



End of Award Report

Spinning Science: The Nanotech Industry and Financial News

- **Background**

The drive towards nanotechnology's commercialisation, with all its associated hyperbole about high returns or improved health or products, seems to go hand-in-hand with high profile concerns about its risks. The Royal Society and The Royal Academy of Engineering's 2004 report, *Nanoscience and nanotechnologies: opportunities and uncertainties*, recognised that the societal and environmental impact of nanotechnologies could become another hotly debated issue and threaten to develop deep divisions between the public, scientists and business institutions, such as is the case with genetically modified organisms (GM), unless all stakeholders and the public were involved in dialogues with each other at an early stage (The Royal Society 2004: 67). In the past six years, especially since the founding of the U.S. National Nanotechnology Initiative (NNI) in 2001, debates about nanotechnologies' risks have become more of a central focus for governments, scientists and businesses concerned about the successful commercialisation of nanotechnologies, and members of the public concerned that the market successes of nanotechnologies do not jeopardize the health and safety of consumers or the environment. During 2006 following the first U.S. Congressional hearings on nanotech's risks, for instance, there was a marked increase in public discussions that tackled the health, safety and environmental risks of nanotechnologies through an increase in academic and institutional conferences, workshops, publications, forums and hearings, and protests dedicated to the issue of risks (Nordan 2006).

These discussions about the health, safety and environmental risks and potentials of nanotechnologies, appearing in the popular press, as well as in academic, business and governmental settings, have been spurred in large part by the heavy investments in the technologies' commercialisation that have occurred over the same period. Part of the concern is that, of course, in the pursuit of financial returns, industries will neglect to address serious implications and uncertainties in regards to health and safety risks of the technologies. As Nordan (2006) has shown, however, industry has been rather quicker than governments to

address, albeit superficially, the potential risks of nanotechnology.

In 2005 alone, total global private and public investment in nanotech research and development reached \$9.6 billion (Lux Research Inc. 2006). Despite these high levels of financial investment and commitment that have been flowing into nanotech research and commercialisation, there has been comparatively little academic attention given to the financial risks to investors or to how discussions of these risks figure in the construction of the nanomarket, even though the speed and level of investment have been important factors driving concerns about health risks. Moreover, as a highly commercialised area of science, nanotechnology would appear to provide a good example of some widely noted trends in contemporary knowledge production (Gibbons et al 1994; Nowotny et al, 2001; Etzkowitz and Leydesdorff 2000). For these reasons, a sociological focus on financial aspects of nanotechnology development would appear to be merited.

Similarly, while there has been much research into the communication of risk to the public through popular media and the contestations over understanding science and technology in society, there has been virtually no work on the communication of financial risk or critical, sociological examinations of financial journalism. In relation to nanotechnology, studies of communication have focused primarily on scientific news and information that has a direct and immediate impact on the welfare of the public or how public opinion about health and environmental risks are shaped by media (Wilkins and Patterson 1987; Hansen 1993; Hornig 1993; Flynn, Slovic et al. 2001; Anderson, Allan et al. 2005; Cobb 2005; Gaskell, Eyck et al. 2005; Lee, Scheufele et al. 2005; Stephens 2005). Work to date has, in other words, been framed within a public understanding of science agenda. By contrast, and drawing on our respective research interests in journalism (Ebeling) and Science and Technology Studies (Cooper), we set out to investigate the financial understanding of science.

We examined communications between scientists who are spinning out start-up companies from their nanotechnology research, public relations and communication firms promoting the commercialisation of nanotechnology, financial journalists, and investors. In particular we focused on the communication of financial potential and risk by different actors. We explored the ways in which the nanotechnology market is constructed through the way it is communicated to investors, such as through the use of estimates of projected market worth or through investment pitches made to angel and venture capital investors. We looked at

mediated, financial and market information in regards to the nanotechnology field that appeared in financial, science and trade publications, company reports and marketing materials, brokerage firms, and websites dedicated to nano-investing. Research was conducted in the United Kingdom and in the United States. A key element in our approach was to look at the interpretive work of those actors for whom the coherence, validity or viability of claims made for particular nanotechnologies was a practical and pressing issue, and to explicate their analyses as a way of understanding the field.

- **Objectives**

We proposed four objectives, which we discuss in turn below. Our research did reveal some of these to be based on assumptions that needed qualification, thus necessitating some adjustment of focus. In general, the consequent reformulation of ideas has been a positive aspect of the investigation and its findings, and part of the necessarily iterative research process.

- 1. To develop a better understanding of how news sources control media messages on the financial potential of nanotechnology for investors.*

An aim of the project was to map and understand the communication circuits through which information about the financial potentials and risks of the nanotechnology field travel, and to understand how financial risk is communicated. One of the ways we sought to map these circuits was to interview scientists ‘spinning out’ start-up companies based on their nanoscience and technology research, to interview PR and marketing experts in the nanotechnology market and to interview financial journalists. While most of our assumptions in this regard were correct, we quickly realised that most start-ups were years away from going public, therefore, our assumptions on the types of journalists and news outlets to interview had to be altered. Mainstream financial journalism generally covers publicly traded companies and these were the types of journalists we initially proposed to interview. This also had implications for our assumptions about the consumers of media messages, that is, the categories of investors. Whereas publicly traded nanotechnology companies would have been of interest to retail and institutional investors – investors in stock markets – we had to reframe our focus to investigate the primary types of investing happening at this stage in the development of the nanotechnology market: venture capital and angel investing. These types of investors use different types of financial news information, such as specialist newsletters and publications, networking events and word-of-mouth information from trusted investing sources. We were

often told that once information appeared in the mainstream financial media, it was already dead information for this type of investor. Therefore, the PI attended several angel and VC networking events to observe sale pitches made to this group as well as she spoke with marketing and PR professionals to understand how these sources explained the financial potentials and market benefits of nanotech to the VC and angel investing public who already have specialist knowledge of technological markets.

2. To produce an ethnography of the relationship between news sources, such as press agents, scientists and entrepreneurs, and journalists who work for financial news media.

Since it is often the case that the financial and scientific media act as privileged translators of science and technology information, especially in regards to new technologies' market potential, we conducted an ethnography of the sources for financial and science journalists covering the nanotechnology market – scientists and institutions working in nanotechnologies, their press agents and public relations firms – and finished with the journalists themselves. As noted above, we had to alter our frame based on our assumptions about the investment stage of nanotechnology. This fact determined the pool of journalists we could speak to: in general a much smaller group covers nanotechnology than is the case with other emerging technologies, such as biotech. It also meant that the backgrounds of journalists were different: instead of speaking with financial journalists covering publicly traded stocks, often we spoke with science journalists working for financial newspapers and periodicals, business and industry journalists writing in scientific magazines, mutual fund and personal investing reporters and columnists and journalists working for trade magazines covering nanotechnology. We also focused on scientists and engineers who are building companies out of their research in nanotechnologies, to understand how they communicate the financial potentials of their company and the overall nanomarket to prospective investors. We learned from these 'nanoentrepreneurs' how perceptions of risks, especially health and safety risks, do not coincide with the journalists' conception of the risks of the nanomarket. The final group that we spoke with, venture capital and angel investors, gave us a broader account of how the investing messages are received, and how their recipients use them to construct and assess potentials and risks within their own understandings of technological markets. The development of this ethnography is directly related to Objective 1, to map the communication circuits between stakeholders, and the map could only come out of a brief but intensive ethnography of the commercialization of nanotechnologies.

3. To understand the role the financial media play in shaping the market in nanotechnology securities.

As noted, we had to shift our focus from nanotechnology securities since this is not how most investment is flowing into nanotechnology. We found that, while the financial media do play a role in shaping the investing public's perceptions of the nanotechnology market, marketers and PR professionals have a more significant impact in creating the perception of an investible market in nanotechnology.

4. To provide the investing public with information to enable them to become more critical readers of financial journalism and corporate messages.

While 'the investing public' constituted the key category of research user in the proposal, it became clear in the course of the research that many categories of respondents were very receptive to the issues raised by the project and, in particular, felt that a critical analysis of the financial claims being made by those building the nanotechnology market was greatly needed.

- **Methods**

We utilised several qualitative methods to collect data and conduct research for this project. We conducted a brief ethnography of the sources for financial and commercial news for nanotechnology and the journalists filtering and reporting on this information. Twenty-three interviews were conducted with professionals in nanoscience and technology, scientific entrepreneurship, financial and science journalism, PR and marketing specifically for the nanotechnology field, and with venture capital and angel investors. The publications that interviewees worked for varied, as did their roles, and include notable periodicals such as the Economist, the Financial Times, Nature, and MarketWatch. Three of the eight journalists interviewed had science backgrounds, with undergraduate degrees in physics, biochemistry, and other sciences, and came to journalism out of their science training. Of the remaining five, three came from journalism backgrounds and two came from business backgrounds, with no previous training in journalism. The journalists either covered science for financial publications, or covered finance and business for science periodicals. Two journalists were financial journalists covering tech stocks for financial periodicals. The four PR and marketing professionals interviewed worked for either specialist nanotechnology marketing and PR firms or professionals who worked for PR firms servicing the biotech and health fields. We interviewed three angel and venture capital investors who focus on emerging technology start-up investing who are considering investing in nanotechnology firms. Our analysis has focused

mainly upon journalists' and investors' own understandings of the field and, in particular, has explicated the ways in which they conduct their own lay sociology: that is that their practices of interpretation, synthesis and translation of financial information on the nanotechnology market are similar to the work of sociologists (see Cooper and Ebeling, 2007 forthcoming).

During the project we gathered and analysed a large collection of digital and print resources related to nanotechnology and financial information, including press releases and annual reports from major nanotechnology companies, marketing and promotional materials from key nanotechnology companies, two journalists' annotated archives of nanotechnology press releases dating back to 2003, and financial news stories from 12 financial and science publications from October 2005 to August 2006. This collection included 200 press releases, marketing materials, investment newsletters and guidance from financial services companies, and 78 news articles from financial news outlets including *Bloomberg News*, *Reuters*, *The Economist*, *The Wall Street Journal*, *The Financial Times* and the trade magazine *Small Times* were among the 12 publications analysed. On this data set we are conducting a content analysis that involves a comparison between press releases generated around financial and industry news and the news stories that resulting from the press releases. Investment newsletters from important investment firms were also included in textual analysis, especially in a comparison between claims made by nanocompanies and the perspectives of investors on the market. We are analysing the annual reports and other publicly released financial information of publicly held nanotechnology companies. This complements the analysis of interviews by enhancing our understanding of definitional conflicts that arise between companies attempting to exploit the nanotechnology moniker and competitors and journalists, who question the use of the nanotechnology label and exuberant financial claims for the nanomarket. A further line of analysis, in relation to all data sources, concerns the ways in which nanotechnology becomes articulated in terms of very diverse agendas, for which Laclau and Mouffe's (1985) discourse theory provides a useful model. The qualitative analytical software Nvivo has been used to analyse interview transcripts, news articles, press releases, newsletters and other textual data.

- **Results**

1. *Definitional uncertainties about, and the performative construction of, the nanotechnology market*

There are enormous definitional uncertainties and struggles over the commercialisation of

nanotechnology. Journalists, PR, company owners and investors all debate exactly what products can be defined as 'nanotechnology', which company can rightly call itself a 'nanotechnology company', and whether or not there exists a unified, single 'nanomarket'. Since nanotechnologies are diverse and their application spans several industrial sectors, when stakeholders speak of a 'nanomarket' this signals an effort on their part to create an investable market out of a disparate set of companies and technologies. For instance, there are several 'nanoindexes' that were created with the stated purpose to help investors who are interested in investing in nanotechnology make investment decisions or to track the progress of the market. These indexes, however, are most helpful to marketers and other key stakeholders with a financial interest in creating the perception that a 'nanomarket' exists (explained in detail in finding 5). Critics of these nanoindexes point to the fact that many of the companies listed are not "pure-play nanotech", that the companies' core business is not nanotech but perhaps car or computer chip manufacturing, and this significantly dilutes the value of the index for indicating the worth of the nanomarket. The companies listed within these indexes do not belong to a single sector, normally a common characteristic of most indexes, making nanotechnology indexes less valuable as a direct indicator of the financial health of nanotechnology *per se*, but very useful to those interested in seeing that a nanotechnology market is created. Many respondents, journalists in particular, are highly attuned to this duality: namely, that indexes and related phenomena are in some ways arbitrary constructions, but have important performative and concrete effects in relation to investment patterns.

2. The analytical value of financial and science journalists' interpretive work

Journalists are cautious in regards to the exuberance surrounding the marketing of nanotechnology. Many journalists have developed strategies to deal with these uncertainties around definitional claims made by PR, marketing and nano-entrepreneurs. To underline this point, one financial journalist explained that there was an editorial decision made at his news service that the word "nanotech" could not be used to describe technological markets. Instead, if, for example, he wrote about the new 40nm Samsung computer chip, he would describe this within the context of the semiconductor industry and refer to the chip simply as a computer chip, and avoid labelling the chip as nano.

The increased presence of nano-indexes, in another instance, indicates for many journalists the 'overhyped' of the nanotechnology market, which makes them more cautious in dealing with claims about the financial potentials of the burgeoning nanomarket. Journalists deploy a

number of strategies to enable them to filter highly partial information received from the nanotechnology industry, especially from PR companies who increasingly constitute an obligatory passage point for such information. Rather than attempting to determine the “truth” of the scientific claims, they decide the relevance of the information to enable their audience, investors in nanotechnology, to make investment decisions; they frequently refrain from direct evaluation of scientific claims, instead attributing claims to experts who can speak to either the validity of the science or the financial soundness of the claim; and they take account of sources’ interests and reputational stake in assessing claims made. In this and other respects, including their use of constructionist forms of argument and interpretation, their expertise as analysts of this field is perhaps insufficiently appreciated, and we have noted important convergences between their epistemological strategies and those of STS scholars. We have also suggested (Cooper and Ebeling, 2007 forthcoming) that recognition of this might have some wider significance for social scientific approaches to journalism.

At this comparatively early stage of nanotechnology’s commercialisation, there are only a handful of publicly listed nanotech companies. Because of this, retail and institutional investing in publicly trade stocks in nanotechnology companies is not yet significant enough for mainstream financial media to act as pivotal mediators of financial information on the development and financial risks of nanotechnology in the way envisaged; nevertheless, their interpretive work forms a valuable and relatively unappreciated resource for the analytic understanding of the sector.

3. Resources used to understand and translate forms of risk

Actors in this field routinely employ two different models in order to negotiate, understand and control the uncertainties of a volatile market. In each case, the still relatively uncertain trajectory of nanotechnology is interpreted via the use of narratives derived from other known phenomena (Ebeling, under review).

On the one hand, the ‘dotcom’ bubble and crash of 2000 provides one frame of reference that directs attention towards the financial dangers of taking overstated and uncontrolled marketing claims at face value. In our data, it was notable that journalists were the key actors who used this particular narrative as a resource for explaining aspects of the development of the nanotech market.

By contrast, those working in marketing and PR refer to the 'lessons of GM'. The work of marketing and PR is the work of translation, translation of messages about the potentials of nanotechnology. The experience of GM looms large over this work, and is seen to provide a privileged exemplar of what can go wrong if translation is not done well: the 'lessons' to be learnt being the importance of controlling the communication field of nanotechnology in the early stages in the technologies' commercialisation, if a PR disaster is to be avoided. For the PR professionals interviewed in this research, and for many of the scientists, the GM debate and controversy demonstrate that poor communication is the largest potential obstacle to the development of nanotechnology, and that communication on the risks and benefits of a new technology should be transparent and should happen early (Barnett, Carr et al. 2006). Within the PR field, the public concern about health risks gets translated into the possible financial problems these perceptions may cause – consequentially there is an effort to control the field of communication from the beginning of the development of the nanotechnology market. It is notable that, once again, actors display a finely tuned appreciation of the performative power of social constructions; one PR source, for example, advises potential investors that whilst a distinction can be made between real and perceptual risks, the latter are likely to be far more financially consequential.

The use of such narrative resources is not confined to these fields, GM providing a key frame of reference for a good deal of social scientific work concerned with, *inter alia*, developing forms of public engagement in decisions about nanotechnology's future. A question for future consideration will be whether there are analytical limitations in the recourse to this existing frame of reference to explain an emerging set of technologies whose trajectory is uncertain, and whose structure and development is inevitably not directly analogous in all respects.

4. The indirect relation of scientific validity to financial potential

Whilst an important strand of this project has been to focus on forms of analysis routinely deployed by certain categories of actor in this field, the implicit assumption that a financial interest, for example, would necessitate giving some attention to the robustness of the scientific claims made for a particular application has been shown to be problematic, or at least in need of some qualification. For many, there is, in practice, no direct correlation between scientific validity and investment potential. Most investors in nanotechnology are interested simply in profitability at the point of exit, and the science is of interest only to the extent that it has any bearing on this.

There is a further, temporal aspect to this indirect relation between scientific validity and financial viability, in the form of an incongruity between the investing cycles and scientific research cycles. The validity of a nanoscientific innovation – does the invention work and is it sustainable? – can take years to be proven. Yet marketing and investing cycles run along much shorter time scales; a VC or angel investor expects their exit point to be five to seven years after the initial investment, when the start-up is expected to go public, be bought by a larger corporation or sell off the IP.

5. Levels of investment and the black boxing of finance

The drive towards the commercialisation of nanotechnologies has been stimulated, in part, by promises of large R&D funding from several government initiatives to support and enable the private sector to build a nanotechnology market. Since its inception in 2001, for instance, the U.S. government's NNI has allocated more than \$6.5 billion for nanotechnology R&D projects, the U.K.'s Department of Trade and Industry (DTI) has earmarked £90 million and Japan has a dedicated spend of £200 billion by 2010. The founding of the NNI stimulated a large jump in R&D governmental funding and investment globally, which has grown incrementally from 2001 to 2004 by more than 267 percent (President's Council of Advisors on Science and Technology [PCAST] 2005: 8). Current estimates suggest the global nanotechnology industry worth will reach \$1 trillion in less than 10 years. It is this figure—a market in nanotechnology worth \$1 trillion by 2014—that is recycled by financial journalists, marketers, company owners and entrepreneurs. The estimate originally appeared in a report by the U.S.-based National Science Foundation, a figure that helped to justify government investment in nanotechnology R&D, and since its publication in 2001, it has become the mantra to justify the claims made that nanotechnology is “the next big thing” for investors (Roco and Bainbridge 2001; Roco 2003). While governments are earmarking funds for nanotechnology research, investment bankers, venture capitalists and established industry leaders have been investing billions into nanotechnology research and start-up companies. In 2005 alone more than \$496 million venture capital investment went into nanotechnology firms, a 21 percent increase from 2004.

One of the more surprising findings to result for this research is the tendency for certain actors to blackbox the financial information on the nanotech market. A prime example of this is in the assertion that the nanomarket will be worth \$1 trillion by 2015, a figure originally proposed in 2001 by the U.S. National Science Foundation's Mike Roco and used ever since to rationalize

nanoinvesting and marketing (Roco and Bainbridge 2001). Roco reiterated this figure in a 2005 article, stating that based on the independent research of other institutions, including the marketing firm Lux Research Inc., that have also claimed that the market will be worth \$1 trillion in less than 10 years (Roco 2005: 708). This, he states, is vindication that his prediction is correct yet provides scant explanation on how the figure was arrived at, and by pointing to the figure becomes legitimized by its source and its repetition. The fact that there are less than 100 publicly traded companies in the U.S. alone, and that the number of nanotech companies are difficult to determine with certainty given the definitional struggles over which companies can be labelled “pure-play nanotech” indicates that not only are the financial potentials and risks blackboxed, but that there are enormous efforts on the part of stakeholders to build the *perception* of an already existing and investible nanomarket (Center for Economic Growth 2004: 6).

The perceptual construction of a nanomarket is most obvious in the proliferation of nanoindexes, especially when the consideration that there are so few pure play nanocompanies that are publicly traded. For instance, the market research firm tracking nanotech’s commercialisation, Lux Research Inc., created an investible index fund, Powershares Lux Nanotech Portfolio fund, which is traded on the American Stock Exchange, in October 2005. The creation of the only publicly traded index fund for nanotech was a marketing strategy for Lux Research in two ways; one, for the firm to foster a perception of market expertise, and two, to create a public perception that there is an investible nanotech market, which in turn, drives more business to Lux Research. The creation of the investible index created a small media storm of criticism because of the lack of pure-play nanocompanies represented in the index; for investment purposes there are simply not enough nanocompanies to create a strong investible index.

6. The articulation of nanotechnology with other issues and agendas

The interpretive flexibility of nanotechnology arguably enhances its suitability for being, in Laclau and Mouffe’s (1985) terms, articulated in different ways: in our data, there is evidence of its being enmeshed and connected to such diverse agendas as the war on terror, flagging economies, cures for cancer, and national competitiveness. In terms of national competitiveness, for example, the future promise of a nanotech industry is translated to be especially important in regards to economic regeneration for areas affected by high unemployment and economic downturns, or to stay competitive in a globalised marketplace

(Ebeling and Cooper 2007).

- **Activities**

During the yearlong project, we participated in several activities as part of the overall research. These include:

- A presentation in November 2005 at the Communication, Culture, Technology and Science seminar series at Kungliga Tekniska Högskolan (Royal Institute of Technology), Stockholm, Sweden.
- Participation in a public panel at the Dana Centre, Museum of Science, London, UK, also in November 2005.
- Participation in the “Governing at the nanoscale” DEMOS workshop, London, and in the Bioeconomies workshop at Lancaster University, both held in April 2006.
- Poster presentation at the Nano Science and Technology Institute annual convention and trade show, Boston, MA, USA in May 2006.
- Participation in two ESRC Science in Society Programme Annual Meetings, London, 2005 and 2006.
- Paper presentation at the European Association for the Study of Science and Technology (EASST) annual conference in Lausanne, Switzerland in August 2006.
- Presentation of a paper at the Society for Social Studies of Science (4S) annual conference held in Vancouver, Canada, in November 2006.
- Invited lecture, Department of Information and Media Studies, University of Aarhus, Denmark, 14th March 2007.
- Presentation of a paper at the British Sociological Association’s (BSA) annual conference at the University of East London, London, UK, convening in April 2007.

- Invited talk at workshop 'Nanotechnology and Innovation: perception, policy, dispute resolution, and diffusion', supported by National Science Foundation, University of Massachusetts, Amherst, USA 17th-18th May, 2007.

- **Outputs**

This research produced a dataset of interview transcripts, of which a part will be deposited in the Data Archive (not all participants gave their permission for their transcripts to be deposited). We also developed several conference papers and peer-reviewed articles as a direct result of the research. These include:

Ebeling, M. and Cooper, G. (2006) "Spinning science: The commercialisation of nanotech and financial news". Proceedings of the Nano Science and Technology Institute (NSTI) Annual Meeting. May 7-11, 2006. Boston, MA, USA.

Ebeling, M. and Cooper, G. (2006) "The commercialisation of nanotech and the communication of financial risk". Paper presented at the European Association for the Study of Science and Technology (EASST) annual conference, August 23-26, 2006, Lausanne, Switzerland.

Cooper, G. and Ebeling, M. (2006) "Understanding nanotechnology: epistemological practice in the work of financial and scientific journalists". Paper presented at the Society for the Social Study of Science (4S) annual meeting, November 4-6, 2006, Vancouver, Canada.

Cooper, G. and Ebeling, M. (2007, forthcoming) "Epistemology, structure and urgency: the sociology of financial and scientific journalists". *Sociological Research Online*. Accepted for publication, subject to revision.

Ebeling, M. (under review) "Mediating uncertainties: Communicating the financial risks of nanotechnologies". *Science Communication*.

Ebeling, M. and Cooper, G. (2007) "Talking (up) technologies: ambiguity and certainty in financial discourse". Paper presented at the British Sociological Association (BSA) annual meeting, April 12-14, 2007, University of East London, London, U.K.

- **Impacts**

We contributed to two separate documents produced by the SiS programme that were distributed to interested stakeholders and the general public. We were informed by the SiS coordinators that these documents were well received and generated interest among readers in the topics that our research addresses.

The process of collecting data was itself an engagement with users in many respects. For example, we not only attended but also made a presentation at The NSTI Trade Show (Boston, MA, USA, May 2006), and this stimulated some very useful discussion, especially with nanoentrepreneurs. On other occasions, journalists, investors and scientists were keen to discuss findings emerging from our work, which we have been sharing with them.

- **Future Research Priorities**

We are presenting a final conference paper on the project at the British Sociological Association's annual meeting, 12-14 April 2007. We also intend to publish one further article from this research, giving a total of three peer-reviewed articles, and will be contributing a chapter to a book planned for publication as part of the Science in Society programme. Plans are under discussion to conduct a symposium with social scientists and science and financial journalists on shared methodologies. This workshop will most likely occur late 2007 or early 2008. The principal investigator is now in the early stages of a research collaboration with a nanoscientist and entrepreneur who participated in this ESRC-funded research project. The PI is also pursuing a collaboration with her present university's nanotechnology centre and engineering school on a project for this current year to include more social science research in nanotechnologies. We believe very strongly that the support that the ESRC gave to this research has opened up several research and collaborative avenues that will provide new growth for the next several years.

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