Attitudes towards technology in sustainability studies: a framework applied to ecological economists

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Summary

In this paper we first look at the institutional and scientific background of public understanding of science, analysing time series from Eurobarometer Data on attitudes towards technology. Results indicate a shift towards more diverse views in the public. From the literature we then develop a framework which allows categorizing and openly discussing such divergent views as: optimism, determinism, uneasiness and pessimism. This is of particular relevance for the sustainability studies we believe, where large differences implicitly co-exist. We use empirical data from questionnaires and lecture material, in order to investigate whether our categories can be found among sustainability scholars. Our findings confirm the usefulness of the framework, as attitudes vary greatly, but only optimism is most straightforwardly articulated. The goal of this work is to open up a spectrum of different legitimate perspectives, for their refinement, discussion and study.

Extended Abstract

Throughout history technological change had significant effects on human society, which today are commonly seen as advancements. However, applications of technology for military purposes and technological disasters such as Chernobyl or Bhopal have also generated more differentiated perspectives in the twentieth century (see Mitcham 1994).

At policy levels technological innovation tends to be equated with competitiveness and economic growth, which is expected to increase welfare. The European Commission's 2020 Strategy (EC 2010) for example sets out to stimulate economic growth and improve employment, while making the economy "greener" and more innovative[1]. Even though economic, political and social innovations are conceivable, it is focused on technological innovation. A special Eurobarometer opinion poll was initiated, to monitor public support for such strategies and their funding. The underlying assumption for this initiative was that negative attitudes toward technology are detrimental to progress. The root of such non-positive public attitudes believed to lie in the knowledge deficit of the public – the so called 'deficit model' (Bauer 2009a). Motivated by the axiom 'the more you know, the more you love it', the discipline of 'Public Understanding of Science' set off to study measures for filling this gap and to examine progress in public 'science literacy', interest and attitudes.

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[1] In a similar tone, it's Lisbon Strategy of the year 2000 aimed at making the EU the most competitive and dynamic knowledge-based economy in the world, for which effective investment in R&D and innovation was seen as key (EC 2010).

Even though the deficit model is now largely discredited, its discourse has remained in public policy.

Contrary to all ambitions to establish technological optimism as the only desirable attitude towards technology, our historic analysis of Eurobarometer data suggest a potential dethroning of technological optimism, while ambiguous attitudes become more widespread and differences among countries larger.
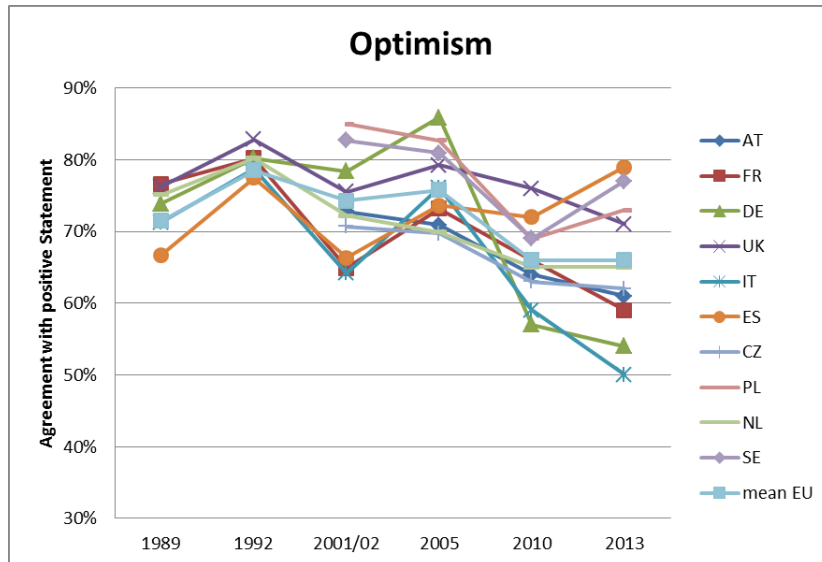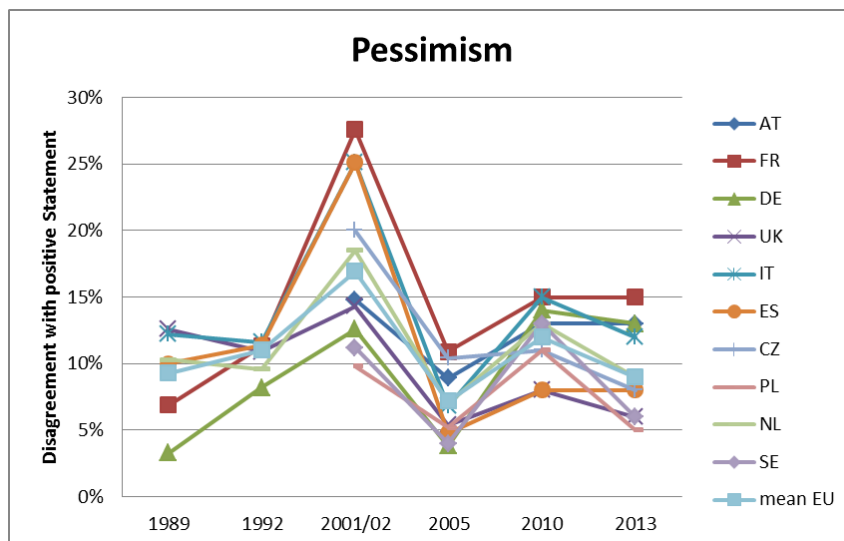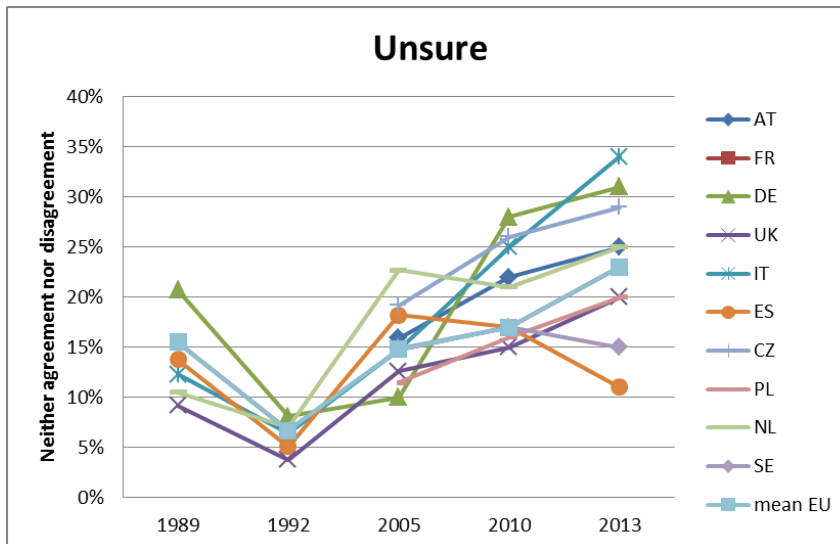

Figure 1a

Figure 1b

Figure 1c

Figure 1: Percentages of (1a) optimistic, (1b) pessimistic and (1c) ambiguous public attitudes towards science and technology in ten selected Member States and the mean in the European Union[2]. (Source: own elaboration - data from Eurobarometer). Countries: Austria (AT), France (FR), Germany (DE), United Kingdom (UK), Italy (IT), Spain (ES), Czech Republic (CZ), Poland (PL), The Netherlands (NL), Sweden (SE).

Attitudes towards technology of those engaged in sustainability studies are far from homogeneous. They cover a wide spectrum ranging from those who consider innovation and technology-based efficiency improvements as the key to addressing sustainability problems, to those for whom they are their very source: increasing absolute resource consumption through rebound effects and accelerating the disruption of natural ecosystem cycles by introducing ever more non-natural substances. In between these two positions there are at first sight confusing variations and combinations of attitudes.

To facilitate transparent articulation by scholars and orientation of receivers of research and teaching, we propose an 'attitude towards technology' (ATT) framework. It offers a heuristic device for their exploration, refinement, conceptualisation and interpretation. The framework covers a spectrum ranging from technological scepticism, over romanticism and determinism, to technological optimism. Attitudes are derived from social and philosophical studies of technology and accommodate additional concepts we propose such as "entropy pessimism" and "entropy optimism".

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[2] The EU average is calculated on the basis of actual members at the time. Data for periods before EU membership of accession countries are not available. In 2002 an extraordinary survey was conducted just among the accession countries.
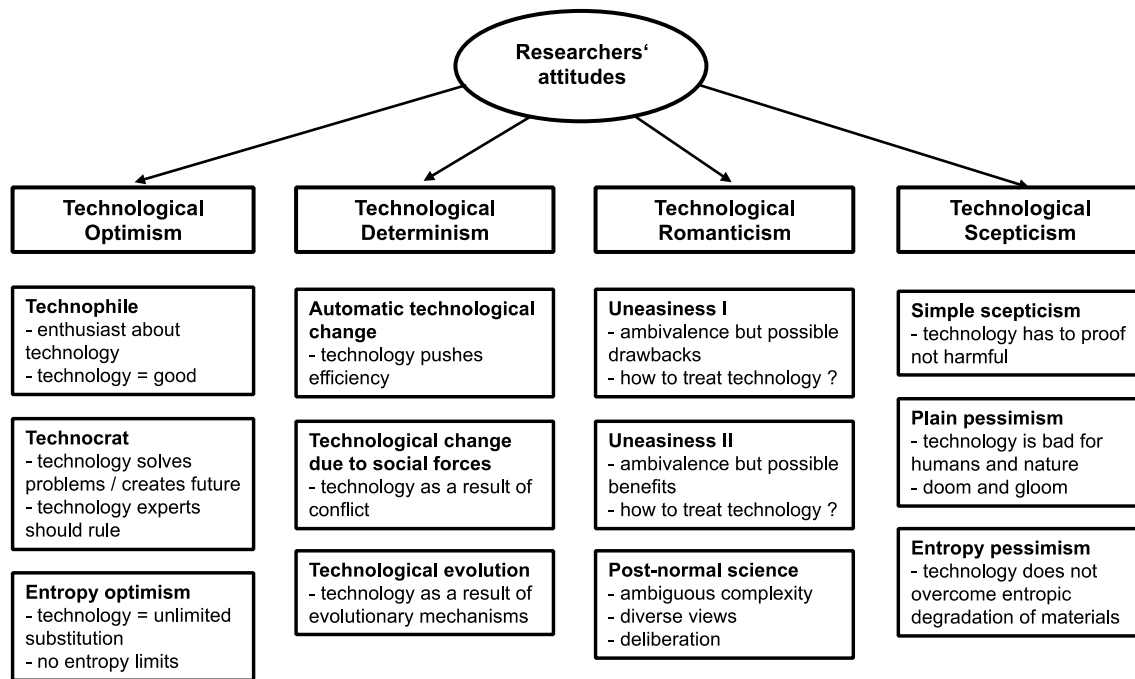
Figure 2: A framework of attitudes towards technology (ATT–Framework).

Moreover we use a qualitative content analysis of lecture material of ecological economics instructors in order to locate manifestations of attitudes towards technology according to our framework. Results suggest a great diversity in implicit and explicit expressions of such attitudes in teaching practice. Even within lectures attitudes towards technology are often inconsistent or contradictory, despite the apparent homogeneity of participants. This elusive diversity underlines the importance of an open and transparent debate on attitudes towards technology among communities of academics.

We aimed to develop a framework to categorize attitudes towards technology and to use it as a tool to make individual stances of researchers and teachers explicit. This is important, as positions on technology could influence the outcomes of sustainability research and teaching.

Exploring this framework empirically, we conclude that even in a small sample of instructors working in similar or related disciplines, attitudes towards technology are highly diverse, which is reinforced explicitly and implicitly by the attitudes conveyed in the lectures. Personal backgrounds and aims of researchers, their self-stated attitudes towards technology and attitudes conveyed in lectures may not necessarily clearly correlate in meaningful patterns. But, given the importance of technology in the sustainability discourse, more transparency about the stances on technology that scholars adopt in their research and teaching would be useful.

We can only engage in constructive deliberation on the use of technologies, if we know on what framings of technology the relevant research rests. In post-normal science terms it would be a public responsibility of scientists to transparently articulate their own attitudes towards technology. Today, technology is increasingly not seen as good per se, as the data from the Eurobarometer shows. Thus, technology should generally be subjected to some sort of public appraisal. Moreover, there are calls that scientists themselves should be encouraged to clearly expose the limitations and dangers of new technologies they develop or propose and reflect upon their own views about technology. Our framework helps to reveal them as explicit and implicit attitudes towards technology and therefore maps a plurality of perspectives. When

deciding on technology deployment it would be useful, if the whole spectrum was brought in and made explicit. There should not be positions or options that are systematically discriminated or *"closed down"*, as it may be suspected in the case of non-adoption of new technologies or a reversal to less advanced practices. Hegemonic discourses on technology may still be at work and influence decision-making. Breaking discourses up requires explicit framing of attitudes. It follows that individual attitudes towards technology, framings and the languages used by researchers require attention when aiming for transparency on technological attitudes.