Scientific decision-making and stakeholder consultations: The case of salt recommendations

Lada Timotijevic\textsuperscript{ac}, Julie Barnett\textsuperscript{bf}, Kerry Brown\textsuperscript{ad}, Monique M. Raats\textsuperscript{ae}, Richard Shepherd\textsuperscript{ag}

\textsuperscript{a}Food, Consumer Behaviour and Health Research Centre (FCBH)
\textsuperscript{b}Department of Psychology
\textsuperscript{c}School of Human Sciences
\textsuperscript{d}University of Surrey
\textsuperscript{e}Guildford GU1 7XH
\textsuperscript{f}United Kingdom
\textsuperscript{g}School of Information Systems
\textsuperscript{h}Computing & Mathematics
\textsuperscript{i}Brunel University
\textsuperscript{j}Uxbridge UB8 3PH
\textsuperscript{k}United Kingdom

\textsuperscript{c}l.timotijevic@surrey.ac.uk, \textsuperscript{d}k.brown@surrey.ac.uk, \textsuperscript{e}m.raats@surrey.ac.uk, \textsuperscript{f}julie.barnett@brunel.ac.uk, \textsuperscript{g}r.shepherd@surrey.ac.uk

Corresponding Author: Lada Timotijevic, Tel: +44 1483686946, Fax: +44 1483682913
Acknowledgements:

The work herein has been carried out within the EURRECA Network of Excellence (http://www.eurreca.org), financially supported by the Commission of the European Communities, Specific Research Technology and Development (RTD) Programme Quality of Life and Management of Living Resources within the sixth framework programme, contract no. 0136196. This does not necessarily reflect the Commission’s views or its future policy in this area. We would like to acknowledge the contribution made to editing of the article from Israel Berger, University of Surrey. No conflicts of interest have been declared by authors.

Research highlights:

Scientific Advisory Committees (SAC) are “boundary organisations” working at the interface between science, policy and society. Recent trends to democratise scientific processes of decision making has been described as “post-normal science” (PNS). We examine the application of PNS in practice through a study of stakeholder consultations within the UK SAC for Nutrition. Documentary analysis of the UK SACN Salt Subgroup’s consultation documents (issued in 2002/2003) was carried out. The analysis shows the SACN’s simultaneous engagement with the tenets of PNS and re-assertion of scientific authority.
Key words: risk governance; post-normal science; scientific advisory committee; stakeholder consultation; institutional risks; SACN UK; nutrition policy; salt
Abstract

Scientific Advisory Bodies (SAB) are seen as “boundary organisations” working at the interface between science, policy and society. Although their narrowly defined remit of risk assessment is anchored in notions of rationality, objectivity, and reason, in reality, their sources for developing recommendations are not limited to scientific evidence. There is a growing expectation to involve non-scientific sources of information in the formation of knowledge, including the expectation of stakeholder consultation in forming recommendations. Such move towards “democratisation” of scientific processes of decision making within SABs has been described and often studied as “post-normal science” (PNS) (Funtowicz and Ravetz, 1993). In the current paper we examine the application of PNS in practice through a study of stakeholder consultations within the workings of the UK Scientific Advisory Committee for Nutrition (SACN). We use the theoretical insights from PNS-related studies to structure the analysis and examine the way in which PNS tenets resonate with the practices of SACN. We have selected a particular case of the SACN UK recommendations for salt as it is characterized by scientific controversy, uncertainty, vested interests and value conflict. We apply the tenets of PNS through documentary analysis of the SACN Salt Subgroup (SSG) consultation documents published in 2002/2003: the minutes of the 5 SACN SSG’s meetings which included summary of the SACN SSG’s stakeholder consultation and the SSG’s responses to the consultation. The analysis suggests that the SACN consultation can be construed as a process of managing sources of risk to its organisation. Thus, rather than being an evidence of post normal scientific practice, engagement became a mechanism for confirming the specific framing of science that is resonant with technocratic models of science holding authority over the facts. The implications for PNS theory are discussed.
Introduction

Post Normal Science (PNS) is a theoretical framework developed by Funtowicz and Ravetz (1993) to denote a new way of production of science that is required in the context of high scientific uncertainty and high stake (interest), when the problems are multifaceted and decisions are urgent. Within this context, scientific process, traditionally confined to scientific peer community, is seen to benefit from engagement with an extended peer community that includes many perspectives and values. Arguably, scientific advisory committees are the site within which PNS practice is most visible (Lorenzoni et al, 2007) due to their boundary position between science and policy (Guston, 2001). We report on a case study of the Scientific Advisory Committee for Nutrition in its efforts to engage a wider network of stakeholders in the processes of setting recommendations for salt. Uniquely, the case study examines the actual consultation outputs throughout the recommendations setting process. We apply the analytical framework developed by Turnpenny et al (2009) to capture the elements of practice within SABs that can be described as “post-normal science”, and critically evaluate the application of the concept. The current article reflects on the extent to which PNS is a helpful lens through which the processes of engagement within SABs are explained and theorised.

The remainder of this introduction unfolds as follows: we will first give an overview of PNS theoretical framework and the aligned notion of democratisation of science, then review the policy origins of the calls for democratisation of science with a particular reference to the workings of SABs. We will then describe the case of SACN reviewing both the policy context and the institutional characteristics of the SACN.
Post normal science and democratisation of science

PNS is a step change in our understanding of the practices of science, diverging from Kuhn’s (1962) framing of “normal” science. “Normal” science is characterised by a high degree of scientific consensus about the scientific approaches, until such time that the ongoing critical reflections of scientists reach a point of “paradigm shift”. In contrast to this, the new, “post-normal” approach to scientific practice reflects the emergence of complex, multifaceted and multidisciplinary nature of problems (defined as “wicked” problems), which in turn call for the inclusion of multiple perspectives and values. Broadening of the scientific practice from the traditional (scientific) peer community to the extended community of peers is seen as necessary for a number of reasons. It is believed that it enables scrutiny of assumptions and questions (Nowotny, 2003), that it ensures that ethical dimensions of social problems are not overlooked through scientific evidence production, and that it leads to trust in the decisions of the regulator (Parliament Office of Science and Technology, 2001; Government Office for Science, 2009; Government Office for Science, 2007a,b; Wynne, 2006). According to PNS framework, the “extended peer community” (Rosa 1998) as the community of individuals who should be included into scientific deliberation either because they are affected by the issue or can provide perspectives that broaden and extend the framing of the problem, make quality judgments of the scientific process based on considerations of values as well as scientific facts (Turnpenny, Jones and Lorenzoni, 2011).

The concepts of PNS and the extended peer community have been in wide use for the past couple of decades, both as a theoretical framework to explain and guide the relationship between science, policy and broader society, and as a method developed to
identify the contexts – issues, stakes and uncertainties - that call for the extended peer community in scientific practice (Turnpenny, Lorenzoni Jones, 2009). The studies employing PNS as a framework have used it to identify the “wicked” problems - issues characterised by uncertainty, value inconsistency, urgency and heterogeneity of visions and epistemologies - that call for the adoption of post normal scientific practice (e.g. Saloranta, 2001); and to explain the processes of science in practice in the light of PNS (e.g. Turnpenny Lorenzoni and Jones, 2009; Petersen et al, 2011). Among the more enduring debates about PNS is the extent to which it represents a normative framework for scientific practice and its links to policy, or rather, is a theoretical model, a description or a heuristic (Farrell, 2011) that offers an explanatory framework for this interaction as it happens in practice. The growing critique of PNS framework questions some of its unexamined assumptions that ascribe a normative role to the extended peer community as “quality control” (Wesselink and Hoppe, 2011). More recent examination of the processes of the EPC through alternative theoretical angles such as risk colonisation (Rothstein et al, 2006a,b), showed how application of the concept can be played out in practice with unintended consequences that are at variance with the values of inclusivity, information completeness and heterogeneity. In a similar vein, Walls et al. (2010) have demonstrated how the pressures for openness and engagement can lead to selective transparency by making obvious only those elements of scientific decisions characterised by consensus and uniformity. It is argued that the current procedure for linking democratic control and risk assessment as the two modalities of decision-making within a SAB can lead to institutional deficiency and diminished legitimacy (Ferretti, 2007, Bijker et al., 2009). This raises an issue of the applicability of PNS aims in practice, their compatibility with the traditional governance approaches, and their relationship with aligned concepts of better governance such as accountability and transparency. This is
particularly relevant to the workings of scientific advisory committees. The way in which
PNS aims are reflected in policy discourse related to the workings of scientific advisory
bodies will be examined below.

Policy rationales for the extended peer community in the operations of SABs

Scientific Advisory Committees are seen as “boundary organisations” working at the
interface between science, policy and society (Guston, 2001), which makes them clear
contenders for the post normal scientific practice. Historically, however, they have been
tasked with risk assessment, that is the technical decision making of experts who engage in
systematic, analytical, and largely probabilistic thinking to characterise hazard, model its
distribution, and estimate its risk (Renn, 1998). The past 10-15 years have witnessed a great
deal of regulation of this process through clear guidelines of when and how SABs are
convened, the mechanisms through which their decisions are made and conveyed (as
exemplified in Codes of Practice for Scientific Advisory Committees (Office of Science and
Technology, 2001; Chilvers, 2008; Liberatore and Funtowitz, 2003; Scientific Advisory
Committee on Nutrition, 2002).

The principles of scientific universalism and independence enshrined in definitions of
risk assessment have been under increasing scrutiny. Various documents such as the House
of Lords report (House of Lords, 2000) in the UK, Code of Practice for Scientific Advisory
Committees 2001 (Office of Science and Technology, 2001), Science in Society Action Plan
(European Commission, 2001), and Communication on Collection and Use of Expertise
(European Commission, 2002) in the EU emphasised the requirement of SABs to seek
external input on their decisions, broaden the basis on which they are made, increase
transparency, and ensure active acceptance by those who will be implementing them.
Consequently, the framing of SABs’ role and practices as embodied in policy documents contains a dichotomy of the competing and simultaneous emphasis upon the technocratic bases of policy (“normal science”) and the ethos of stakeholder engagement (or extended peer community). For example, alongside the EC Science and Society Action Plan (European Commission, 2001), which calls for democratisation of expertise, is the enshrining of the key principle of scientific independence from external constraints (in the Part II of the Draft Treaty Establishing a Constitution in Europe, 2003, Article II:13 (European Commission, 2003). An interesting and thus far unexamined question of both practical and conceptual importance therefore is whether and how the twin pressures (implicit within policy documents) of engagement and scientific independence can co-exist within the workings of SABs. The examination of this tension in the current paper will focus on the operational aspects of SACN and the strategies used to manage the consultation procedures.

Aim of the paper

The aim of the current paper is to examine the application of PNS in practice through a study of the Scientific Advisory Committee for Nutrition (SACN). We use the theoretical insights from PNS-related studies to structure the analysis and examine the way in which PNS aims resonate with the practices of the boundary organization such as SACN. We have selected a particular case of SACN recommendations for salt, the scientific area that is characterized by controversy, uncertainty, vested interests and conflict, and can therefore be described as a “wicked problem”. We apply the frame of PNS through documentary analysis.
The Case of SACN UK and the Analytical Framework

The Scientific Advisory Committee for Nutrition (SACN) UK

SACN provides a potentially interesting case since its formation and the replacement of its predecessor, the Committee of Medical Aspects of Food and Nutrition Policy (COMA) was explicitly driven by the expressed need for clear separation between risk assessment and risk management, as this institutional reform aimed to remove policy considerations from the remit of the scientific committee. Like COMA before, SACN (UK) brings together independent experts who provide advice to the government department primarily responsible for nutrition policy – until recently, the Food Standards Agency and now the Department of Health– as well as other government agencies and departments. Its remit includes matters concerning nutrient content of individual foods, advice on diet, and the nutritional status of people in the UK. The Committee members are appointed as independent scientific experts on the basis of their specific skills and knowledge (mostly in nutrition and biomedical sciences, but also in social sciences) and typically hold a Chair in academic institutions. There are also two lay members representing consumers. SACN is supported by a secretariat provided by the relevant department in charge, who are selected for their scientific expertise. This ensures that they can provide comprehensive background information to SACN members when briefing them about the Terms of Reference and throughout the decision making process of the Committee.

There are clear guidelines for the conduct of the members (Code of Conduct for Scientific Advisory Committees 2001, revised in 2007 and then 2011) as well as a document that specifies the decision making processes in assessing risk (SACN Framework for Evaluation of Evidence, 2002, revised in 2012). SACN can co-opt experts to form working
groups (‘standing groups’) who meet on an ad hoc basis to discuss specific issues. SACN subgroups include non-SACN members. The appointment process is less rigorous (as it often does not follow an open call and application process) and members are selected for their topic expertise. The subgroups are disbanded once the work is completed.

SACN communicates through reports based on risk assessments and position statements. They also sometimes engage in consultation exercises with an aim of identifying relevant evidence to take into consideration or as a way of getting feedback on draft reports in preparation for a final report. These consultations are usually written communiqués that invite comments from relevant stakeholder groups; it is at the discretion of SACN whether to engage with these comments.

SACN publishes minutes of its meetings on its website (http://www.sacn.gov.uk) and designates consultation summaries as open access. It is these documents from the meetings of SACN Subgroup for Salt and the consultation summaries (see Table 1 for details) that will form the basis of our research.

**Analytical Framework**

To address whether and to what extent the practice of post-normal science is evident in the workings of SACN, we have identified themes to develop a coding system, which was guided on the one hand by the existing literature, and on the other, through inductive analysis of the data. We found the analytical framework summarized and applied by Turnpenny et al (2009) particularly useful and resonant with the thematic codes that were emerging inductively. Turnpenny et al (2009) adapted the key concepts of PNS and developed a new framework for analysis to suit the needs of their case studies, along the following themes: 1) Participation 2) Issue framing; 2) Evidence; and 4) Influence of
knowledge. We applied this frame in our analysis of the available documents, which included the consultation summary. We also refined it since the inductive analysis suggested an extension of this frame to include decision-making outcomes. The following key questions linked with the analytical frame helped guide the current processes of analysis:

- **Issue Framing**: What constitutes a scientific and political backdrop against which the issue is framed? How is the problem defined by a) the commissioner; b) the Salt Subgroup (SSG)?

- **Participation**: How is the SSG composed and overseen? Who constitutes the extended peer community? What was the mode of engagement?

- **Issue framing by the extended peer community**: How is the framing of the problem by the SSG perceived by the extended peer community? Is there evidence of the conflict in values/interests?

- **Evidence**: Are there disputes about the nature, quality, selection and interpretation of evidence? Is this underpinned by value preferences?

- **Decision-making outcome**: Is there clarity about how the decision/recommendation has been reached? Is this disputed and why?

- **Influence of knowledge**: How were the comments of the extended peer community incorporated into the final report? Whose comments were addressed, and how?

All publicly available documents related to the workings of the SSG were identified, which included 5 reports on the minutes of meetings of the SSG (the final one of which included the Subgroup’s response to consultation), a table summarising
submitters’ comments, the draft report, and the final Salt and Health reports (see Table 1 for the list and summary of the documents).

Analysis

Issue Framing by the Commissioner and the SACN SSG

“Three decades of controversy over the putative benefits of salt reduction show how the demands of good science clash with the pressures of public health policy.” (Taubes, 1998:898).

Salt recommendations setting by the SACN UK was set against the backdrop of a long running, acerbic dispute in nutrition and medicine over the putative risks and benefits of the nutrient. When the SACN SSG was established to review the evidence on salt, the salt controversy had been in its full swing, fuelled by a number of scientific uncertainties, value conflicts and vested interests. The key aspect of the debate is whether a drop of blood pressure by 1 or 2 millimeters of mercury due to reduction in salt is a sufficient basis for a prolonged, expensive public health campaign. It is argued that at the individual level, its effect upon hypertension is considerably smaller than that of drugs, and at the population level, though significant for the hypertensive, the effect of salt reduction is in fact insignificant for the majority of the population with normal blood pressure (Swales, 1988; 2000). The existence of the controversy is often attributed to the powerful interests and lobby groups of food processing industry, who are seen as the principal culprit of the current intake of salt, most of which is through processed food (Godlee, 1996; McGregor, 1997).
Against such a backdrop in 1994, the UK scientific advisory body for Nutrition – COMA, the forerunner of the SACN UK, recommended a ‘reduction in the average intake of sodium by reducing salt intake by a third, from 9g per day to 6g per day’. The recommendation of COMA did not find its way into policy however, due to a considerable amount of controversy this triggered within interested parties (particularly the corporate sector) who disputed the government recommendations. In September 2001, the Food Standards Agency and the Chief Medical Officer for Wales requested that the newly established SACN review the evidence and update the previous recommendations made by COMA, in the light of any new evidence, taking into account the submissions that had been received from interested parties. In addition, the SACN was asked to consider whether the evidence for children should be reviewed in order to quantify a recommended amount for the general population of children (Scientific Advisory Committee on Nutrition, 2003b). To this end SACN set up the SSG, which embarked on a series of meetings to evaluate evidence using the framework of risk assessment developed by SACN in 2002. They in turn launched a consultation which was conducted in the context of the growing unease of the salt industry about the mounting scientific evidence that salt increases blood pressure, and the recognition that most dietary salt (65-85%) is sourced from processed foods. Indeed, food manufacturers had actively sought to engage with government’s policy on salt with an aim of minimizing the potentially negative effect upon industry (Godlee, 1996). In recognition of this, the SSG included three independent experts with academic backgrounds in human nutrition and epidemiology and a representative of industry. There were six observers from the Department of Health and the Food Standards Agency.

The SSG’s proceedings began with collation of responses from interested parties. Responses were received from 11 organisations, all but two of whom were private
corporate organisations and their representatives. The nature of these submissions by the
interested parties was twofold: to contribute to the development of the frame for sourcing
and interpreting evidence and to suggest new evidence for consideration, published since
the last salt recommendations by COMA. Many submissions requested careful
considerations of risks of salt reduction, of reliability of measurements, the range of health
outcomes, the nature of studies (how able are they to capture “habitual” intake). As a result
of this exercise, the SSG drafted statements which provided an important frame for the
further sourcing and interpretation of evidence in terms of: 1) importance of sodium and
understanding physiological requirements for sodium; 2) relative importance of chloride
ion; 3) need to understand salt sensitivity; 4) need to clarify morbidity and mortality
outcomes.

Participation

Following a series of the SSG’s meetings, a draft report was placed on the SACN
website in September 2002 for consultation (please see Table 1 for the summary of the
Draft Report conclusions). After a 3 month consultation period, stakeholder submissions to
the draft report on Salt and Health were collated, and the SSG issued a response on 7
February 2003. The final Salt and Health report was published on 15 May 2003 (Scientific
Advisory Committee on Nutrition, 2003b).

In total 28 responses to the draft report were received, and the extended peer
community included 10 corporate sector organisations, 8 NGOs, 7 professional or academic
institutions, and 3 individual submitters.
Of the total number of respondents, 15 were in agreement with the conclusions, 2 agreed with parts of the report, 4 respondents raised points but did not comment on the conclusions, and 7 did not agree with its conclusions. Organisations that were not supportive of the draft report were six corporate organisations and one individual. Table 2 indicates that the most commentary came from the corporate sector or its membership organisations. Those who were in agreement with the main body of the report and its conclusions were mostly members of academic, professional, and non-governmental organisations (NGOs).

-Please Insert Table 2-

The extended peer community’s comments about the framing of the issue

A considerable number of comments related to the way in which the SSG conducted the review. One of the key issues that emerged from submitters’ comments concerned the way the SSG framed the problem. Many questioned the health end-points taken into consideration, for instance a specific medical indicator of health such as blood pressure or a health outcome such as cardiovascular disease or mortality. Some stakeholders felt that the problem under consideration was framed in terms of risk of excessive intake, whilst it was felt that broadening this to include the risk of sodium deficiency would lead to substantively different conclusions. Many submitters requested broadening the scope of the review to include the role of other factors in hypertension. Others commented on the way in which certain concepts were defined and how this influenced the sourcing of evidence. For instance, comments were received about the lack of clarity about the choice of age bands for children, as well as the reasoning behind the decision not to separate recommendations
for men and women. The majority of comments around the framing of the problem were submitted by those representing the corporate sector.

A large number of comments addressed a perceived lack of transparency in the rationales for setting the boundaries of the problem frame. The respondents appeared to be unclear about the inclusion/exclusion criteria for the studies selected. There were also more general accusations of bias, lack of accuracy in interpreting the data and lack of clarity and consistency in reporting.

One submitter questioned the legitimacy of the subgroup, querying the appropriateness of the current range of expertise selected to address the issue as framed by the Subgroup’s terms of reference.

The extended peer community’s comments about the evidence

A wide range of comments related to the way evidence was gathered, selected, and interpreted. There was considerable disagreement about the degree to which the list of the studies selected for inclusion was exhaustive: whilst some respondents felt that the breadth of studies from which evidence was drawn was too wide (e.g., animal studies), others felt it was partial (e.g., individual trials included, but few systematic reviews). It was also felt that the selection of the studies favoured short-term physiological effects over the long term impact of salt consumption on health. Some responses requested the broadening of the range of studies to include consideration of other factors influencing hypertension, rather than just salt consumption. A related point addressed the quality of evidence and commented on the inclusion of outdated studies in the review. Finally, a host of submissions centred on the Subgroup’s interpretation of the evidence presented and how the conclusions were drawn. Some submitters commented on the lack of an explicit account of
what approach was used to evaluate evidence. It was felt that too much weight was given
to some studies, that the choice of terms to describe the new evidence (since the last COMA
report) should be characterised as ‘more numerous’ rather than ‘stronger’, and that the
potential dangers of sodium restriction had been ignored.

The extended peer community’s comments about the SSG’s decision

The final recommendations for daily intake of sodium and how these were to be
implemented attracted a range of respondents’ comments. Many submitters felt that the
evidence reviewed failed to warrant the final conclusions reached by the SSG.

The extent of stakeholder disagreement was further apparent in the diverse
assessments of whether the Subgroup’s recommendations of 6g of salt per day was above
or below the levels suggested by the reviewed evidence. For instance, an NGO queried why,
despite the body of scientific evidence suggesting that 4g of salt per day should be the
recommended dose, the current recommendation of 6g of salt a day was endorsed. On the
other hand, a corporate sector submission characterised the target levels set for children as
unrealistically low and unachievable, suggesting it could potentially deter consumption of
foods of nutritional importance for children such as cheese and milk. One comment raised
the expectation that the final recommendation must be in line with the internationally
accepted values for salt, quoting the WHO’s recommended 5g of salt a day. A separate,
though related point was the way in which the population group of interest was defined and
conclusions generalised to the whole adult population.

The challenges of translating the recommendations into policy, and the
viability of possible implementation strategies were key concerns for many
submitters. In particular, how the recommendation would be legislated around food
labelling, whether implementation necessitated considerations of issues of food safety (e.g., the use of salt as a preservative), and what specific measures would be taken to achieve the target (e.g., how to marry up advice regarding processed food and discretionary consumer use of salt) were questions posed by a number of respondents. Some submitters felt that this was an opportunity to query the research commissioning process and the direction of further research.

How influential was the extended peer community?

The SSG produced a ‘response to the stakeholder submissions’ document on 7 February 2003, during the 5th Meeting of the Subgroup noting possible modifications of the document in light of the stakeholder comments. They agreed with some of the comments around the issues of transparency and clarity of presentation, and for the most part, the SSG accepted criticism and agreed to amend the draft document to achieve greater clarity. Thus, for instance, the SSG agreed to provide a clear rationale for the evaluation of evidence and a rationale for why the report advocated a population-based approach. They also agreed to make editing changes to the document, including reiterating certain issues (e.g., future research) in the Conclusion section and amending wording in the text (e.g., from ‘stronger evidence’ to ‘larger body of evidence’). The concern raised around the legitimacy of the SSG in relation to the range of expertise within the SSG was rejected, though this decision was not elaborated.

The issue that generated the most controversy and debate related to the selection criteria for the inclusion/exclusion of evidence for consideration. The committee chose selectively which comments pertinent to the selection and breadth of evidence to accept. Thus, for instance, the committee agreed to extend the review by widening the range of
longer-term and meta-analytic studies included in the review as well as more recent dietary exposure surveys. The criticism suggesting that the SSG’s report gave disproportionate consideration to the animal studies was rejected, and justified as largely being pre-determined by the terms of reference and the framing of the problem. Indeed, one of the key arguments justifying the selection criteria centred on what was thought to be restrictive terms of reference (or problem framing) for the workings of the SSG. However, our reading of the SSG’s responses suggests that the Subgroup in fact had some autonomy in how the problem was framed. Thus, in response to the request for an inclusion of other factors affecting hypertension in conjunction with salt (in order to provide a balanced review of the role of salt in health), the SSG emphasised some factors (e.g. physical activity and lifestyle), to the exclusion of others (e.g., genes). The basis for such prioritisation was not always made explicit..

The final recommendation that sodium intake was not to exceed 6g was reflective of the SSG’s judgments about the possibilities of achieving behaviour change in line with the recommendations, in the context of the large behavioural shifts required to move from the current 9g of average intake to the requirements of no more than 4g. Although this decision was based on pragmatic considerations, the whole section of submitter comments focusing upon implementation of recommendations was rejected as being beyond the SSG’s scope of providing recommendations based on risk assessment.

Before the revised report could be agreed on, the SSG sought the advice of another SACN subgroup, the Subgroup on Maternal and Child Nutrition (SMCN). A more specialist opinion was needed from experts on the adequacy of findings in children and infants. On 15 May 2003, and after much deliberation SACN published the final Salt and Health report.
Discussion and conclusions

PNS theory posits that the management of controversial policy issues that draws upon often uncertain scientific evidence must recognise the value of engaging multiple perspectives not only in the policy process, but also in the scientific processes informing it. It has long been argued that scientific advisory committees, which exist on the boundary between scientific and political realm, are the clear contender for the post normal scientific practice (e.g. Lorenzoni, 2007; Farrell, 2011; van de Kerkhof and Leroy, 2000). However, the analytical focus thus far has been upon the way in which PNS is realised in the interaction between a SAB and a political body, whilst the extended peer community is studied as an emergent (rather than an intended) process. In the current paper we set out to examine PNS practice and the intended engagement with the extended peer community within the confines of the SACN SSG scientific decision-making. We have argued at the outset of this paper that the simultaneous expectation of independence of scientific advisors, and consultation with the extended peer community, will provide a particularly informative context to reflect on the value of PNS as a theoretical framework. The analysis of consultation summary documents represented a unique prism through which to study the processes of scientific decision-making. Whilst we recognise the inherent processes of re-presentation of stakeholder views by those with responsibility for their use in science policy, the analysis of these documents provided useful insights into the ways in which the SACN SSG operated behind the scenes (‘back stage’) (Hilgartner, 2000).

There are several points of discussion that emerge from the results. The current results confirm the value of PNS as a framework to describe the workings of the SSG since both the comments of submitters and the SSG’s responses fell outside the strict confines of
risk assessment and addressed considerations stemming from the broader policy and political perspectives. However, the SSG’s relative autonomy in determining the framing of the issue ensured that they achieved a consistent scientific authority, more akin to the processes within “normal” science. In addition, whilst ostensibly consulting, the SSG continued to exercise authority in how stakeholder comments were addressed, referring strategically to scientific rationale or policy/political realities. Thus scientific autonomy was successfully safeguarded in the face of alternative readings of the problem under scrutiny.

We will discuss each of these points with reference to PNS.

The thematic analysis of submitters’ comments makes apparent that the submitters’ reflections on the draft report were made in the context of the overall nutrition policy development process rather than its narrowly defined remit of risk assessment. One explanation is that submitters attributed to the SSG a more political role than formally ascribed, possibly as a reflection of its “boundary” position (Guston, 2001). In the context of salt, the stakeholders saw the risk assessment aspect of decision making inseparable from risk management. The current analysis suggests that such perception was not unwarranted: whilst the SSG maintained, at least formally, that their role was firmly within the risk assessment stage of decision-making, in practice, some of the decisions (e.g., recommendations) were based on pragmatic considerations of what was achievable and were only partially informed by the assessed scientific evidence. This provides some evidence for the validity of PNS framing of SABs activity since the risk management and communication elements of the issue are inextricably linked with the science/risk assessment as they provide context and bound science to political realities.
And yet, many of the submitters’ comments were rejected as ‘risk management/communication’ issues and deemed to be outside of the SSG’s remit. Literature has established that, in the effort to downplay the elements of judgment in the process of risk assessment, expert advisors “actively work to enact objectivity, separating themselves sharply from ‘vested interests’ that might seek to influence their advice”, thus downplaying diverse views (Hilgartner, 2000, p. 14-15; Martin, 2008). The SSG endorsement of the value of the EPC is at variance with their simultaneous efforts to distance themselves from the social and political realities. The confining of scientific advice to risk assessment as separate from the context of its application, which is explicit in the policy documents guiding the workings of the SACN, poses an additional pressure to exemplify objectivity, which in reality can lead to restrictive transparency (Walls et al, 2010). There is some evidence of this in our data—enacted in our case through strategic and partial addressing of the submitters’ comments.

The analysis also demonstrated that the expert committee exercised a degree of autonomy in determining the scope of the review process through the decisions made about the inclusion and exclusion of evidence and the way in which certain concepts were defined. Considering the number of submissions reflecting on these issues, the framing of the problem appears to be an area where some debate and disagreement is evident. Even when the terms of reference for the expert committee are provided in no ambiguous terms (as was the case above), there appears to be area of ambiguity that will invite scrutiny and interest of the extended peer community – a clear evidence for the need for post normal scientific practice. In anticipation of the controversy, the SSG engaged the extended peer community explicitly both through consultation processes and by including an industry representative as a Committee Member (apparently to shape problem framing in line with
the broader sets of values and interests). Despite adopting what is ostensibly PNS practice, however, the SSG appeared to be set on distancing itself from the demonstrable pressures of different interest groups through the repeated reference to the “objectivity” of risk assessment. This is particularly poignant in the light of the submissions analysed here which came mainly from the organisations with narrow specialisms (linked with nutrition and medical conditions associated with over consumption of salt), or vested interests (corporate sector, NGOs active in the area of nutrition). Very few submissions came from individual members of the public, and none were submitted from representatives of the target population as defined by the terms of reference (e.g., children). Thus, the submissions were far from representative of the broad cross-section of perspectives and views. This raises a practical question relevant to boundary organisations such as the SACN SSG about how the aims of PNS are to be achieved in the context of the simultaneous policy imperative of scientific independence from the vested interests.

What we have witnessed through this analysis is therefore a curious contradiction between the engagement of a SAB with the extended peer community on one hand, and the simultaneous distancing from the consequences of such engagement through re-assertion of scientific authority. Viewed in such light, the engagement with stakeholders on behalf of the SACN can be construed as a political act - to gain credibility and acceptance through PNS practice, whilst maintaining legitimacy as an independent body by deflecting the influence of controversial values and vested interests upon the decision outcomes.

We can find theoretical resonance of this finding with the recently proposed concept of risk colonisation (Rothstein, 2004; Rothstein, 2006a,b). The concept has been put forward to explain the way in which an increased emphasis upon risk assessment in regulation has
acted to amplify institutional risks (risks to the institution’s legitimacy, credibility and accountability) thus threatening institutions’ organisation and practices. The emphasis upon “good governance” that requires an organisation’s greater transparency and openness, consultation as well as constant accounting for their practices (to the wider audiences with often conflicting judgment criteria) has given rise to the practice of managing “institutional risks”. This creates a dual role for governing organisations: to govern societal risks whilst simultaneously managing their own institutional risks. As the current analysis demonstrates, the SACN consultation process is as much a process of engaging in optimal risk assessment, as a way of managing sources of risk to its organisation. Thus, rather than being evidence of post normal scientific practice, the engagement became a mechanism for confirming the specific scientific practice that is resonant with technocratic models of science as “holding authority over the facts”.

Examined in the context of a case study of the SSG consultation we can see the value of PNS as a normative framework though less support for its role as a theoretical model in explaining new modes of science practice. This may be partly due to the specific nature of our case of micronutrient recommendations which, though uncertain, complex, and often controversial and disputed, is nevertheless characterised by a degree of consensus about its overarching aim – to help achieve healthy population (Dhonukshe-Rutten et al, 2010). Scientists within scientific advisory committees for nutrition may see their role as the “guardians of public health”, their values aligned with those of the public and in conflict with food industry, and hence their science as a “quest for truth” rather than “quality control”. The evaluation of the extent to which the adoption of PNS aims in practice by SABs is the function of the nature of and interactions between the value networks clustered around an issue might provide useful insights into the applicability and limitations of PNS.
References


Scientific Advisory Committee on Nutrition. (2003c). Summary of responses received to request for comments on salt and health draft report.


<table>
<thead>
<tr>
<th>The document title</th>
<th>Date of issue</th>
<th>Summary of the document</th>
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</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; Meeting of SSG SACN/SaltSub SACN/SaltSub/02/min01</td>
<td>25 January 2002</td>
<td>Members asked to express conflict of interest. The purpose of the group is clarified. The oral summary of the submissions of evidence by interested parties (e.g. Salt Manufacturers Association; Consensus Action on Salt and Health; Food and Drink Federation) is discussed. The draft framework of risk assessment (dated 24/01/02) is considered and judged a useful checklist when considering and evaluating the evidence.</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Meeting of SSG SACN/SaltSub SACN/SaltSub/02/min02</td>
<td>18 April 2002</td>
<td>Framing of the problem to be addressed in terms of: 1) sodium as an essential nutrient; need to identify the physiological range of sodium required to maintain homeostasis and the associated individual variations; 2) relative importance of chloride ion; 3) salt sensitivity; 4) morbidity and mortality outcomes; 5) age-related changes in the above areas. The relevant evidence is sought to address these areas.</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Meeting of SSGSACN/SaltSub/02/min03</td>
<td>21 May 2002</td>
<td>The SACN Secretariat proposes a structure for the draft report. The Subgroup proceeds to evaluate the collated evidence as per the</td>
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<td>The document title</td>
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<tr>
<td>SACN Salt and Health Draft Report</td>
<td>Circulated by the Secretariat</td>
<td>The Subgroup finds no evidence to suggest that a reduction in salt to 6g/day for the adult population recommended by COMA in 1994 would be a risk to health as the evidence to support it is now stronger.</td>
</tr>
<tr>
<td>4th Meeting of SSGSACN/SaltSub/02/min04</td>
<td>11 September 2002</td>
<td>Discussion of the draft statement on salt. Agreement about the way to characterise the studies reviewed; agreement that there is no evidence that the reduction of salt intake to 6g/day (as per COMA report) would be a risk to</td>
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<tr>
<td>The document title</td>
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<td>health and the evidence is now stronger than in 1994. Need for greater understanding of habitual intakes. Reduction to be achieved by changing content of food and drinks and dietary recommendations. Interested parties will be alerted to the draft and be given 1 month to comment on the draft.</td>
<td>7 February 2003</td>
<td>Comments on the draft statement about salt received (after an extended consultation of 3 months) and the Members agreed to go through the report section by section in order to incorporate agreed changes in the light of comments received. The responses are analysed in the main body of the Analysis of the paper.</td>
</tr>
<tr>
<td>SACN SSG Summary of Responses Received to Request for Comments on Salt and Health Draft Report</td>
<td>7th Feb 2003</td>
<td>Responses summarised by the Secretariat of SACN. (We analyse them in our paper)</td>
</tr>
<tr>
<td>SACN Final Salt and Heath Report TSO, Norwich</td>
<td>15th May 2003</td>
<td>COMA recommendations upheld. There is now “larger” body of evidence to link salt consumption and hypertension. A public health approach to reduction in salt intake is required.</td>
</tr>
</tbody>
</table>
### Table 2: Key themes identified in the analysis of consultation documents

<table>
<thead>
<tr>
<th>Key themes</th>
<th>Extended peer community (N=28)</th>
<th>Comments addressed by SACN SSG</th>
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<tbody>
<tr>
<td></td>
<td>Corporate</td>
<td>NGO</td>
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<td><strong>Framing</strong></td>
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<td>Transparency</td>
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<tr>
<td><strong>Evidence</strong></td>
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<td>Type and breadth of evidence</td>
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<tr>
<td>Quality of evidence</td>
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<tr>
<td>Interpretation</td>
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<tr>
<td><strong>Decision</strong></td>
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<td>Final recommendations</td>
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<td>7</td>
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<tr>
<td>Implementation</td>
<td>15</td>
<td>12</td>
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<tr>
<td>Conclusions</td>
<td>9</td>
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</tbody>
</table>
Text box 1: The Extended Peer Community

The extended peer community included the following organisations:

1. British Dietetic Association (BDA);
2. British Frozen Food Federation (BFFF);
3. British Nutrition Foundation (BNF);
4. British Retail Consortium (BRC);
5. Cochrane Heart Group (CHG);
6. Consensus Action on Salt and Health (CASH);
7. Co-operative Group (Co-op);
8. Food Commission (FC);
9. Food & Drink Federation (FDF);
11. Inside Story;
12. Institute of Food Science & Technology (UK) (IFST);
13. Intercollegiate Group on Nutrition (IGN);
14. LoSalt;
15. Macnair A;
16. McGee E;
17. Meat & Livestock Commission (MLC);
18. Medical Research Council, Human Nutrition Research (MRC HNR);
19. National Heart Forum (NHF);
20. National Osteoporosis Society (NOS);
21. Nutrition Society (NS);
22. Sainsbury’s;
23. Salt Institute (SI);
24. Salt Manufacturers’ Association (SMA);
25. Scottish Consumer Council (SCC);
26. Socialist Health Association (SHA);
27. Snacks, Nuts & Crisps Manufacturers Association (SNACMA);