

Immaterialisation?

A Personal Ruminaton or Poor Man's Guide to a Complicated Concept

Contents:

Sustainable Development?	2
Dematerialisation?	3
Immaterialisation?	5
Strikes me that this is a promising track.....	8
Some sort of synthesis?	9
What Next:.....	10

Also in this series on immaterialisation and Xcars:

- [The 'Xcar' in Your Future](#) (18 July 2001)
- [Immaterialisation? A Poor Man's Guide](#) (27 July 2001)
- [More Thinking About Xcar](#) (8 August 2001)
- Also check out the [Assist Discussion Forum](#)

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Author Note: This is not a 'paper' intended for broad public distribution nor for cracking the leading edge of thought on the topic of immaterialisation. It is rather presented as an informal 'personal rumination' intended for a few friends of the ASSIST project. I am certain that all this has been done better by others elsewhere in this project, but I have been asked so many times and by so many bright people who have had a look at the site and some of the deliverables to explain to them in a few clear words what this whole business of ASSIST is all about, I have decided to see if I can make my own stab at putting it onto a few conversational pages. My thought is that this might be worth at least a brief discussion and correction in and by the various members of the group. These I await with genuine interest. It's never too late to learn.

Sustainable Development?

The root problem that our project is trying to address is of course the sustainability conundrum – the pressing ecological and social dilemma of our small planet, with simply too many people, making and consuming too many things, and in the process using too many materials and producing too many effluents in a relentless and alarming upward spiral.¹

- One theoretical solution to this, some think the best, is just to have a lot less people. Sapristi! Now that's an attractive thought on paper. But how to get there in the real world with real breathing people and a right to live within the time window available to us before we set off a whole plethora of irreversibilities? (brrrh.)
- Another is to have all those teeming billions somehow make less and consume less. That sounds like an even better idea, but how does our political system make that one work?
- But what if we could find ways to make 'enough' (i.e., do the necessary and still hang onto the votes so we can stay in office) but by using far fewer resources and somehow in the process reducing the effluent, etc. outflows. That's kind of nice on paper too, and if the experience of the last decade or so is to go by, it also seems to be possible. . . to a degree anyway. This business of somehow satisfying demand through a continuously fine-tuned but still basically recognizable producer sector is of course the main stuff of what in some quarters has come to be called "dematerialisation".²

¹ It is our consistent position that there can be no sustainability without social justice, and while we shall not bring up this point repeatedly here (as indeed deserves to be the case), we will for now just say it once and hope that we can all keep this to the fore. Thanks for your indulgence in this.

² A couple of quick points to be made about this word. The first is that it is long, ugly, strange and in and of itself invites perplexity and/or ambiguity. The second is that it is used, in addition to the ways in which it is discussed here and in the sustainability literature more generally in others senses as well, and it may not be altogether inappropriate to mention a few of these alternative meanings. The first has to do with the fact that the word has long been used with respect to certain religious phenomena, such as the 'dematerialization' of the Shroud of Turin. Another increasingly familiar usage is in terms of the 'dematerialisation' of the corporation, such as we are seeing in the energy sector among others where firms are divesting themselves of physical assets and

Dematerialisation?

Dematerialisation is an economic and technological track which results in the reduction of energy, natural resources and materials in each unit of economic output produced. It is claimed by its proponents to a promising strategy for faster and more systematic development of a sustainable, knowledge-based and service-oriented economy.

- As has been pretty well mapped since the mid eighties, one of the hallmarks of this on the producer side is the shift in emphasis from making and selling *products*, and instead thinking of the market in terms of *services*. Some of this from a serious sustainability perspective is more or less abracadabra or sheer lateral movement, but there are also a good number of examples of how this shift can operate as part of the process of dematerialization.³
- More than that, at the leading edge we also have some pretty good ideas as to how we could put dematerialisation into high gear and really begin to make come inroads. Let me cite just one common example by way to get the ball rolling on this: a, say, 15 year escalator tax on carbon emissions, which would give the producers enough time to line up technology with, say again, \$20/gallon petrol. (Easy to say, eh?)
- This note is not intended to take on the task of providing a detailed explanation of dematerialization and how it works or should work, a field which is richly treated in a vast if not always fully concordant and transparent literature. But we do think it important and useful within ASSIST to be able to see and develop a shared understanding these two related phenomena – the dematerialization and immaterialisation of our collective way of life on this planet– so that we can all have a common and hopefully coherent conceptual frame within which to work.
- That said, a brief reminder about what is needed to make sure that the positive impacts of dematerialization do in fact take hold and do their job. The fundamental point is that if this approach works to move us toward greater sustainability, it is not the result of some invisible hand or unfettered free market. Rather we can see from the results thus far obtained that dematerialization can work as an important component of a sustainability strategy when guided by the broader framework of wise and forceful public policy, whether driven by the tax system, specific performance targets and various other incentives and disincentives that combine to get the job done.

concentrating instead on making their money through owning and managing the information and financial network that links all the ‘old’ physical or material assets.

³ Even if only en passant, it is worth noting that there are many conceptual links between both of the two phenomena that we have under the microscope here and in many ways related concepts such as re-engineering and down-sizing to the extent that they look within the firm for rationalizations and, looking upstream, to supply chain management, including the ways in which this is being managed by IT and the Net. In fact while we are at it, we can also point out the parallels with ‘customer management’ at the other end of the business chain, including once again also via the Net, etc.

- Indeed, since we are interested in the immaterialisation side here, there is every reason for us to have a mature understanding of how things work on the dematerialization side, even if the parallels between the two are not precisely identical.
- Furthermore, while some may call on ‘moral suasion’ to do the job, the story of the last decades is that we need something with more teeth in it to do the job. Thus over on the producer side, if a given manufacturer cuts back on the materials used in his business, this will be because it is in his interest to do so, and it is of course the job of wise public policy to make sure that the overall policy framework that sets the basic rule set for these decisions of details and interest are of a sort that will result in outcomes that are in the public interest – meaning in this case, naturally, a reduced call on natural resources, fewer effluents and other lessened negative impacts.
- To borrow a phrase that we have heard before here, dematerialization is a process which involves many steps and spans time. But is also has “triggers”, and these are the things that are needed to get the process moving. Some of these triggers maybe the result of careful study, extensive planning and perhaps even painful negotiation. Others may be the result of the process itself – which suggest the point that if we get the right process, it is going to be one that creates its own future triggers – including many which we could not at this early point even envisage, never mind recommend.

Immaterialisation?

If dematerialisation is what is going on over on the producer side of the economy in the drive toward sustainability (think supply), then is there anything correspondingly in the wings on the consumer side (demand)? Yes. Now we are coming to the thing that some call immaterialisation.

This too is another hard word to love. In common usage, it often connotes simply that something is without any importance, insubstantial (but not in the way we take it) – and that surely cannot be what we mean here. To gain some perspective let's have a look at several definitions that have been proposed by a handful people and groups working on these matters and who have given this some thought on their own.

- “Immaterialisation is a question of consumption and is defined as replacing the physical means of satisfying ones needs and wants with immaterial means. We all satisfy our needs and wants by consuming goods and services. Information technology can lower the environmental burden by creating possibilities for immaterial ways of doing things, for example, using video conferencing instead of travelling. The immaterialisation potential is born of social innovations - changes in behaviour patterns on both the individual and, especially the social level. Immaterialisation will be a key concept in sustainability thinking in the future; thus, it is worth noting that it originated in Finnish research circles (Malaska, among others).”⁴
- “Immaterialisation refers to the replacement of products by services, e.g., the use of products to be utilized for specific purposes is replaced by information and telecommunication services. Typical examples include the substitution of physical products, such as technical devices or even paper, by virtual information devices. Yet, the bordering line separating dematerialization and immaterialisation is sometimes hard to specify.”⁵
- “Immaterialisation - fundamental changes to lifestyles that replace unsustainable activities with information intensive alternatives, e.g. downloading the times of trains from a web-site instead of buying a heavyweight timetable that consumed a small forest.”⁶
- “Most (perhaps 75% of all) material consumption is unrelated to basic survival needs (nutrition, shelter, etc) but is rather intended to satisfy some non-material

⁴ From the Environmental Cluster Research Programme of the Finnish Ministry of the Environment , see <http://www.vyh.fi/eng/research/cluster/clus2pha.htm>

⁵ From the EURO-SUSTAIN program, for which full details available at <http://aix.meng.auth.gr/eurosustain/> (The main objective of EURO-SUSTAIN is to promote the economic competitiveness of the European economy based on technologies that will lead towards the elimination of materials use and/or the reduction, and/or replacement of materials and energy..)

⁶ This is the ASIS definition from <http://www.jrc.es/iptsreport/vol32/english/ISS2E326.htm#dematerialization>. It is also of interest to note their definition of dematerialisation which stands right next to the above: “Dematerialization - optimizing the design of products to do more with less resources, e.g. reducing the weight and increasing the efficiency of the automobile.”

need (place in society, individuality, etc). Thus immaterialisation of consumption through the use of IST, Information Society Technologies, could eliminate the use of non-renewable resources and offer a powerful route to global sustainability.⁷

Finally to round off this quick survey of thinking at or close to the leading edge, here is a page taken from the IST track of the Finnish Ministry of the Environment's interesting Environmental Cluster Research Programme (for details see <http://www.vyh.fi/eng/research/cluster/backrou/backrou3.htm>).

"Immaterialisation is more complicated. From the wide range of human activities, individual activities can be picked that, currently, require great physical resources to happen, but that, in the future, could mostly be done by using information technology means. Many changes in behaviour are needed to actually replace old ways with new ones, but change is possible. What is needed is to incorporate creative thinking into the institutional structures of consumption in our society. One way is "social innovations", in which information technology is used to its fullest potential in most areas of our daily activities. Information technology, and the network ideology, is bound to change the way we work, learn, use services and communicate, to name areas that are already widely discussed. The satisfaction of industrialised societies' needs and wants is only partially connected to our own physical needs for food, shelter and security. People also want, for instance, human respect and caring. At the moment, these totally social needs are satisfied by buying goods and services or by moving from place to place in an energy-inefficient way. If these needs were to be satisfied, for example, by using information technology to reduce the environmental effects, our culture could take a quantum leap towards real sustainability. In other words, by changing our lifestyles, immaterialisation becomes a possible reality.

The logic of immaterialisation is not a part of our consumption behaviour in the same way that dematerialisation is a logical process in industrial production. Individuals do not think along the line of productivity maximisation; so people might behave inefficiently just because it is more emotionally fulfilling than is a more efficient type of action. In the longer term, the chances of achieving immaterialisation look good, because there is more time for social learning. When people try out new information technology-based ways of acting and communicating they are able to experience them naturally. Better and more comfortable ways of acting will inevitably gain support, even though these ways may be considered difficult or strange at the beginning. One way to look at the potential and effects of dematerialisation and immaterialisation (as well as rebound effects) is simply to divide human activities into areas where the potential effects can happen. As this is close to real-life situations, the picture is easy to comprehend. Based on this principle, the areas where information technology can best be used to promote sustainability in the information society are:

Dematerialisation can be promoted in physical production processes. The driving force here is the need of companies to become more competitive.

1. Production, including the distribution of goods and, as an interesting sub-area, the environmental effects of information technology production itself.

⁷ This point has been made by David Leever in the Mission Statement that is found on the ASSIST website.

Immaterialisation in several areas (based on needs):

2. New ways of doing business, immaterial goods and services
3. Working (telework)
4. Transportation/travel
5. Communities (living, construction and planning, communication)
6. Network activities (teleservices, distance learning, teleculture, etc.)

Finally, information technology already has a very important role in comprehensively understanding both production and consumption structures and in creating and applying new knowledge:

7. At the macro level, activities for follow-up, simulation and regulation use information technology in many ways, as well as in those areas mentioned in 1-6.

* * *

Hmm. Well let me see if I can step back and state in my own words for the purposes of this Poor Man's Guide what I think this boils down to:

- a. Immaterialisation is a process which may or may not exist -- but if it does is one whereby people make daily life choices that result in fewer materials being consumed in the process.
- b. And if it does exist, it would certainly seem like a good thing to encourage on both resource and environmental grounds – and perhaps a few others too if we develop an adequate understanding of our new topic (which both by definition and all available proof we do not as yet have in hand).
- c. A priori, it would see that IST might be one of the most promising means – perhaps the most promising, but that is not really at issue here – to move to these new processes and choices. Or to try that in other words, “IST as a prime mediator of immaterialisation”.

The e-timetable example strikes me as a good one. If in the new ITS era, I have access to a WAP phone or other handy web device I have in hand the material of a resource saving raw material, which I chose to use not because I am particularly Green or even environmentally sensitive, but because it's handier and better.

And while I am at it, I might make the point that the e-timetable was not born in a day either, but is in this case the latest point in a continuing process of technological evolution and learning patterns, which have just brought me to make this (resource saving) choice this morning as I scrambled for the latest train information. Moreover, I might note that if we examine the cradle to workplace (not grave) evolution of our e-timetable we will doubtless see that there are opportunities for wise public policy there as well.

So what about the future? Suppose that in the future, to an extent instead of buying (and thus obliged to be made) books I buy at least some of them as e-books, some of my

magazines as e-mags, instead of using paper money use e-money (you define it), instead of going only to bricks and mortar schools do some of my learning via e-schools, well are these not too pretty good examples of immaterialisation? Of useful moves in the direction of greater sustainability? And are they not processes? And do they not opening up opportunities for wise public policy?

Strikes me that this is a promising track.

Some sort of synthesis?

Another quote from the ASIS program might help here to get us going here:

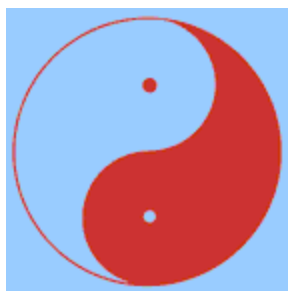
“Over the last 25 years the communications and IT industries have been seen to be one of the strongest contributors to environmental protection, improving the efficiency of industrial processes and improving the effectiveness of travel, for example by means of multimedia meetings. However, recent prototypes of the Personal Information Environment have indicated that ICT can offer a much more profound contribution to sustainability. It is likely to be the catalyst that switches sustainability thinking from "Dematerialization" as a burden to "Immaterialization" as an opportunity:

- Dematerialization - optimising the design of products to do more with less resources, e.g. reducing the weight and increasing the efficiency of the automobile.
- Immaterialization - fundamental changes to lifestyles that replace unsustainable activities with information intensive alternatives, e.g. downloading the times of trains from a web-site instead of buying a heavyweight timetable that consumed a small forest.

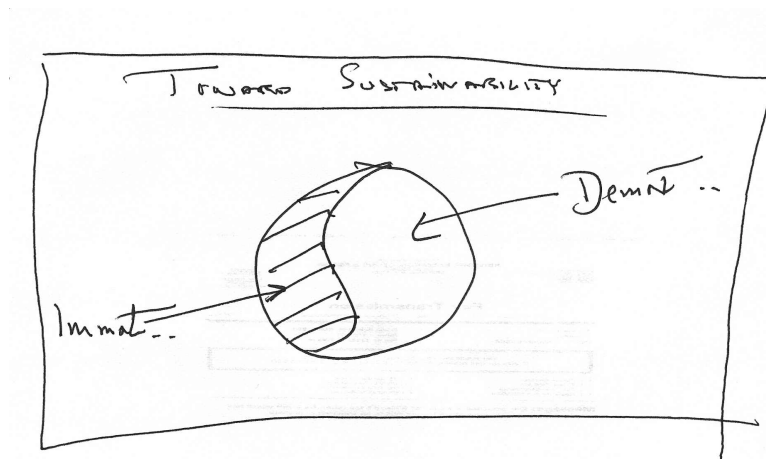
In this pair of examples the dematerialization burden is the increased traffic congestion resulting from the fact that more people can afford cars. The immaterialization opportunity is a substantial improvement in quality as the opportunities to introduce errors are almost eliminated. Maps and timetables do not contain data: they contain only analogues for data or copies of data, so immaterialization cuts out unnecessary analogues. In the same way, most non-material needs are fulfilled by material analogues which the Information Society has the potential to immaterialize: social satisfaction is one such issue, and within that, social travel is by no means trivial.”

Not bad, but it only helps us a bit on our way. But as I read it, the authors' seem to be setting up a certain kind of opposition or at least separateness of the two concepts that I am not quite sure is either the case or useful from the public policy perspective which, after all, is the reason we are here in the first place.

It may be that we need to take a mature view of what dematerialization and immaterialisation are all about, and the first step might be to understand that they are not wholly separate phenomena, but that they work (or could be made to work) together in many ways. Might be that they work not separately but together as Yin and Yang?



It's my best guess that there is every reason to be aware that these two work together and that it would possibly be an error to try to separate them too entirely the one from the other.



What Next:

I think that the most pressing immediate next step is to move from abstraction to a handful of examples, and then to try to push them hard for both what they might be made to yield in terms of policy guidelines on an ongoing process or two, and then at the same time provide us with a more develop view of what immaterialisation is really all about. We need to master both of these if we are to get our job done.

So, if there is any agreement at all on this, I propose to get back to the Xcar piece and see if I can next begin to deal with some of the objections, qualifications, etc. that have been made in these last says to show both (a) that this can in fact be seen as an activity of immaterialisation, (b) explain how it overlaps and links with the dematerialization axis, and (c) begin to sort out some of the eventual public policy ramifications and possibilities?

And then once that is done to have a whack at what some might call videoconferencing? Or, maybe better, tele-presence?

Comments? Suggestions?

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