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## Managing the Future Imaginary: Does “Post-Normal” Science need Public Relations?

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**Abstract:** Contemporary conditions of so-called “post-normal” science characterised by fundamental uncertainty and high decision stakes have been met by the call for an “extended peer community” to include a full range of potential stakeholders in the assessment and evaluation of future research policy (Functowicz and Ravetz 1993, 1994). Correspondingly, the term “Anticipatory Governance” (AG) has entered currency within Science and Technology Studies (STS) circles, where the phrase refers sympathetically to the fields involvement with an array of novel practices routinely carried-out in the name of increasingly public-focused, conscientious management of emerging science and technology. Existing literature in this area has typically focused on perceived benefits of social-scientist driven AG as “Real Time Technology Assessment”, rather than address how such participation — in line with STS’s contemporary post-social, object-centred, anti-normative research character — relates to a lack of institutional protection for most STS practitioners today. I argue the activities of social science researchers enrolled in AG-styled programmes appears to closely resemble those of Public Relations professionals, and as such, in today’s knowledge economy the field could have much to gain by turning to clarify and formalise the unique cognitive-base and normative horizons befitting of a closed occupational group. I suggest a sub-disciplinary occupational restructuring in line with the “professional project” (Macdonald 1995) could bring about increased autonomy for STS practitioners, as well as purposeful direction for future research.

**Keywords:** Post-normal Science; Anticipatory Governance; Science and Technology Studies; Public Engagement; Technology Assessment

### 1. “Post-Normal Science”: What Role for the Social Sciences?

Contemporary conditions of so-called “post-normal” science characterised by fundamental uncertainty and high decision stakes have been met by the call for an “extended peer community” to include a full range of potential stakeholders in the assessment and evaluation of future research policy (Functowicz and Ravetz 1993, 1994). Correspondingly, the term “Anticipatory Governance” (AG)

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has entered currency in Science and Technology Studies (STS) circles, where the phrase is typically used as short-hand for the fields own involvement with an array of novel practices now routinely carried-out in the name of increasingly public-focused, conscientious management of emerging science and technology (Barben et al. 2008, Guston 2014). This paper opens by reconsidering the role of social-scientists in mediating relations between newly emerging forms of science, technology and publics currently travelling under the rubric of AG: It suggests — by highlighting the often understated proactive character to AG practices — that a purposeful reformation of the occupational constitution of STS so as to become more closely aligned with the disciplines otherwise overlooked constructive “future-building” potential could be utilised to substantially enhance both practitioner working conditions, and the subsequent quality of research outputs in the years to follow.

I then argue in the Post-Cold-War era many Science and Technology Studies researchers enrolled in AG-styled programmes will come to find their assignments exhibit a significant degree of procedural overlap with those of PR professionals, and therefore, by analogy STS practitioners could benefit from turning to both clarify and explicitly formalise some shared cognitive and normative features to provide basis for “social closure” as a distinct professional group. I entertain the notion that it may, at least in principle, be possible to form a state-licensed “Science-Public-Relations” (SPR) sector in the contemporary knowledge economy, with established standards comparable to Law or other skilled professions. Among the key benefits of this movement would be an increased sense of working autonomy for STS practitioners, and with it the freedom to be selective with clients. The overall normative force of the discipline might then also be significantly enhanced, with the creation of protected space for STS to provide strong thought-leadership vis-a-vis contemporary scientific activity, drawing upon the rich disciplinary insights gleaned from the history, philosophy and sociology of science and technology.

## **2. Passive Governance: Enhancing Trust via a “Value-Neutral” Cautionary STS**

On a certain level, the concept of AG neatly captures how default modes of understanding and forwarding the development of techno-science within so-called “advanced” liberal democracies has significantly evolved during recent years (Rose 2006): In line with a rising power, scope and complexity to present-day techno-scientific practices – under twenty-first century epistemic dynamics of increasing reflexivity, transdisciplinarity and heterogeneity – drives to instantiate an extended community of peers have led to potential end-users and stakeholders becoming ever-more actively engaged in knowledge production (Gibbons et al. 1994). By way of resolve, AG has been optimistically defined as: «a broad-based capacity extended through society that can act on a variety of inputs to manage emerging knowledge-based technologies while such management is still possible» (Guston 2008 : vi). The phrase is then used to convey the possibility – and no doubt, implicit desirability – to incorporate a wide range of both multi-user and multi-stakeholder inputs into the future direction and format of high-technologies, specifically while such products move through early (and thus undetermined) stages in development: In practice, this has comprised a myriad of “upstream” Public Engagement with Science interventions — including, but not limited to focus groups, science cafes, citizen juries and various online discussions (as detailed in Gavelin et al. 2007 : Section 2) – ultimately

geared toward generating dialogue around the social value and subsequent legitimacy of loosely-defined techno-scientific possibilities which are yet to occur.

The notion of AG was first introduced to STS in the context of social studies surrounding Nanotechnology – inceptive applications of Nano-science and Engineering – within the first years of the new millennium. Canonical literature in this area has typically focused on the supposed public-benefits of social-scientist driven AG programmes in providing a sophisticated form of “Real Time Technology Assessment” (Guston and Sarewitz 2002). Building on the short-comings of previous chequered attempts at public consultation around new technologies (i.e. the 2003 “GM Nation” public debate on transgenic crops), ambitions for the research programmes associated with this new trend in governance essentially revolve around the promise of social scientists conducting various forms of public-focused empirical work designed to foster unprecedentedly enhanced capacities in “Foresight”, “Engagement” and “Integration” around emerging technologies (Barben et al. 2008). Given the prevalence of this upbeat perspective on the matter, there has been a striking lack of critical reflection on how these forms of research assignment — in line with STS’s post-social, object-centred, anti-normative research character — relate to a lack of institutional protection for the majority of STS practitioners today. No doubt, according to the actor network-derived Newspeak associated with AG, researchers drawn from the social-sciences represent just a single part of the powerful assemblage of human and non-human agents which intricately coalesce in ways that amount to both the production and governance of science and technology: In other words, any distinct contribution STS might offer within the technological assembly-chain should be restricted to the provision of some kind of reflexive support function, helping to manage the ambitions and expectations of those operating in a complex and fundamentally uncertain field: one awash with other interested actors (running the gamut from scientists, engineers, policy makers and other publics) all holding varied levels of power and responsibility toward the research and developments in question.

From this casualised “service-sector” starting point, Fuller (2005) suggests the distinctive research character of much contemporary STS should ultimately be seen as an ideological expression of the client-driven nature of knowledge production in our neoliberal times: Under present disciplinary-institutional arrangements, the vast majority of STS practitioners who find themselves drafted into AG-type initiatives tend to be marginal, contract-based researchers who he suggests typically harbour resentment towards traditional academic structures, and also hold a degree of cynicism toward “politics as usual” (76). For Fuller, the process metaphysics underlying much of present-day STS research then represents a theory-based reflection of a deep-seeded, professionalised value-neutrality underlying the field overall, a tactical move which apparently pits it above rival empirical analysts (such as Marxists) who hold normatively loaded conceptual frameworks by comparison. In this respect, he views STS’s marked success at proving itself “useful” to a wide range of constituencies (evidenced by the vast range of STS research applications in recent years) as clear testimony to not only how adaptable its practitioners are to circumstance, but moreover, also how eminently detachable the fields theories are from its practices: According to this critical framing, AG is simply the latest in a long line of client-centred research appointments to make use of the dynamic, all-purpose methodological toolbox currently offered by STS.

Perhaps unsurprisingly, both the format and quality of the various outputs to have emerged from new-fangled efforts at techno-science governance though anticipatory-styled STS interventions have been brought into question. The rhetoric surrounding “Engagement” — certainly the most animated facet of AG — has been met with its share of criticism. From a cynical perspective, Public engagement with Science arose as a harm-education strategy following the serious questions raised surrounding

the modes of institutional justification which brought about genetic modification, with the UK’s rejection of GM technology offering perhaps no clearer testimony to the potential for significant costs to be incurred from mismatch between public and scientific interests (Irwin 2006). In this regard, Groves (2011) suggests recent efforts at fostering Public Engagement across the so-called “post-academic” sciences — i.e. those increasingly reliant upon government and industry funding (Ziman 2000) — are intimately tied to institutional domestication of risk, with the application of such practices typically failing to achieve so-called “second order” social robustness of emerging technology by accomplishing a genuinely reciprocal multiple-stakeholder value consensus, but instead employing dialog-based trust-building exercises as a strategic response to the politics of uncertainty. Correspondingly, on both sides of the Atlantic, AG tends to be discussed in terms which clearly characterise it as an extension to the precautionary principle, the set of ethical ordinances — including institutional policy and modes of legislative governance — designed to minimise harm above all which began within ecological discourse (Sarewitz et al. 2000, Gupta 2001). Despite the historic tendency for STS to align with the cautionary aspects of AG, it is also necessary to acknowledge the potentially more proactive quality to research initiatives associated with the practice.

### **3. Proactive Governance: Configuring the Future Imaginary?**

Beyond the cautionary-minded “trust building” function of recent UK public engagement efforts deployed in the spirit of “openness” (Phillips et al. 2000), commercially speaking, AG research programs can attempt to anticipate — directly or otherwise — the public’s future reception of advanced technologies long before any actual products arrive within the marketplace. No doubt, from an industrial perspective, AG has certain obvious parallels with Steve Woolgar’s (1991) idea of “configuring the user” of new software by first collecting and then actively incorporating the initial viewpoints and feedback gathered from both prospective end-users (and indeed also would-be dissenters) into subsequent design and development protocol: It is entirely reasonable to expect early-stage AG-inspired public consultations around upcoming techno-scientific developments work to “prime the customer” in the sense that being presented with extreme-case scenarios during public engagement with science exercises — most of which to date have centred around Nanotechnology (Gavelin et al. 2007) — prepares the public psychologically to eventually accept some real-life variation on said innovation but in a diminished form. Fuller (2011) goes as far as to suggest that the act of holding such structured discussions around hypothetical future scenarios not only lower the participants guard to the potential harms caused by the technologies at hand, but also raises the public’s expectations that social benefits are forthcoming (148).

Such new efforts at governance through facilitating novel forms of multi-stakeholder dialog come following an apparently rising standard of scientific knowledge and understanding among the general populous, and perhaps with it an unprecedented capacity — corresponding with a sharp rise in Science Communication styled media coverage in recent years — for non-specialist publics to engage critically with the scientists and sciences in question. From this more affirmative perspective, it is not unreasonable to expect public engagement exercises in the name of AG could be harnessed as a form of “participatory design” wherein those potentially impacted by upcoming technical innovations are co-opted into research and development, not only in a way that formally registers and validates their concerns, but goes a step further by attempting to address such potential misgivings in the basic composition (or perhaps simply market placement) of the eventual techno-scientific product.

To be sure, this closely resembles an existing well-established strategic development approach otherwise known as “Constructive Technology Assessment”.

Indeed, building on this same notion of tightening collaboration between producer and consumer, STS support for AG has been drummed-up — again alluding to the idea mutual value-added to both science and society, but with a more ethical slant — under the heading of Real Time Technology Assessment, described by the originators as «...an explicit mechanism for observing, critiquing and influencing societal values as they become embedded in innovations» (Guston and Sarewitz 2002 : 94). Despite some conceptual overlap with Constructive Technology Assessment, the model attempts to surpass this strategy by becoming an integral feature of the knowledge creation process: In this sense, it represents an unprecedentedly ambitious and sophisticated — perhaps even bordering on etherial — attempt at garnering public perspectives, and then weaving such concerns intricately into the normative fabric of post-normal scientific practice. To this end, the strategy promotes the use of reflexive measures such as public opinion polling, focus groups and scenario development to “elicit values and explore alternative potential outcomes”, alongside other forms of research – i.e. content analysis and surveys – designed to investigate the evolution of knowledge, perceptions and values over time (98). The originators of the approach suggest Nanoscience and engineering-derived artificial cells might, for example, be productively analysed either in terms of a broad historical progression of implantation technologies, trends toward gradual hybridization of natural and artificial devices, or perhaps equally in view of recent differing public responses to medical versus agricultural applications of genetically modified organisms (101): Such a use of analogical case studies would in principle ensure a broad-based and multi-faceted account of the technology at hand, and with it help anticipate public concern surrounding different types and applications of artificial cells. In effect, so-called “Real time” technology assessment then seeks to integrate a range of current views on emerging science and technology alongside both historic (retrospective) and future (prospective) scenario analysis around the innovation of concern, ultimately to reach a deep-understanding of the construction process, and prompt modification as necessary.

Of course, the model assigns a de facto significance to popular perception, with public opinion heralded as a kind of moral-ethical standard bearer for the equitable conduct of science. In its proximity to both Science Communication and Public Engagement with Science, AG is essentially an amalgam which arose following the idea of a publicly edifying function to mass-media in the age of mass-democracy, and equally also the advent of “public opinion” as a discreet, malleable object of political concern — and thereby subject to strategic forms of active governance. As discussed, for largely political-institutional reasons, STS practitioners have typically tended to downplay the extent to which they — no doubt, alongside journalists, film-makers and other popular media creators — have become involved in not just impartially reflecting, but rather actively shaping, wider public orientations towards emerging forms of science and technology. Unwittingly or otherwise then, whilst called to steward the normative-ethical space between science and publics, through their exulted status as insiders operating within techno-science (Rip 2006), it would appear STS researchers have developed a previously untold capacity to become deliberate architects of the “Future Imaginary”. Under present disciplinary arrangements, this innate potential is being significantly discounted at best, and at worst completely overlooked.

#### ***4. Science-by-Public-Relations?***

STS’s current self-understanding of its contribution toward AG is though actualizing Real time Technology Assessment, which limits researcher involvement to the point of acting as a conduit for other societal perspectives, and in so doing practitioners render themselves something of an absent presence within the actor-network chain taken to advance the development techno-science. Whilst this marginal position enables researchers to make their services useful to a wide range of constituents, it can also be seen as a gross abdication of the moral-ethical responsibility for STS to provide strong and decisive thought-leadership vis-a-vis contemporary scientific activity through drawing upon the rich disciplinary insights gleaned from the history, philosophy and sociology of science and technology. All things considered, in the interests of remedying this sub-optimum situation I propose the normative/empirical strands of STS could move in unison to secure increased professional legitimacy to enhance the autonomy — and thus with it normative force — of the discipline.

In the Post-Cold War climate of “Post-normal” or “Post-Academic” Science, the future sustainability of other fledgling techno-scientific enterprises such as Synthetic biology will be greatly dependent upon how multi-stakeholder value-consensus is both established and maintained. Despite pioneering approaches toward the generation of public dialogue (those detailed in Gavelin et al. 2007 : Section 2), given the ultimately vague and disjointed strategy employed by the government towards determining both quality of inputs and utility of dialogical outcomes, initial attempts at “upstream” public engagement around Nanoscience and Technology apparently used public consultation to superficially “restore trust” in existing institutional practices rather than build a “socially robust” foundation for the future of UK nanotechnology. To actually reach this goal important steps in this direction are, no doubt in keeping with the present aims of AG, the continued delivery of “would-be” and “could-be” scientific issues to the general public, and also repeated attempts to find ways of formally registering responses within actual cultures of research and innovation. Beyond this elementary existing scope for AG however, I suggest some sympathetic social science practitioners working in this space could perhaps move to occupationally re-organise — particularly in such a way as to better mobilise a more proactive substrata of STS — through the formation of a distinct “Science Public Relations” (SPR) sector within the contemporary knowledge economy.

Of course, by certain obvious standards, “Science Communication” appears to offer the most suitable corpus of specialised knowledge currently delivered through higher-education programmes which SPR could be justifiably aligned with. That said, as it stands existing UK third-sector attempts at managing science-public relations are limited to the activities of the Science Media Centre, which offers scientists media training geared toward essentially minimising public declarations of the overall significance of their research findings, much in a precautionary spirit. To be sure, since its inception in 2002 following the public genetically modified food scandal, the “trust building” principles underlying these efforts have gained credibility on the world stage, with the London-based Non-Profit spawning a global network of similar centres adhering to a formal charter designed by UK Centre director Fiona Fox (Callaway 2013). No doubt, the top-down paternalism driving this model — also echoed by Groves (2011) “first order” trust-building function to Public Engagement — is exactly of the kind Walter Lippmann would wholly endorse. By contrast though, altogether more enterprising proponents of SPR wishing to adopt a more Edward Bernays style consumer/market-oriented approach might instead prefer to think of the public’s future orientation toward emerging technology as a relatively pliable state of mind — perhaps analogous to the “Attitudes” and “Consumption Patterns” found within marketing literature — which they might hope to subtly cultivate through a steady stream of proactive interventions. Moreover then, another “middle-of-the-road” solution would see STS practitioners engaged in SPR working more closely with Science centres and Science

Museums to capitalise on such attractions apparent potential to act as powerful institutional steering mechanisms: In this sense, thoughtful STS-backed curation of such sites could function to both formalise and promote secure public expectations for science, whilst equally awarding scientists and other stakeholders new and greater opportunities to actively contribute toward the cultural meaning-making significance of these settings – with the chance for deep reflection on the social embeddedness to their practices helping deliver those moments of so-called “functional deceleration” necessary to ensure future applications of technology proceed along stable developmental pathways (Rosa 2013 : 303).

At the very least, to build “Science-Public-Relations” into a discrete professional vocation with elevated public standing will require proponents drawn from STS to identify what, if anything, forms the fields unique cognitive base, and then take measures, according to this “common core” of knowledge, to increasingly formalise and achieve “social closure” by restricting entry into the practice. Some elementary preconditions in this regard might include adherence to a code of professional practice, incorporation under Royal Charter, and would-be practitioners undergoing prescribed training and seeking official approval of a registration council to bare the “Science-Public-Relations” professional title. Amongst the benefits corresponding with this transition could be an elevated sense of both self-discipline and value-consensus across peers, and enhanced autonomy stemming from the types of statutory legal/economic protections typically enjoyed by professional bodies. Of course, by the same token, from a Popperian perspective it might be suggested the act of individuating such a “common core of knowledge” and indeed the subsequent “social closure” of Science-Public-Relations as a professional group could well result in the dogmatic predominance of a certain mode of STS over others, with the professional power and institutional protections of the dominant school then at significant risk of reducing other diverging or dissenting voices to silence: For this reason, it is important to emphasize that far from wishing to “close off” science and technology studies as a whole, I suggest by explicitly foregrounding the purposive nature of public relations as the basis for this new professional grouping, SPR could come to exist as a distinctly – and indeed self-consciously – proactive subset of the field, whilst still remaining open to external critique from the wider sphere of critically engaged STS commentators. No doubt, the most intuitive first-step in this direction would be a clear articulation of the public-value added to society though STS theory and practice. Maybe on this basis, under the right institutionally mandated conditions, a well-organised breakaway faction of STS imbued with a common sense of purpose and relevant forms of professional standing could assist more proactively in building a future which genuinely reflects publicly agreed values.

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