean, efficient and odour-free, it has been hailed as a major public health success of the last century. At the same time, and as this paper will suggest, it represents a 'socialisation of nature' (Giddens, 1991) as expressed through a particular form of technology. As Giddens has noted with reference to a range of now-familiar domestic technologies: 'Such systems, and the expertise on which they draw, act to stabilise many of the settings of day-to-day life - at the same time as... they radically transform them as compared to pre-modern ways of life.' (ibid p.135)

We will argue here that social relations take on particular significance when attempting to understand environmental concerns - and especially when considering apparent 'resistance' to new environmental 'solutions'. In so doing, we will argue that 'the environment' does not constitute an external world from that of social experience, but that the 'social' and the 'natural' are co-constructed within particular contexts (see Irwin forthcoming). From this perspective, the toilet does not simply represent a technological fix to prior social and health-related problems: it also constitutes - and is constituted by - a network of social, institutional, natural and technological relations. In this paper, we will offer a preliminary outline of this argument.

Toilets - when the solution becomes a problem

As a technology or artefact, toilets are indeed a deeply-embedded feature of contemporary Western society. 'A short trip to the loo' is an event which usually isn't given much thought. The water-closet or flush-toilet is probably one of the most commonplace fixtures of everyday life. Virtually every household has one - and in some parts of the industrialised countries many households have more than one. Moreover, they come in many shapes and colours, as well as with and without water-saving features. Regardless, they all serve the same purpose. They allow us to get rid of our bodily wastes. With a flush, the wastes are transported away from the household (or wherever else the WC has been installed) through the sewage system and either discharged directly into a nearby waterway, or - in the more industrialised nations - transported to a waste treatment plant, treated and then discharged into a waterway. This way of dealing with bodily wastes has, over the years, become the dominant solution in most - if not all - Western, industrialised countries. Few other technological solutions exist, or have been allowed to exist, on any great scale.

The foundations for this dominant solution date back to the second half of the nineteenth century when cholera epidemics were harrowing the larger and rapidly growing cities of Europe (Joergensen et al., 1997). People were dying from drinking water polluted by their own (bodily) wastes. However, with the introduction of water closets it became possible to contain these waste streams and separate them from the cities' drinking water, and in this fashion protect the water supply. Important as this may have been for improving drinking water quality in the cities, there were other problems associated with getting rid of the household wastes even with the water closet - and notably the problem of what became known as the 'night soil'. Historical accounts contain vivid descriptions of the arduous task of collecting the wastes and the noxious smell associated with the 'new' toilets. A less smelly and more efficient way of disposing of night soil was not achieved until the water closets were connected to a 'closed' sewage system. This, however, took some time to achieve. It took quite a few years before this 'cleaner' sanitation system (Joergensen et al, 1997) was actually implemented on a larger scale, and considered to be the 'best solution'.³

The WC in combination with a closed sewage system has since been heralded as key to some of the greatest improvements in hygiene and public health. Moreover, from the turn of the century until the 1960s - when the development of urban infrastructure and urban renewal had made it possible to install WCs in almost every household - the WC was seen as a symbol of progress. Going to the loo no longer entailed using a toilet situated in either the hallway outside the apartment or completely outside the building. It provided (and, as most people will probably contend, still provides) a clean, convenient and expeditious way of dealing with one of the most basic routines of everyday life. The very convenience of this technology is also what contributes to its being taken very much for granted. Equally, the development of such a system has 'privatised' (or 'sequestered' in Giddens' terms) the whole business of using the toilet - in the sense that this is not a topic for discussion in polite circles. This is clearly brought out by the number of euphemisms Anglo-Saxons have for 'going to the loo' (e.g. public conveniences, the rest room, the powder room, a place to wash my hands, ladies and gents rooms). Particularly the British are known for their 'toilet humour', which may be an indicator of social

³ Joergensen et al (1997) attribute this to opposition from the technical-administrative personnel in local government and to a broader political opposition as well.

embarrassment (even if such humour may pre-date modern sanitary systems - further scholarly research is needed on this point).

The WC came to be a solution to some - at one point in time - very pressing environmental problems. However, over time, this solution appears to have become a problem at least in some circles. The WC has become subject to a 'renewed' environmental critique, but for reasons that differ from those at the turn of the century. WCs use vast amounts of water, despite the improvements made with the introduction of 'low-flush' toilets. Moreover, they use water of high quality. This is particularly problematic given the problem of drinking water scarcity facing many urban areas in the industrialised countries. Moreover, this is not 'just' a problem in the developed countries. Sanitation systems of this kind have been exported to the developing countries as well, and put to widespread use particularly in the urban areas. Coupled with rapid population growth in many of these areas, this will likely accentuate whatever problems there may be with securing sufficient drinking water. Moreover, 'modern' sanitation systems are criticised for their wastefulness with regard to the amount of energy that is needed to run the waste treatment plants⁴ and because urine could represent a resource rather than a waste if used as fertiliser.

Both of these aspects have been addressed in the quest to develop more environmentally benign technologies such as alternative methods for waste treatment (e.g. reed-beds) and 'new' types of toilets. With regard to the latter, the issue of considering urine as a resource rather than as a waste has been of particular importance. This not only caught the attention of doctors and technicians alike when the WCs were first introduced (Joergensen et al, 1997), it has also inspired the development of current alternatives to the WC. The separation toilet is one such alternative which we will now explore in greater detail⁵.

The separation toilet does exactly as the name indicates - it separates the two bodily waste fractions from one another. This toilet was invented by the Swedish doctor Mats Wolgast, a kidney specialist. As an entrepreneurial endeavour, the development of the separation toilet fits very well with the commonplace caricature of entrepreneurs tinkering away at their inventions. Mats Wolgast experimented with the technology at home, using his family as test objects and his home as a test facility. Drawing on his professional background and interests regarding the composition of urine Mats Wolgast has argued that the composition of urine fits perfectly with the nutrient needs of plants, and that it could, therefore, be put to better use than simply flushing it down the toilet. To him (and many others) this represents a waste of resources that otherwise could have been put to more productive use. From this perspective then, urine is a 'natural' product. Meanwhile, the idea of using human waste as a fertiliser can appear anything but natural to those who associate such wastes with dirt and pollution.

Based on his home experiments, Mats Wolgast came up with prototype for the separation toilet, the VM-Toilet, in 1989. He could, however, not convince producers of conventional toilets to include the

⁴ The environmental merits are claimed to be that root-zone technology allows for in-situ treatment and thus making waste transport redundant. It uses less energy than conventional treatment methods and it provides biotopes, small wetlands that can function as habitats for flora and fauna (Irwin et al, 1995: 48)

⁵ The details of this case have been compiled research assistant Maj Andersen in connection with a European study of "The Social Management of Environmental Change" (see Irwin et al, 1994), and described in Irwin et al, 1995:266-272.

separation toilet in their production series, and as a consequence he established his own company in 1991, VM-Ekologen, in collaboration with a partner. The company has succeeded not only in developing two models (one with a single flush and the other with a double, both of which use very little water) and putting them into series production, but also in selling them.

VM-Ekologen has, in other words, been able to tap into the market for sanitation articles. Several other small companies have also cropped up in response to the growth of this niche market. In light of these developments, it is hardly surprising then that Ifö and Gustavsberg, two of the world's largest producers of conventional toilets, are monitoring the situation closely. Moreover, these producers proclaim that in the course of the next 10-15 years sanitation and waste treatment will be based on completely different technologies from the ones we have today. The market for separation toilets has, however thus far, primarily manifested itself in the rural areas, whilst the conventional sanitation system continues to be the dominant solution to waste problems in the more urbanised areas.

The VM-toilet does bear some resemblance to a conventional toilet, but its size and shape are slightly different. There is a 'plate' in the toilet bowl that separates the two waste fractions and funnels them into two different receptacles instead of them being flushed out together. The urine (and limited amount of rinse water) is led into an underground storage tank, which maintains a relatively low temperature that prevents the urine from decomposing into more or less smelly components (e.g. nitrogen), whilst the solid wastes are collected in an insulated, ventilated decomposition container situated directly underneath (but screened off from) the toilet bowl. Constructed in this fashion, the toilet is not only more massive looking than conventional toilets, but it also takes up more space. Installing these toilets may then call for some 're-doing' of bathroom facilities. This is particularly the case if there is to be space for a spare decomposition container beneath the toilet bowl (i.e. a spare to be inter-changed with the one in use when the container needs emptying). Connecting the toilets to the urine storage tank effectively involves installing new soil-pipes or changing existing ones and, in essence, shunting the household out of the conventional sanitation system (if one exists, which is something we will return to below).

Once the toilets have been installed, then 'going to a separating loo' is really no that different than if a conventional toilet had been used. However, when it comes to 'keeping house', then these toilets do require some extra attention particularly when it comes to emptying the decomposition container and urine storage tank. These have to be emptied on a regular basis, depending on the number of people using the toilets and the number of households connected to the storage tank. The tasks involved vary depending upon the type of housing, i.e. whether the separation toilets have been installed in single-family dwelling (detached/semi-detached houses) or in multi-family dwelling (apartment buildings). Generally speaking, however, it seems that people living in detached houses will come in more direct contact with their wastes than those living in apartment buildings. The fluid wastes can be tapped and used in the family garden (or by someone else), whilst the solid wastes either have to be incinerated or buried; both of which are rather labour intensive activities. For people living in apartment buildings there appear to be some advantages to this because of scale effects involved in 'collecting' and disposing of the wastes, i.e. the contents of the decomposition container can be put into a plastic bag, and then 'chuted' down to a storage compartment until it is collected and disposed of in some fashion (i.e. incinerated by the buildings' inhabitants or by a company). The urine is also stored, and in larger quantities, which makes collection more advantageous.

The separation of the bodily waste streams is the first step if the wastes are to be used as resources. The solid waste is, however, of little use in this regard because of its composition - it consists primarily of cellulose which has little agricultural value. The urine, on the other hand, can be 'recycled' as fertiliser. Once separated, the urine can - diluted with water - be used directly. In principle, this would make it possible for farmers and gardeners to avoid using commercial fertilisers, whilst also circumventing the need for waste treatment. The separation toilet seems, thus, to have much to offer. It uses a minimal amount of water, and allows for the conservation of water resources (as opposed to the earlier environmental interests in protecting water resources). It facilitates the conversion of wastes into resources, and appears to be an environmentally friendly way of dealing with wastes in instances. Viewed from this perspective, these toilets make 'environmental sense' (at least as presented by various Swedish institutions). However, at this stage, we need to assess these matters from a more explicitly social and cultural perspective.

Putting toilets in context

The starting point for this analysis must be the Swedish context in which the separation toilet has been developed. Indeed, there appears to be an increasing up-take of this technology, and not just on the part of individual households. Local governments are showing an increased interest for toilets of this type. Several municipalities (25 out of approximately 450) have decided to promote the use of these and other alternatives to the conventional toilets, and at least 3 have decided to prohibit the use of WCs by the year 2000. Decisions such as these are, however, closely linked to the broader context of prevailing natural, social and cultural conditions in Sweden.

A characteristic natural feature of Sweden is that the country is located on top of solid bed-rock, and this has exercised tremendous influence on the development of the urban landscapes (with regard to distribution, size and structural build-up of the country's cities). Sweden is also a country with plenty of space. It is sparsely populated and, to a large extent, covered with forest and farmland (particularly in the southern part of the country). Apart from a few big or medium-sized cities, most of the cities are relatively small and there are numerous small or very small rural communities spread throughout the entire country. Although modern sanitation has made its way to the urbanised parts of the country, it has by and large not made it to the rural areas. And it is in these settings that toilets like the VM-toilet seem to have been deemed as a viable and more environmentally benign way of dealing with household wastes. There is, however, an economic aspect to this as well - it is extremely expensive to establish conventional sanitation systems in these sparsely populated areas, and this is only made worse by the fact that underground is bed-rock. This is presumably why there is a long-standing tradition in Sweden of using dry closet toilets in the more rural areas of the country.

Following through on this, then, it seems reasonable to assume that the people living in these rural areas have different social conceptions, acquired through experience and socialisation processes, as to merits/drawbacks of dealing with one's bodily wastes in this fashion. One could argue that they may be less estranged from their bodily functions than people living in more urban settings and, thus, more likely to find separation toilets socially acceptable. They are accustomed to being directly 'confronted' with their wastes when using the dry closet (and when 'cleaning' them), and thus less likely to be put off by the separation toilet, emptying the bins, etc. Viewed in this perspective, the separation toilet may

even represent an improvement (because the wastes are contained in separate tanks/bins and improvements in ventilation). This is not to say that the opposite - and more negative - reaction isn't possible. The growing interest in the separation toilets speaks, however, more to the former argument. Put in these terms, separation toilets appear to be a 'natural' solution to the perceived problem.

In essence what we are claiming is that toilets may not necessarily have the same symbolic value in all parts of the country. Indeed, what is culturally admissible depends both on existing systems of values and on the cognitive structures or systems defining what is a problem and what is not. As Burningham and O'Brien (1994: 926) have also noted: "In both academic work and in socio-political disputes over environmental change-events there persist *no enduring environmental values*. In relation to any particular dimension of an environment *what* is valued, *how* it is valued and *why* it is valued varies within structures of goals and immediate aims and objectives persisting with the localised context." In line with this, there are many ways of, as Macnaghten and Urry (1995) put it, "reading nature" and giving meaning to it.

To pursue this line of argument further would require much more detailed studies of the Swedish context than we⁶ have been able to conduct. There are nevertheless three important points that this case seems to suggest. First, the case highlights the fluid nature of what is considered to be the problem as well as the solution. Time and societal development allow for a continuous redefinition of what is perceived to be the most pressing environmental problem (e.g. protecting and ensuring water quality or minimising resource use) as well as of what the solution can be (e.g. a modern sanitation system or separation toilets and reed-beds). What is considered as environmentally damaging at one point in time is not necessarily perceived as such at another point in time.

Second, developing environmental technologies is wrought with conflicting rationalities as to what is the 'logical' course of action. The case highlights the rationality of a scientist seeking to find a more resourceful use for urine rather than using energy to treat it ; of policy makers trying to make political and economic 'ends meet' in a rural community; and of the individual households who will have to change some of their everyday routines to accommodate the separation toilet. To fully illuminate the contested nature of technological development would require much more detailed studies of how the technological solutions are constructed, e.g. how existing ideas, concepts and practices of the 'users' as well as the 'producers' come into play.

Linked to these points, the third point which we would like to emphasise is the cultural embeddedness of environmental concerns and technological development. One telltale indicator of this is that although socially accepted in some parts of Sweden, the very 'intimacy' of the separation toilets may provoke social resistance in other areas/nations because this ecologically sound technology may be considered 'dirty', unhygienic and perhaps even primitive. The separating toilet can easily - taken in a different context - give associations of "going back to the bad old days" (without running water and 'modern conveniences'), and thus may meet with considerable opposition. What in one context can appear as the latest technological marvel, can - in another - seem like a step back to a pre-modern form of

⁶ This case was one of twenty-one cases studied in a larger project on 'The Social Management of Environmental Change', funded by the European Commission 1993-95 (Irwin et al, 1994 and 1995).

existence. In the setting of a larger European project of which this case-study was one part, this caused substantial discussion within our team. How could separation toilets ever be sold in the UK, for example? Or in the US? Isn't this just the kind of environmental technology that gets environmental technology a bad name? Certainly, 'selling' such an environmental solution to more sceptical audiences seems profoundly problematic and unlikely to succeed, because it requires them to buy a 'solution' that they don't want, to a problem that they don't recognise.

Put more broadly, culture (including our norms and cognitive structures) influences not only what practices and (environmental) consequences are considered to be problematic, but it also delimits which solutions can be conceived. Separation toilets embody a set of assumptions and carry differing meanings depending upon the social settings of their assessment. Thus, separation toilets can - only in specific contexts - be presented as a very 'natural' solution to what, for the people involved, seems a pressing environmental problem. They have through their social interaction established a collective understanding of what they perceive as being 'wrong' with the way in which they deal with their bodily wastes. Empirical studies have shown that even in a relatively -socially, politically and culturally - homogeneous country like Sweden, people appear to follow fundamentally different 'logics' depending on experience, traditions and social expectations (locally) when it comes to changing behaviour in an environmentally sound direction (Maartensson & Pettersson, 1998).

Equally, an argument about the 'natural' consequences of this technology becomes inseparable from a consideration of cultural preferences and patterns of behaviour (i.e. how 'nature' is perceived). The key point is that, whilst arguments about the 'natural' and 'social' characteristics of the technology are presented as distinct in character, they systematically blur (or re-construct) these categorisations.

Using toilets as an example, we have tried to make the case that rather than simply viewing these and other competing technologies as carrying intrinsic 'environmental consequences', we need to consider the contexts of their development and application. This can also mean that what may appear as a 'solution' in one context can be singularly inappropriate in another. We have argued that this lack of 'transferability' across settings is not simply a matter of environmental conditions but also of the manner in which social, technological and natural concerns are co-constructed. In other words, the 'appropriateness' of particular technological fixes is not just a matter of 'technical' or 'natural' characteristics (as if these simply 'spoke for themselves') but also of the social settings within which these characteristics are measured and specified. Rather than pre-defining the problems as either 'social' or 'natural' in character, we want to emphasise the inter-linked formation of these factors. Thus, what in rural Sweden may appear a 'natural' environmental solution can appear anything but 'natural' in a different cultural setting. At the same time, this approach suggests the importance of constructivist approaches in maintaining a sensitivity to the manner in which environmental discourses are produced and supported within specific contexts.

Discussion

From one perspective, this is a story of resistance to an environmental solution. The separating toilet represents a step forward from the water closet - just as the WC itself took society forward from the

previous technological fix. From that viewpoint, the task of social science is to explain the apparent resistance and consider its social dimensions.

Our account here has suggested a number of more fundamental points about the relationship between the social, the natural and the technological:

1. that environmental consequences are not separable from their particular settings;
2. that culturally-attributed meanings form a constituent element of environmental assessment;
3. that 'nature' (and a sense of 'the natural') is a matter of contestations rather than a predetermined category;
4. that policies which work well in one setting may not necessarily work elsewhere - and for reasons which are not simply a matter of environmental conditions.

In terms of the current discussion of sustainable development and the role of social sciences within this, we are advocating a constructivist approach which extends considerably beyond the job of the 'underlabourer'. Rather than taking environmental technologies for granted and then seeking to achieve social responsiveness, we wish to highlight the manner in which the technological, the social and the natural are bound together. In theoretical terms, this represents a considerable advance on talk of 'social resistance' and 'barriers' to environmental innovation. Of course, we are aware that this paper only represents a preliminary step in this direction and that further research is needed into the social settings discussed here.

In explicitly policy terms, it seems to follow that *either* environmental solutions should simply be imposed (an approach which, we argue, would only provoke antagonism and rejection for reasons which, as we have seen, may be deeply embedded in cultural terms) *or* that a more context-sensitive strategy should be adopted. Whilst it is tempting to advocate sweeping environmental solutions - especially for those in bureaucratic institutions but also environmentalists impatient to save the earth - it may be that a more productive way forward will be achieved through smaller-scale discussions and more 'partial' solutions.

In advocating such an approach, we are of course aware of the difficulties this can create for policy making. The adoption of sweeping policies is in many ways a less demanding task and one which is more easily attuned to large-scale institutions and technical generalisations. However, in their presentation of cultural constructions as a minor distraction from the main business of sustainable development, such policy perspectives continue to founder on local evaluations of what is both socially and naturally desirable. The challenge suggested in this paper is for both academic analysts and those concerned with policy to move forward into a greater acknowledgement of local variation and contextual construction as an integral part of environmental response.

References

- Beck, U. Risk Society: Towards a New Modernity, (Sage, London:1992)
- Burningham, K. and M. O'Brien, "Global Environmental Values and Local Contexts of Action", *Sociology*, Vol. 28, No. 4, 1994, p. 913-932.
- Giddens, A., Modernity and Self-Identity (Polity, Cambridge: 1991)
- Hannigan,, J., Environmental Sociology (Routledge, London: 1995)
- Irwin, A., Sociology and the Environment (forthcoming)
- Irwin, A., S. Georg and P. Vergragt, The Social Management of Environmental Change - Final Report, European Commission Contract No: EV5V-CT-92-0088, 1995.
- Irwin, A., S. Georg and P. Vergragt, "The Social Management of Environmental Change", *Futures*, Vol. 26, No. 3, 1994, p. 323-334.
- Joergensen, U., S. Hoeier and Hanne Lindegaard, "The Emergence and actual dominance of the water closet and the sewage system - a study of the historical development and the social construction of design concepts and systems of knowledge as the basis of creating of the sanitation and handling of waste water of the future", Project proposal, 1997
- Maartensson, M. and R. Pettersson, "Forsorjning, Vardag och Miljø", *Miljø, Kultur och Vardagsliv i Hushall: Rapport Nr. 1* ["Livelihoods, Everyday Life and Environment", *Environment, Culture and the Everyday Lives of Households: Report No. 1*] Dept. of Sociology, University of Stockholm, 1998.
- Macnaghten, P. and J. Urry, "Towards a Sociology of Nature", *Sociology*, Vol. 29, No. 2, 1995, p. 203-220.
- O'Connor, J., "Is Sustainable Capitalism Possible?" in M. O'Connor (ed.) Is Capitalism Sustainable (The Guilford Press, New York: 1994)
- Schnaiberg, A., The Environment (Oxford University Press, New York: 1980)
- United Nations Development Programme(UNDP), Human Development Report 1998, New York: Oxford University Press, 1998.