SATSU Working Paper No 30 2006

This is a preprint draft.
Citation should conform to normal academic standards. Please use either the 'SATSU Working Paper' number and date. Or, where a paper has entered into print elsewhere, use normal journal/book citation conventions.

Shifting tenses – from 'regimes of truth' to 'regimes of hope'

Nik Brown
Science and Technology Studies Unit, University of York, UK.

Contact details: email: ngfb1@york.ac.uk

Paper presented at:

Shifting Politics – politics of technology – The times they are a-changin'
Groningen April 21-22, 2006

Preamble

Drawing on insights from the 'sociology of expectations' this paper explores shifts in the apparatus and public consumption of science in which it has been argued that 'regimes of hope' (Moreira and Palladino 2005) have lately come to the fore. Here, questions of present-day evidence have given way to future-oriented abstractions premised on desire, imagination and the will to the yet 'not present'. To this extent, the paper speaks to long-standing debates on the relationships between present facts and future values (Lash *et al* 1998), or the movement from 'authority to authenticity' (Brown and Michael 2002) and, especially, the way these are linked to the market and economy.

Three interrelated stories serve as basis for discussing the politics of regime change at the junctures of the present and the future, truth and hope in the contemporary consumption of science – each of these are presented here merely as sites for thinking about these relationships between presents and futures, truths and hopes:

- First, the paper comments on a series of recent and curious events in the biotechnology debate at the close of the C20th where it has been possible to see a key strategic shift away from a debate premised on an authoritative, factual and evidential discourse, towards the language and authentic symbolism of hopeful future-oriented values. One illustrative expression of this can found in the evolution of the public representation and promissory branding of biotechnology. Here, the shift from truths to hopes represents an important strategic shift away from more familiar contestations around competing risk assessments, evidence and expertise.

- Second, the imagination has been central to brokering new and highly privatised consumption markets in the biosciences – most saliently in global efforts to store the present for the future through biobanking. This has been particularly striking in those situations where new parents have elected to pay for the storage of their newborn's cord blood for future use should the need, and indeed the therapeutic opportunity, arise (Brown and Kraft 2006). Crucially, this kind of case illustrates both the corporeality of regimes of hope in terms of the deposition of a familial biological asset that should accrue some kind of value over time. But the case also signifies acute

tensions at the boundaries of regimes of hope and truth as debate rages over the miss-selling ('truthlessness' or 'hype') of the stem cell promise.

- Finally, I want to explore an area in which regimes of hope become calculable objects of truth regimes. The emergence of 'hope scales' – a literature and apparatus widely used in oncology treatment to assess whether or not patients are appropriately positive about their potential recovery – represents the calculative naturalisation and objectification of hope in the form of personal will and volition to overcome personal pathology. In what Mary Delveccio-Good (1990; 2003) describes as the political 'economy of hope' in oncology culture there are conflicting pressures to both speak the truth of clinical disclosure, whilst not at the same time damaging the subject's volition to mindfully confront their pathology with volition and hope.

In these uneven though related stories are intertwined the changing balances between 'regimes of truth' and 'regimes of hope' in the present day politics of the biosciences. Such stories prompt far reaching questions about the temporalities of expectations and changes in the character of the future; the place of bioscience futures in future-oriented subjecthood and emodiment; and important reflexive questions about the role of social science analysis in re-shaping or intervening in the worlds of hope and expectation. This paper also explores the links and connections between these sites and economies of capitalisation where regimes of hope serve as the basis for new markets and new ways of mobilising biologies and selves (Thompson 2000; Franklin 2001; Waldby 2002).

By way of background, this paper draws on a number of recent strands in sociological literature on expectations, time and futurity in making sense of these kinds of shifts and dynamics. First and most recently Moreira and Palladino (2005) have contributed to this discussion in writing about the tensions and parasitic relationships between the paired 'regimes' of hope and truth. This is a means of making sense of their case, clinical trials of stem cells for treating the highly complex neurodegenerative disorder, Parkinson 's disease (PD). What I find particularly compelling in their analysis is the choice of regimes over discourse expressing, as they put it, 'their embedding in usually far less visible social networks and material practices' (58). The merging of facts and values and their mutual dependence is a mutual or parasitic relationship they claim where, for example, '... clinical trials no longer are a vehicle for an impossible escape from politics, but have instead become the medium of political engagement within the biomedical domain'. This is also parasitical in as much as uncertainty or present doubt and the potential for future certainty or truths are in dynamic relationship with one another. That is, the present absence of certainty is itself constitutive of the hope for, and drive towards, future truths. The uses of uncertainty are of course strategic, variable and plastic – arbitrarily becoming the basis for doubting or promoting future potential. For example, present uncertainties and the failure of the present to satisfactorily measure-up to conventional standards with a regime of truth can be both grounds for discontinuing support for an endeavour (say a clinical trial) or, quite the opposite, where uncertainty in the present becomes the basis for arguing for continued support in the hope of arriving at those truths in the future.

Of course, Moreira and Palladino are not alone in their interest in the relationships between hope and truth in the biosciences. As mentioned above, Mary Delvecchio Good (2003) writes of the 'political economy of hope' in American cancer care and research. For her, it is a discourse of hope – a shared culture of images about the promise of the biosciences and the importance of personal and collective action in the face of potential pathology – that links together networks of clinical scientists, oncologists, patients, venture capitalists, and wider public political actors. Here, health care consumers make investments in 'medical imagery', what she calls a 'possibility enterprise... culturally, and emotionally, as well as financially' (3), and we may add corporeally in terms of, for example, the hopeful deposition of blood and cells in stem cell banking explored in greater depth below. In a statement that clearly distinguishes between regimes of truth and those of hope, she writes:

> 'Enthusiasm for medicine's possibilities arises not necessarily from material products with therapeutic efficacy but through the production of ideas, with potential although not yet proven therapeutic efficacy' (3).

More recently, Carlos Novas (2005) has been very usefully applying this notion of a political economy of hope to the kinds of collaborative links that have been established between pharmaceutical companies and patient advocacy organisations. Of particular note here is the corporeal or material character of these investments in, for example, the establishment of biological data banks and new contractual arrangements whereby patients make their bodies and patient records available to pharmaceutical innovation in return for certain expected benefits. This parallels numerous developments in the biosciences – including cord blood banking discussed later in this paper – where bodies have become crucial knowledge rich sources for the production of future 'biovalue' in a process of what Charris Thompson writes of as biological capitalisation (2000). It is in the context of these kinds of relationships that we find 'new norms' for human participation in the promise and consumption of the biosciences, and importantly, that these forms of collaboration include new temporal distributions of present investment and future benefit. One of the more intriguing aspects of Carlos' account is that participation in economies of hope has itself come to depend on the increased expertise and knowledge of patient advocacy groups. That is, regimes of hope are here facilitated by regimes of truth, expertise and scientific competence as the basis for negotiating and collaborating with pharmaceutical companies:

> 'Contrary to forms of imagining the future that rely on formal methods of calculation or probabilitistic thinking, I would suggest that the field of hope consists of a domain of possibility, anticipation, a balancing act between knowledge of the limits of the present and recognition of its potential to bring new futures into being' (2005)

Sarah Franklin in her work on IVF has been similarly interested in the corporeal connections between aspirational longing and embodiment when she writes of 'embodying progress' and IVF as a 'hope technology' that demands of its subjects practices of 'hope management' for women and couples engaged in the turbulent process of undergoing a form of reproductive treatment ridden with disappointments. In the context of reproductive diagnostics and foetal screening, truth and hope are the twin contradictory and ambivalent tensions common to modern reproductive experience of the 'tentative pregnancy' as Barbara Katz Rothman puts it (1993).

In this vein, I wrote about 'ordering hope' (Brown 1998) as a more or less strategic 'mode' (Law 1994) involving material and corporeal forms of delegation through which hopes and aspirations are mediated. This was a story about the future promise and potential of xenografting and the frustratingly intransigent difficulties presented by the truths that failed to cooperate with the xeno dream. Such hopes were in mutual tension with the desperateness of transplant patients facing the immanent crisis of a threatened personal future. These were not hopeless desperations but were always performed against the backdrop of some potential hazy future resolution. The proposed resolution serves as a narrative bottleneck – an *obligatory temporal passage point* – through which the subject must travel from the present and into the future. And of course, how that obligatory passage point comes to be defined will depend upon powerful competitive dynamics between different networks each proposing parallel, though usually mutually exclusive, aspirational hopes. In this way that Frans Berkhout writes of expectations and futures as bids, tenders, propositions and proposals (2006). Such bids create what Harro van Lente calls 'possibility spaces' that serve as both a means of enrolment but also as protected zones in which future possibilities are given greater weight than the perhaps less promising realities of present truths (1993; 2000).

Regimes of hope and truth also register a problematic distribution of expertise and knowledge in terms of who has the authority to judge the veracity or reliability of future expectations – and according to what kinds of privileged expertise – and relations of trust in that expertise.

Expectations in this way are 'situated' (Brown and Michael 2003; Brown 2003) in as much as, for example, bench scientists might be more jaded or even disillusioned by the sheer difficulties they face in drawing that promissory imagined future into the present (MacKenzie 1990). Though these uncertainties become less visible the further one travels in space and time from the material messiness of the bench. Policy makers, investors, even sociologists of expectation are rarely privy to the private reservations of the lab and the boardroom. In this sense we might say that regimes of truth and hope have both a spatial geography and a temporal patterning.

Whilst these considerations of 'situatedness' and location within economies of hope are crucial, we also have to acknowledge that we are all equally remote or removed from the future. In other words, the future – the yet to be - is only available to us through abstraction and the imagination. The reality status of the future lies in its performative function in the present – and the way in which such real time abstractions both reflect imagined futures and also eventually constitute them. George Herbert Mead's work emphasises the entirely non-deterministic and complex processual relationships between the past, present and future – and that it is only the present that has a reality status as a unique and unrepeatable series of 'nows' (Mead 1932; Flaherty and Fine 2001; Adam 1990, 4). These presents can range from the periodicities of historical formations and 'timescapes' (Adam 1998). Or they might be the micro-conditions of the moment-to-moment. Bhaktin's literary term 'chronotope' expresses the point that orientation to the future and the past is always embedded in a specific scene or temporal location (Bhaktin [in Morris 1997, 18]). Abstracting about the future therefore occurs at a certain juncture in the unfolding of a narrative or plot. The historical sociologist Rheinhart Koselleck makes similar points (2004) in that memory and present are inextricably bound to futurity, and every present is a former future. This point about the primacy or truth status of the 'real time' moment is at once applicable to questions of micro expectations, but also a more general feature of wider socio-utopian futures (Kosellek 2004). In other words, *regimes of future hope tell us a truth about the now.*

But there are complex discussions to be had about the reality status of the future – its material tangibility - in articulation with the present. I think Andy Pickering's book, *The Mangle of Practice*, has some important insights to contribute to this discussion. At the heart of his description of 'mangling' in scientific practice are the complex temporal relationships between imagination and materiality - or hope and truth – and the means by which promissory abstractions (theorising) take on substance through experimentation (1995). On the one hand we have the imagination, the experimental expectation of how things in science should or might behave. On the other hand materialities offer certain resistances that force us to re-imagine, to 'retune' our expectations. The imagination undergoes a process of accommodation to materiality, and these resistances are defined only in relation to normative goals. That is, 'goals are temporally emergent from culture... and can themselves be transformed in, and as an integral part of, real-time practice, which includes sensitive encounters with material agency' (20). Here, Pickering's work starts to connect with other themes in Science and Technology Studies such as 'obduracy', 'path dependency', 'lock-in' or 'irreversibility'. That is, ways in which imaginations become materially or corporeally embedded in bodies, structures, routines, systems, matters, etc such that they assume a future reality status in the present. And to a certain extent that reality status of the future can even be anticipated or expected in as much as it would be difficult to foresee things altering greatly from a given course or 'narrative' as Deuten and Rip have expressed it (2000). Pickering writes about this as the 'prediscipliningof the imagination' – that regimes of hope are in constant articulation with prior networks of established, though constantly contestable, material and cultural truths. This is not to be mistaken for some kind of modernist scientific theory testing – or the progressive accumulation of facts through empirical falsification - by which the imagination progresses towards harder and 'more material' truths. Rather, the imagination articulates with a wider body of materials, concepts, values and cultural reference points, a political climate that in turn governs the normative questions asked of materiality and in respect to which materiality constantly changes. In this way – regimes or truth and hope are inter-articulated in continual reassessments of what is

known (past and present truths) in order to proceed towards what is suspected but not yet known (the hope in future truths).

Each of these contributions have been concerned with the complex temporal articulation between the present and the future, between reliable knowns and unreliable unknowns, between proven evidence and unproven theorising, clarity and doubt, immanence and postponement, immediacy and deferral. And just as importantly, these tenses map onto the characteristics of networks as, for example, either invested in the present (such as we might see in highly professionalized or closed institutionalised forms) and those invested in re-invigorating or opening the present to potential, disruption, and opportunity. As a number of these authors have noted, economies or regimes of hope, are inextricably linked to capitalisation, future markets and the latent potential of biovalue. It is this theme of capitalisation and embodiment in materialities and corporealities that I want to take forward and explore through the following three examples.

Imagine that! From facts to values in the biotech debate

In the late 1990s, as the debate over GM reached its peak throughout much of Europe and elsewhere, a representative conglomerate of European and American biotechnology companies (EuropaBio) commissioned a consultancy report from the German public relations firm Burson Marsteller. Burson Marsteller - you may remember - had been very highly regarded in managing numerous public relations disasters - like that of the Exxon-Valdez oilspill, the Bhopal tragedy and even the BSE crisis in the UK – and proved itself capable of reshaping deep-rooted perceptions of high risk sectors ranging from the nuclear to the petrochemical industries.

Now, controversially the 1997 biotechnology consultancy report was leaked to Greenpeace who made the document public. What caught my eye at the time was the way the report stressed the importance of the imagination and the need for a new way of steering the debate towards aesthetic considerations of future values. In its recommendations to the EuropaBio group, Burson Marsteller made what was to become a highly prescient set of recommendations. In particular it suggested that the biotech industry get away from issues about facts, messy material squabbles about health, risk and hazard. And instead, start to offer 'symbols', a new qualitative vocabulary capable of fostering, and I quote 'hope, satisfaction, caring and self-esteem'.

A debate conducted within the highly restrictive confines of variously challenged 'truths' had in effect resulted in two things. First, it had distracted consumers, the market and policy making from being able to grasp the promissory potential of the future of GM products. The closed present tense of current and past truths had occluded the future open tense of potential and possibility, or so BM believed. And just as significantly, they recognised that given the normative positions assumed by most parties within the European controversy, all truths would be continually and unremittingly open to challenge. STS scholars would recognise in this the ubiquitous problem of infinite epistemological regress so common to controversies involving incredibly complex proofs circulating in volatile cultural and epistemological environments. The only hope would lie in a widespread shift in the basis of the biotechnology debate from irreconcilable and untrusted truths towards the nascent and as yet deferred potential of a utopic technology to mesh with deeply held cultural values of progress, the future of nature and enlightenment advancement. A romanticised nature had become somehow diametrically opposed to technology in the debate and biotechnology would have to make a new bid for compatibility with the future of nature and life. This would depend on laying claim to future-oriented abstractions rather than messy details. In his book *Promising Progress*, Harro van Lente (1993), drawing on McGee, wrote about this kind of meaning making in terms of 'idiographs'. These are highly flexible and plastic cultural motifs or organising commitments – for example, 'justice', 'democracy', 'progress' - to which people

appeal when wishing to situate a statement or an act in a much wider and more powerful context of meaning.

For BM, biotechnology had become negatively detached from a positive idiographic world and had become entrenched in a closed and circular controversy about evidence. Its first recommendation was therefore to stay away from the problem of truth describing facts as the killing fields of the bioindustries:

> 'Public issues of environmental and human health risk are communications killing fields for bioindustries in Europe. As a general rule, the industry cannot be expected to prevail in public opposition to adversarial voices on these issues.... a basic discipline of EuropaBio's communications strategy must be to stay off these killing fields - no matter how provocative the invitation to enter into them may be'.

Instead, the bioindustries would have to substitute a debate about evidence for one about abstract future-oriented values representing a shift towards more aesthetic and symbolic references. Symbols and values – and especially those eliciting 'hope, satisfaction, caring and self-esteem - would come to represent the bioindustries escape route from messy evidential regress:

> 'Symbols - not logic: symbols are central to politics because they connect to emotions, not logic. Adversaries of biotechnology are highly skilled in the cultivation of symbols eliciting instant emotions of fear, rage and resentment. Bioindustries need to respond in similar terms - with symbols eliciting hope, satisfaction, caring and self-esteem'.

Just as importantly, BM diagnosed this not just as an evidential problem but quite specifically an affective or emotional problem about the aesthetic and romantic attachments of people to the complex ideographs of nature and the rural:

> 'Food itself is a powerful vector if cultural - and even political - values virtually everywhere in Europe. But these values differ from country to country. And in many parts of Europe there also exists a strong corresponding emotional attachment to idealised images of rural society, farming and the countryside.'

Following BM's report to the bioindustries representational change followed quickly. Members of EuropaBio – like Genencorp, Pfizer, Eli Lilly, Monsanto and Nestle - lost very little time in taking this massage to heart. Within a year or so, the biotechnology firm Monsanto had rebranded itself with the logo 'Food, Health and Hope' – in benign green lettering against a leafy background. More recently still, Monsanto has shifted again to a new level of future-oriented abstraction replacing the former logo with the simple message 'imagine'.

Monsanto also set out to depict itself as a contrite organisation now much more in tune with other imaginings – particularly those of its sceptical publics and their perceived romantic longings for lost natures. And crucially, the debate became marked by the emergence of a relatively new and incredibly significant turn towards affectivity and the emotions, even at an institutional level. Monsanto's chief executive went to extraordinary lengths to portray Monsanto as having had a 'change of heart':

'Even our friends told us we could be arrogant and insensitive... We were blinded by our enthusiasm.... We missed the fact that this technology raises major issues for people—of ethics, of choice, of trust, even of democracy and globalisation. When we tried to explain the benefits, the science and the safety, we did not understand that our tone—our very approach—was arrogant'. (Vidal, 2000)

This is but a small anecdote in the hopeful aestheticisation of debate in science and technology. But, as myself and Mike Michael have argued, it is part of a much broader turn in the very basis of the politics of the biosciences. In particular it represents a shift from facts and evidence (regimes of truth) towards the conduct of debates through the meta-abstractions of hope, expectations and the future. Of course, given that such futures are only available through abstraction, that future must be mediated through the evocation, performance and practice of symbols and values as a means of connecting with emotions, desires and longings. This is an illustration of the shift from 'authority to authenticity' (Brown and Michael 2002).

Modernity and science counterpoised facts against values, the emotions against rational thought, intuition and desire against direct evidence, intangible wishes against tangible proofs. What we are seeing in contemporary debates about biotechnology is evidence of a movement in the modern epistemological picture. The language of rationalistic authority is being supplemented (at the very least) it seems with a language drawn from values and aesthetics with its connections to desire, longing, the imagination and authenticity. Nussbaum (2001) goes as far as to describe this as an 'upheaval of thought' where the capabilities of rationality are proving to be ineffective at popular persuasion in the way they once were. Nussbaum describes these subtle changes as an 'intelligent responses to the perception of value' (Nussbaum, 2001: p.x). Nussbaum's observation correctly diagnoses the rising significance of the affective in the public sphere. Within the contemporary climate, the language of rationality must therefore embody and register its modernistic opposite if credibility is to be successfully sustained.

At stake in these shifts are vast investments in future value and the economic and market reorganization of global seed and petro-chemical industries stretching back to the mid 1970s and beyond in anticipation, back then, of a future biotechnological basis to world food production (Kloppenberg 1988). The authoritative positions taken by the biotech industries - prior to their change of heart - reflects an undaunted commitment to the truth of this vast and seemingly irreversible 40-year-long restructuring. Most potential consumers of the biotech dream were for most of this period shielded from – or at least unaware of – changes taking place in the global organization of food production and manufacturing in preparation for novel GM based plants. Here then, huge temporal and spatial rifts had opened up between the expectations and hopes distributed between production and consumption. The change of heart, the shift towards shared symbols and the language of hope and promise has emerged as a means of belatedly drawing these divergent economic parties back together into a joint market agenda.

Banking the future - Capitalisation and hope

In a slightly different context, the biosciences are connecting with consumers' sense of future in ways that are just as corporeal and embodied as in the context of food. This example draws on work recently undertaken by myself and colleagues on blood innovation and the stem cell promise (Brown and Kraft 2006; Martin, Brown and Kraft 2005-2008). A growing number of bioscience companies are now offering new parents the opportunity to bank the cord blood of their newborn children, for future treatments both real and imagined (but mainly imagined!). The web sites and glossy brochures are replete with the teary imagery of happy parents, ideal families, perfect bouncing babies – a jarring backdrop to the implicit suggestion of childhood leukaemia, tissue engineered prosthetics, etc. Here, the incredible rarity of present-day uses for cord blood has not significantly deterred many thousands of new parents depositing CB thereby investing financially and corporeally in the future potential of stem cell sector.

Cord blood banking is advertised directly to parents as an investment that may, one day, prove to save the life of their newborn child. Potential 'investors' are implored to, as banks varyingly expresses it, 'put a little something away for a rainy day'; to provide 'a security blanket for your family'; by 'saving key components to future medical treatment '; or 'saving something that may conceivably save his or her life someday'.

By way of background, cord blood HSCs have been of clinical interest since 1988 when they were successfully used as an alternative to bone marrow in the treatment of Fanconi's anaemia. This led to various public sector initiatives in the early 1990s to bank cord blood for transplantation between unrelated though closely matched donors and hosts (allogenic transplantation). The fact that these are unrelated transplants is important because if a person's own cord blood were to be used (autologous transplantation) the transplant may well reintroduce cancerous cells back into the body, even after their successful removal during chemotherapy.

Alongside public sector banking, commercial cord blood banks have been offering new parents the option of storing the cord blood of their newborn, for later use in treating their child should it develop one of a long list of diseases cited by cord blood banks, or for treating siblings and other family members. The chances of a child's own cord blood being used in the treatment of leukaemia is, as we note above, considerably reduced because of the risks that the banked stem cells will themselves be cancerous.

There are then crucial differences in emphasis and strategy between public and private CB banks. In short, whilst the commercial sector cites yet unrealised future developments in tissue engineering as a primary reason for investing in CB banking, the public sector, in contrast, focuses almost exclusively on their present day use of CB HSCs in treating very rare blood and immunological disorders, and also in rare instances where a bone marrow transplantation is not possible. Importantly then, we can see here an organising distribution in regimes of hope and truth, with hope underlying commercial cord blood banking, and regimes of truth serving as the legitimatory basis for public cord blood banking.

Again, in linking to the open-future character of markets based on economies of hope, to 'put something away for a rainy day' (as expressed by SmartCells Inc), by banking cord blood is but the latest twist in the capitalisation of biology, an investment that might or might not one day come to fruition. Capitalisation expresses a number of different processes here, but primarily the way promises and expectations work to link the present and future value of biological investment. It is in these terms that Charris Thompson writes of 'promissory capital' (2000).

As Moreira and Palladino note when writing of the relationships between hope and truth to economy and market 'The main resource for the 'regime of hope' is instead [of the regime of truth] capital, whose reproduction demands a belief in a future rather than resignation to, or an investment in, the present. The future rather than the past, is this regime's distinctive temporal orientation.' (Moreira and Palladino 2005, 69).

Cord blood is, I would suggest, the corporeal link in a novel value chain connecting parents and the future of their newborns with an emerging industrially and globally oriented biological service. Capitalisation here can be seen to take the form of a shift away from the shared public ownership of a collective resource to be used in facilitating currently available treatments for known diseases, and instead towards the privatised storage of cells for personal use (and also commercial profit) in a range of currently unrealised technologies.

Cord blood services are at once highly abstract in terms of the remote deposition of stem cells for a cash payment, and yet also highly affective and inter-subjective in the actions and experiences of parents concerned to 'do the right thing' by the future. At the centre of these debates are whether or not, and in what ways, new parents are being subject to some form of emotional manipulation during the anxieties of childbirth. As one of our respondents expressed it:

> 'I think in the family, certainly mothers specifically are actually in quite an emotional state and quite vulnerable during pregnancy'.
> Interview with the director of a public cord blood bank – March 2005

Recalling Good's work on the political economy of hope, what is important here is the way expectations are being understood and framed as affective, futures with emotional resonance - whether or not manipulation is or is not taking place. As the introduction to this paper points out, this connects with an emerging literature on the biosciences and other areas in which affectivity is seen to mediate future oriented actions in the present. People considering cord blood banking are often represented – and to a certain extent represent themselves - as emotionally vulnerable to persuasion at a time of high anxiety and insecurity about the immediate experience of childbirth itself, and also their responsibilities to the future of their new child.

> ... my feelings are that yes whilst it's what between £1000 and £1500 it's not a lot of money if for example, and I appreciate that the chances of ever actually needing it are very small but in terms of this particular chid developing childhood cancer, leukaemia, that it may be of some use. I'm perhaps quite emotionally involved...
> Female CB parent – CDP1 March 2005.

The open-ended vagaries of heredity and disease provide for a proliferation of meaning-making about future risk. Cord blood banking builds on just such associative understandings by translating banked HSCs into potentially remedial treatments for wider family members as well as that of the newborn from whom cord blood has been taken. Not insignificantly, cord blood banks present themselves as custodians of a 'family asset', making strong reference to themselves as family cord blood banks. There are of course no guarantees that banked cells will be an ideal immunological match for other family members should they be needed, but there is always the possibility.

A crucial point being made here is that futures and expectations are more than just relational and inter-subjective, they are 'intercorporeal' as Catherine Waldby (drawing on Weiss 1999) puts it (2002b). That is, depositing stem cells involves a highly material and yet symbolic stake in the future potential of an investment to protect families from disease, and cord blood banks have been anxious to stress this in their marketing. In the following extract, an expectant mother talks about the diagnosis of colon cancer in her father and Alzheimer's in the mother of her partner, both of which have become factors in the decision to bank the cord blood of their new baby:

> '... because obviously the situation that my dad finds himself in at the moment you know I would dearly love to be able to assist if in any way at all. But aside from that thinking well you just don't know what's round the corner and that if at any point it was of any use to any of us, and obviously with medical research developing all the time it's, it's something that I'd kind of kick myself... concerns over P's [partner] mum's state of health as well'
> Female CB parent – CDP1 March 2005.

There is an emerging moral space developing here where failure to invest now may result in moral recrimination later. Futures and expectations are, by and large, shared

attributes that in some circumstances can become embedded in what we might call 'communities of promise' (Brown 2003). Nevertheless, this prompts important analytical questions of us in searching for an understanding of how it is that communities of promise come about, on the basis of whose understanding of the future and according to what representational and practical means?

Communities of promise are highly complex and multi-authored enterprises. It is rarely ever possible to ascribe responsibility for expectations to one actor rather than another. The interview extracts below are poignant illustrations of the point that different participants in a community of promise 'conspire' or 'collaborate' in the authorship of a future. There are probably important parallels here between communities of promise and writing on 'moral economy' (Thompson 1971), what Cheal writes about as a 'system of transactions which are defined as socially desirable (i.e. moral) because through them social ties are recognised and balanced relations maintained' (1988, 15).

Agency is also complex across time as well as across present communities of promise. There are no 'first causes' but rather a long and complex prefiguring of expectations through events, practices, statements and promises stretching through time. Andy Pickering's (1995) remark about 'predisciplining of the imagination' is significant here. Material and social factors are crucial features in the authoring of the imagination.

> 'I feel a pressure myself… I'm not feeling pressured by anyone in particular or necessarily by any literature but clearly you know when you read the literature, for example, Cells for Life, the literature they send out, they talk about very few actual applications that we could use right now. And I'm thinking here's a company that's making money out of it … they're going to be telling me about everything that this could be used for and they're telling me very little. But what they are doing is they're providing reams of literature about what it might be used for… So they don't actually voice or [laughs] or express… of course you'd spend that kind of money to make someone better but it comes from within I think…'
>
> (Male CB parent – CDP1 March 2005)

At the heart of these networks, and central to the discussion above, are questions of materiality and economy, acts of *embodiment and disembodiment* and the parenting of cord blood for long term cryogenic suspension. Like embryos, cord blood has some form of parallel familial biography removed in time and space from kin and mobilised in global networks of biological resource generation for future use. In both temporal and spatial terms cord blood storage, like other forms of biobanking (Tutton and Corrigan 2004), spans time by projecting the investment of bodily tissues into a future where the potential value of that investment 'might' be redeemed. That future is nested in a highly variegated set of moral narratives about blood and its orderings in which present day promises and prospects are materially and corporeally constituted. There are many more threads to the HSC story told here, including a recent (May 2005) ruling by the UK House of Lords granting the Hashimi family the right to use pre-implantation genetic diagnostics (PGD) to select one of their embryos as a source of cord stem cells for treating their first child, a 'saviour sibling' case as it has been dubbed by the press.

I think probably the most interesting feature of the cord blood case are these distributions in the debate – and also in actual networks with quite tangible implications – between present truths and future hopes. For a number of policy communities the present absence of the future treatments used to promote and legitimate commercial banking is sufficient grounds for condemnation of the sector as a predatory and fraudulent in overselling stem cell innovation. For the commercial

cord blood sector, and indeed many parents, such condemnation is taken to signify a lack of vision and misplaced anxiety that commercial banking will threaten the moral economy of gift and donation in public sector blood services.

Truth regimes of hope – calculating volition in oncology

My final story comes from the worlds of cancer care and the emergence since the 1970s of highly statistical-psychometric 'hope scales', becoming a widespread means of calculating the hope that patients are able to mobilise in overcoming their disease. Here, hope is a pathological object, a disciplinary means with which to police personal will and volition towards an imagined future biography, interrupted in the present by illness. It is also highly dependent on a 'naturalised' or 'biologised' treatment of future-oriented emotions (particularly hope and wilfulness) and the bifurcation of psyche and soma. This is by any measure an expansive and burgeoning research network endeavouring to quantitatively specify the varying hopeful properties of cancer patients. 'Hope Scales' serve as instruments of psychometric measurement enabling clinicians to judge the varying 'hopefulness' of their patients. As one of its early authors (Herth 1989, 1990, 1992, 1993, 1995) has put it:

> '... although the importance of hope in influencing adaptation to illness and wellness has traditionally been recognised by clinicians, further expansion of the construct of hope, validation of the conceptual models of hope, and systematic investigation of hope are dependent on having valid and reliable instrumentation' (Herth 1995, 48).

Most of the research literature emerges in predominantly American oncology journals. The ostensible purpose of developing 'hope scales' is to specify and constitute hope as a therapeutic utility - an undertaking to develop 'instruments' of 'quantification' and 'measurement' combined with a commitment to the significance of hope in protracting survival and harmonising the patient with the aspirations of a prescribed treatment programme. Hope here has become the focus of intense calculative scrutiny, surveillance and objectification.

Like most psychometrics, the investigative research literature on hope scales is ridden with investigative instrumentation, measuring devices, the means of quantifying absences and deficits. First, these instruments are concerned with delineating an accurate and precise working definition or conceptualisation of hope. As the author of the 'Hind's Hope Scale' explains, '... the slow advancement of scientific knowledge in the social sciences has been attributed to difficulties in obtaining precise construct measurement'. In another paper, '... precise measurement of hope is impossible unless a clear conceptualisation of hope exists' (Herth 1992, 40). In this latter example, having constructed a multidimensional definition of hope, the 'content validity' of the definition in then subject to scrutiny by a number of 'expert judges' including a psychiatrist, a clinical specialist and three further experts in quantitative statistics. In this way, the oncohope literature sets out to objectively both create (through definition) and calculate a measurable entity (hope) which is understood here as pathological in its relative absence.

As machines or devices for measuring differences (in 'levels' of hope), the internal workings of each scale is a complex tangle of statistical devices such as 'internal alpha coefficiency', 'varimax rotation', 'concurrent validity', 'cronbach's coefficiency alpha', and so on. And with each cross reference of the scale's workings against these objective mathematical tools a sense of the instrument's veracity, truthfulness and rigour takes shape. The main bulk of each of these texts is taken up by a genuinely impressive assortment of ratio, formula, calculations, percentages, averages, variables, calibrations – each carefully designed to sort the hopeful from the less hopeful according to a scientifically defined and universal standard.

Crucially, most of these scales also include some means of policing the difference between real and unreal hopes, or between objectives that are realistic and those that are simply beyond reach. The author of the 'Nowotny Hope Scale' goes to some lengths in differentiating hope from desire and wish – in so far as '... that which is hoped for is possible' (xx, 58). In another of the scales, hope is defined as a '... multidimensional dynamic life force characterised by a confident yet uncertain expectations of achieving goals which, to the hoping person, is realistically possible and personally significant'. In another article, clinicians are implored to ' help patients identify realistic hopes through patient education about their particular cancer.. based upon their knowledge and experiences, nurses can hope patients distinguish between realistic and false hope and can help push them toward realistic hopefulness' (134). And in yet another article, under the heading 'Teaching Reality Surveillance', Miller writes that the clinician '... may assist the patient's reality surveillance by interpreting the patient's observations and validating their accuracy' (xx, 25).

And underlying this is an allegiance to the efficacy of personal volition and the capacity of the self to mobilise a 'desire for life', a 'will to live' and 'a fighting spirit' - infused with both popular and expert notions concerning the relationship between psyche and soma, 'onco-hope' research implies a belief in the responsibility of the individual to marshal the necessary cognitive resources of volition in overcoming an extremely personalised pathology.

Thus, encouraging patients to exercise wilful control over a disease also serves to translate a patient into an accountable subject. In these terms, a health perspective which centres on the power of personal hope articulates with the discourses of individual accountability, blame and body moralism which has concerned writers like Crawford, Sontag and numerous others (Crawford, 1977, 1984, 1986, 1987; Sontag, 1978, 1989). With regard to both cancer and AIDS, Sontag identifies the means whereby individuals are constituted as either directly or indirectly responsible for their disease. 'Hope scales', it seems to me, create the same conditions for making cancer sufferers accountable for levels of hope which will either reflect well or poorly on them.

Perhaps one of the most significant recent developments in a widening range of clinical contexts is the tension between an increased emphasis on disclosure or 'truth telling' on the one hand, and the need to maintain patient cooperation and compliance with remedial treatment regimes. As Good mentions, '... a generation ago, American physicians seldom told patients the diagnosis of cancer, today, there is virtual unanimity on the ethical and legal obligation to disclose diagnosis' (1990). By contrast, Debora Gordon's account of the reluctance on the part of both clinicians and patients in Italy to reveal and receive 'bad news' together with its parallel resonances of 'sentencing' and 'social death' demonstrates the particularly local character of these kinds of tensions.

Linking into post-structuralist perspectives on the emotions, it becomes possible to see the onco-hope agenda as a disciplinary effect in which hope is not only warranted but demanded (Foucault, 1976; Elias, 1982 [1939], 1983, 1985). Affective aspirational discourse ('hope') can be seen to facilitate powerful processes of recruitment in the context of modern medical biology. Much of contemporary Western culture is taken to regard emotions as highly naturalised dimensions of experience – emotions are pre-rational, instinctive, pre-cognitive and individualised (Spurlock and Magistro 1994; Harre 1986). Because of their essentialised treatment in most popular and academic discourse, emotions like hope are infused with authenticity and derive considerable rhetorical value as a consequence. It is, we might say, hard to argue against the authenticity and genuineness of aspirations couched in affective terms like hope and desire. These are, as Michael Taussig notes, key subjective features of both disease and the organisation of medical technology

> ‘above all, it is with disease, with its terrifying phantoms of despair and hope that my body becomes ripe as little else for encoding that which society holds to be real’ (1980, p4).

> Crucially it is worth making the point that there are probably stronger connections here between regimes of hope (particularly in American oncology culture) and the disciplined role of the individual in capitalist political economies. For example, Crawford (1984) illustrated the way economic values like individual accountability, and the capitalist contradictions of control (production) versus release (consumption) – parallel to regimes of truth and hope - are reflected in perceptions of health and particularly weight. In just the same way, recognising the way in which healing systems embody underlying cultural values and beliefs, the 'incitement' or 'compulsion' to hope can be situated within a perspective of the clinic as a significant site in the re-integrative and ordering practices exercised across the body politic. Such regimes of hope have particular resonance in an advanced capitalist economy infused with values of free enterprise, individual endeavour, personal volition and the forbidden taboos of resignation or submission.

Points for Discussion

There are a number of questions that cut across each of these cases and which are differently emphasised or played out in each of them. Space limits the number of points I can raise here so I want to focus on just a few key points of comparison and leaving plenty of room for discussion in the workshop.

The first point I would like to raise is to elaborate around this admittedly broad relationship between ‘facts and values’ (as the briefing paper for this workshop puts it) or regimes of truth and hope (as Morriera and Palladino have just as usefully put it). The literature that has arisen around the ‘co-construction of science and society’ increasingly makes the case that the divisions separating these realms are increasingly disintegrating and that truths must articulate with values and wider aspirations if they are to successfully count as legitimate, or indeed if they are to attain a future truth status. Helga Nowotny and colleagues (2001) make just this point when writing about the role of future-oriented abstractions and their articulation with concrete non-abstractions:

> ‘Visions, images and beliefs cannot sharply be demarcated from knowledge. Far from being dangerous illusions or utopian projections, visions are a precious resource, an intangible asset, that may help to provide the necessary (but typically missing) link between knowing and doing… It is important to recognize how visions and images interact and also how wide the gap separating images from practice can become before an uncontrollable backlash is provoked’ (Nowotny *et al* 232).

Clearly, much in the cases discussed above demonstrates just this point about the mutual connections and disconnections between regimes of hope and truth and the contrasting communities gathered around them. But what strikes me as more curious are the parallels and similarities between these kinds of insights and the emphasis now being strategically placed on values and hope by organisations like EuropaBio or indeed the cord blood banking industry. Clearly, these are broader cultural shifts in which both critical analysis and the industries they study are both caught up. Nevertheless, it does raise intriguing questions about the co-construction agenda, especially in a context where such regimes of hopes are so intricately connected to new forms of consumption, embodiment and the production of biovalue.

The second point I want to raise is probably quite familiar, especially to those who have been interested in and written about the sociology of expectations. The point stems from the cases discussed above and is concerned with this relationship between truth and ‘hype’. If we accept that anticipation is constitutive of value, then we logically cannot differentiate between our expectations of things (biotechnologies, stem cells, nanotechnologies, etc) and the reality

of those things. Within the constructivist perspective, it is only possible to write about and research 'hype' historically, accepting that it would be impossible to fully disentangle present imagination from future reality. And for the analyst this involves a recognition that we cannot place ourselves outside the world of expectations as if we were objectively disinterested observers. Futures 'are contingent, they are imagined, fought for, resisted and embraced in the present, in order to gravitate an imagined future towards the real-time now' (Brown 2003). This 'constructivist' approach to expectations is quite different from the way expectations tend to be framed within more realist forms of analysis. For instance, there is a significant literature on expectations in economics – particularly 'rational economics' from the 1960s – that draws a realist line or distinction between people's expectations on the one hand and the 'real' underlying fundamentals or worth of something on the other. When hype occurs, it does so because people start investing in the expectations and not the fundamentals. A crash occurs, so the argument goes, when the difference between real and artificially inflated values becomes inescapably obvious (Koppl 2002; Pixley 2002). This realist position assumes that there is a calculable difference in the present between expectations and the real worth of something such that expectations can be adjusted 'rationally' according to fluctuations in value. The more rational this process of checking becomes, the less susceptible economies become to inflationary and deflationary pressures.

This clearly contrasts against the position taken in much of the work on the sociology of expectations and the point made by Nowotny *et al* above about the inseparability of regimes of truth and hope, and by implication the inseparability of the tenses of the present and the future. Those 'underlying fundamentals' written of in rational economics are themselves future abstractions, expectant projections that alter the now, the future working back on the present. Fundamental value – its materiality, obduracy, and substance - is then quite inseparable from expectation in either conceptual or empirical terms. It cannot be calculated independently from our expectations in order to determine whether or not, for example, hype is taking place. Nevertheless, is there not some scope in real time for such hopes to be subject to scrutiny within regimes of truth, without resorting to some kind of binary division between the two?

This paper has sought to elaborate around these notions of economies and regimes of hope and truth in exploring some dynamics taking shape at loosely related sites in the biosciences. A particularly crucial common feature is the connection here between hope, economy and market in structuring the relations between bioscience industries, consumption and embodiment. In the context of the biotechnology debate we have been able to observe a new and strategic effort to move discussion away from content and towards form, from tangible though contested truths, towards less contestable values and widely shared cultural desires. This I think possibly raises some difficult tensions about the politics of truth and hope and the celebration of a vocabulary of values and visions in some science studies accounts of 'co-construction'. In the context of cord blood banking there are similarly difficult tensions in the contrast between a public sector blood economy based on a present regime of truth and a commercial sector blood economy based on future regimes of hope. Again, this raises difficult questions for sociological accounts in finding a position from which to critique an essentially future market based on the sale of the imagination. The final case, that of onco-hope scales, raises some important points about the disciplinary dimensions of hope and its objectification in calculative instruments of self-governance. And as with each of the cases discussed in this paper, there are significant connections here between regimes of hope and capitalisation.

There are any number of other points and questions raised by cases like these and I don't expect all of them to add up to a tidy cumulative story but instead raise different questions about the balances between truths and hopes. For the purposes of the workshop we might take up a few of the following questions:

- How are we to think about the material or corporeal connections between presents and futures – truths and hopes – what Adam calls the 'reality status of the future' or what others write about as mangling, obduracy, path-dependence, etc?

- What scope do we have, as critical analysts, for writing about or questioning futures not yet present and unavailable to us – and questioning 'hype' or 'overselling' in other words? What analytical implications might this question bring to cases like that of biotech rebranding, the parental duties of cord blood storage or the economics of individual hope and volition?
- What are the politics of the co-construction ethos or theme in current sociologies of science and technology? Are there not limitations to the integration of truths and hopes, especially in contexts of abstract expertise and highly volatile indeterminate future speculation?
- To what extent does co-construction occupy a place in the shift from regimes of truth to those of hope, if indeed such a shift is taking place?

References

Adam, B. (1990) *Time and Social Theory*, Cambridge, Polity.

Adam, B. (1998) T*imescapes of Modernity: The Environment and Invisible Hazards*, London, Routledge.

Berkhout, F. (2006 in press) Normative expectations in systems innovation, in Brown, N. Borup, M. Konrad, K. and van Lente, H. The dynamics of expectations in science and technology, special issue of the journal *Technology Analysis and Strategic Management*.

Brown, N. and Kraft, A. (in press 2006) Blood Futures - Capitalising Stem Cells in Cord Blood Banking, *Technology Analysis and Strategic Management*

Brown, N. & Michael, M. (2003). A sociology of expectations: Retrospecting prospects and prospecting retrospects. *Technology Analysis and Strategic Management*, 15, 1, 3-18.

Brown, N. (2003) Hope against hype: accountability in biopasts, presents and futures, *Science Studies*, 16, 2, 3-21

Brown, N. and Michael, M. (2002) From authority to authenticity: governance, transparency and biotechnology, *Health, Risk and Society*, 4, 3, 259-272.

Brown, N., Rappert, B. and Webster, A. (eds.) (2000) *Contested Futures: A Sociology of Prospective Techno-Science*, Ashgate, Aldershot.

Brown, N. (1998) *Ordering Hope*, PhD thesis, University of Lancaster

Cheal, D. (1988) *The Gift Economy*, Routledge, London.

Crawford, R. (1984) A Cultural Account of 'Health': Control, Release, and the Social Body." in J.B. McKinlay (ed.) *Issues in the Political Economy of Health*. New York: Metheun-Tavistock, pp. 60-106.

Deuten. J. & Rip, A. (2000) Narrative Infrastructure in Product Creation Processes, *Organization*, 7, 1,69-63.

Flaherty, M.G. and Fine, G.A. (2001) Present, Past and Future – Conjugating George Herbert Mead's perspective on time, *Time and Society*, 10(2/3) 147-161.

Franklin, S. (1997) *Embodied Progress: A Cultural Account of Assisted Conception*, Routledge, London.

Franklin, S. (2001) Culturing Biology: Cell lines for the second millennium, *Health*, 5, 3, 335-54

Good, M.D.V., Good, B.J., Schaffer, C. and Lind, S.E. (1990) American oncology and the discourse on hope. *Culture, Medicine and Psychiatry*, 14, 59-79

Good, M.D.V (2003) The Medical Imaginary and the Biotechnical Embrace - subjective experiences of clinical scientists and patients, Russell Sage Foundation, Working paper no 20.

Harre, R. (ed) (1986) *The social construction of emotions*, Basil Blackwell, Oxford.

Herth K. (1989) The relationship between level of hope and level of coping response and other variables in patients with cancer. Oncology Nursing Forum 16, 67±72.

Herth K. (1990a) Fostering hope in terminally ill people. Journal of Advanced Nursing 15, 1250±1259.

Herth K. (1992) An abbreviated instrument to measure hope: development and psychometric evaluation. Journal of
Advanced Nursing 17, 1251±1259.
Herth K. (1993) Hope in the family caregiver of terminally ill people. Journal of Advanced Nursing 18, 538±548.
Herth K. (1995) Engendering hope in the chronically and terminally ill: nursing interventions. *American Journal of Hospice and Palliative Care* 12, 31±39.
Kloppenburg, J. R. J. (1988) *First the Seed: The Political Economy of Plant Biotechnology, 1492-2000*, Cambridge University Press, Cambridge.
Kopple, R. (2002) Big players and the economic theory of expectations, Palgrave.
Kosellek, R. (2004) *Futures past – on the semantics o historical time, Columbia University Press*, Columbia.
Lash, S., Quick, A. and Roberts, R. (eds) (1998) *Time and Value*, Blackwell, Oxford.
Law, J. (1994) *Organising Modernity*, Blackwell, London.
Martin, Brown and Kraft (2005-2008) *Haematopoietic Stem Cells - the dynamics of expectations in innovation* (ESRC Project - RES-340-25-0007)
MacKenzie, D. (1990) Inventing Accuracy: An Historical Sociology of Ballistic Missile Guidance. Cambridge MA: MIT Press.
Mead, G.H. (1932) The philosophy of the present. Chicago: Chicago University Press.
Miller J. & Powers M. (1988) Development of an instrument to measure hope. *Nursing Research* 37, 6±10.
Moreira, T. and Palladino, P. (2005) Between truth and hope: on Parkinson's disease, neurotransplantation and the production of the 'self', *History of the Human Sciences*, 18, 55-82.
Morris, P. (1994) *The Bakhtin Reader*. Edward Arnold: New York
Novas, N. (2005) Embodying hope, hope embodied: PXE International and the creation of the 'next generation of patient advocacy', paper prepared for the July 2005 meeting of the Expectations Network, York, UK
Nowotny, H. (1994) *Time: The modern and postmodern experience*. Polity Press, Cambridge.
Nowotny, H. Scott, P. and Gibbons, M. (2001) *Re-thinking Science – knowledge and the public in an age of unceraínty*, Polity Press, Cambridge.
Nowotny M. (1991) Every tomorrow, a vision of hope. *Journal of Psychosocial Oncology* 9, 117±127.
NUSSBAUM,M.C. (2001) *Upheavals of Thought: the Intelligence of Emotions* (Cambridge, Cambridge University Press).
Pickering, A. (1995). *The mangle of practice: Time, agency and science*. Chicago: Chicago University Press.
Pixley, J. (2002) Finance organisations, decisions and emotions, British Journal of Sociology, 53, 1, 41-65.
Rothman, B.K. (1993) The Tentative Pregnancy: How Amniocentesis Changes the Experience of Motherhood. New York: Norton
Spurlock, J.C. and Magistro, C.A. (1994) Dreams never to be realised: emotional culture and the phenomenology of emotion, *Journal of Social History*, 295-310.
Taussig, M. (1980) Reification and the consciousness of the patient, *Social Science and Medicine*, 14, 3-13
Thompson, C. (2000) The biotech mode of reproduction. Paper prepared for the School of American Research advanced seminar 'Animation and cessation: anthropological perspectives on changing definitions of life and death in the context of biomedicine'. Santa Fe, New Mexico.
Thompson, E.P. (1971) The Moral Economy of the English Crowd in the Eighteenth Century, *Past & Present*, 50, 76-136
Tutton, R. and Corrigan, O. (eds) (2004) *Genetic databases: socio-ethical issues in the collection and use of DNA*, Routledge, London
Van Lente, H. (1993), Promising Technology - The Dynamics of Expectations in Technological Developments, Enschede, NL
Van Lente, H. (2000) From promises to requirement, in Brown, *et al*. op cit.

VIDAL, J. (2000) GM foods company decides to turn over a new leaf, *The Age*, 2 December.
Waldby, C. (2002) Stem cells, tissue cultures and the production of biovalue, *Health*, 6, pp. 305 –323.
Waldby, C. (2002b) Biomedicine, tissue transfer and intercorporeality, *Feminist Theory*, 3, pp. 239–254.
Weiss, G. (1999) *Body images: Embodiment as Intercorporeality*, Routledge, London and New York