Professionalisation as a social regularity: the policy process in South Africa's Natural Science curriculum

Anitha Ramsuran and **Clifford Malcolm**
ramsurana@ukzn.ac.za; malcolmc@ukzn.ac.za

Curriculum 2005 (C2005) in 1997 and the Revised National Curriculum Statements (RNCS) in 2002 have been two major curriculum policy developments in South Africa. In this study, our aim was to unravel the processes by which they developed as they did, and determine how these policy processes are best researched and understood. In this article we use the concept of professionalisation to analyse the policy process for the two reform periods. In addition we attempt to show how professionalisation acts as a social regularity: professionals brought in to write the policy documents for the two reform periods, through their socialization into the profession, have in many ways worked towards the maintenance of a particular social order, rather than changing the social order. This is evident especially in the concept of 'scientific literacy' that emerged, which is strongly consistent with similar policies in developed countries, even though conditions in South Africa are unique.

Introduction

The 1994 elections brought new possibilities, opportunities and expectations for South Africa: re-entry into the global economy; industry reforms in the light of the declining worth of primary industries in favour of 'value added' production, skills, efficiency, and imagination; social transformation (amidst social problems of inequity, infrastructure, fear of instability, health, etc.); new political freedoms and processes; and a baggage of financial problems (government debt, low economic growth and low consumer confidence). Curriculum reform was seen as a major vehicle for change, driven by the vision of lifelong learning and credentials, one education system for all South Africans, and one set of 'outcomes' (DoE, 1995).

In this context, the purpose of our research was to excavate the policy process and establish how policy writers had conceived the notion of scientific literacy. Although the focus of the study was science education, the research was set within the domain of broader policy changes within the education system. A central question was how the selection of science conceptual knowledge was made. The purposes need to be understood against the complexity of post apartheid transformation and its urgency, where many things were happening at once. Interviews were conducted with policy writers involved in the writing of the policy documents for the two periods: C2005 and the RNCS. For the purposes of this article we focus on the following questions:

- Who were the policy writers for both periods of reform?
- What policy choices were made by the policy writers and how did professionalisation shape these choices made in writing the policy documents?

Our analysis draws on Scheurich's (1997) notion of social regularities, defined as patterns of thought and ways of thinking that permeate the policy process. Scheurich (1997) makes four points about them that are relevant for this article. Firstly, the regularities are not intentional, in that no particular individual or group consciously created them (though some individuals and groups benefit from them). Social orders are continuously re-established by networks of social regularities without the need for controlling agencies. Secondly, while social regularities determine social problems and policy solutions, they operate neither as outside nor inside forces;

they constitute rather than set the conditions in which action is taken. Thirdly, regularities change, perhaps even disappearing or being re-created. Fourthly, regularities operate largely below the surface as social agents may or may not be self-consciously aware of the social regularities shaping their subjectivities and practices. The research process of policy archaeology seeks to excavate influences on the policy process that may or may not be overt. Policy archaeology is premised on the idea that there are powerful grids or networks of regularities that are constitutive of the emergence or social construction of a particular problem as a social problem — regularities that constitute what is labelled as a problem and what is not labelled as a problem. In this article we focus on professionalisation as one such social regularity.

Professionalization works closely in tandem with what Foucault called governmentality.[1] Governmentality, in one sense, concerns the conditions that make a state governable: the ways in which the conduct of a population of individuals is implicated in the exercise of state power. We extend these ideas to explore how the science policy writers in South Africa responded to three broad audiences: the government (the transformation agenda), the international community of science education, and the local community of science educators. From the perspective of governmentality, professionalization is a proliferation of professions whose purpose is to treat and manage the citizenry, i.e. to produce disciplined, productive citizens. The larger implications of their activities need not be evident to the professionals themselves, i.e. regularities operate largely below the surface. Like government agents, professionals operate with the best of intentions; indeed good intentions are typically a major facet of their professional socialization. Consequently, whilst professionals may see their activities as legitimizing their therapeutic or transformational theories, their theories are instantiational ideologies, whose regulative purpose is to fashion productive citizens according to the norms of the current social order, i.e. to 'normalize' citizens (Scheurich, 1997). In the process, productive citizens continually relearn 'right behaviour', in part by the public display of 'wrong behaviour' through social processes of identifying social problems and problem groups, and preparing policy solutions. The labelling of problem groups, particularly by socially-legitimated social agents such as professionals, positively disciplines citizens by defining what a proper productive citizen is and reaffirming the productive citizens' goodness or correctness. Popkewitz and Simola (1996: 121) note that modernization is inevitably inscribed in professionalization, where it serves to join political rationalities with the production of disciplined and self-reflective individuals. Educational practices, among a multitude of practices associated with the emergence of modernity, have played central roles in the professionalization and bureaucratization of western society and directly influenced all sections of society. These practices bring their own rationalities, covertly as well as overtly.

Descriptions of the social/educational problem and problem groups can be circulated in both academic media and public media. As newspapers and television programmes repeatedly display (make socially visible) the problem groups, and academics legitimate the designation through journal articles, books, and conferences, the problem is made real. Consequently, like doctors in the case of social diseases, professionals including educators, social workers, health workers, and psychologists are called forth to treat the problem group with the chosen policy intervention (Scheurich, 1997). Thus a group of professionals, through their critical endeavours, make visible the policy problem and the problem group, then use their knowledge to adjust or transform the social group. Professionals are important in this study in a number of ways: (i) they represent the idea of 'experts' including the corollary of narrowness; (ii) they are networked to a (global) profession, and hence under the influence of ideas that dominate

professional discussion; (iii) they have two allegiances that are in tension — one to the profession, the other to the State; and (iv) they can be co-opted to particular positions, whether derived from government or their professional associations.

We use these ideas of professionalisation to analyse the policy process in the development of C2005 and the RNCS. We begin by briefly describing the structures and people involved, as a basis for considering the ways in which government/management and professionalisation intersected, particularly in the selection of policy writers. This establishes the domain in which the professionals operated and how their professionalisation influenced the policy process. The science policy writers operated in the policy domain; classroom teachers are professionals in the domain of practice. We then focus on the influences of professionalisation on the policies. We draw on four aspects of professionalisation to inform the analysis: to show how the policy problem was constructed; public consultation and attempts to re-legitimise government action; policy rationalities and practices; and the rise and proliferation of independent agencies. Throughout the analysis we attempt to show how professionalisation acts as a social regularity by drawing on the four points made by Scheurich (1997) in our earlier discussion.

Methodology

Interviews were conducted with 17 policy writers/ policy makers involved in the writing of the policy documents for the Natural Science Learning Area for the two periods: C2005 and the RNCS. All policymakers were contacted to be part of the study. Tables 1 and 2 profile these policy writers. In order to protect confidentiality, policy writers are numbered in Tables 1 and 2 and given letters in the text of the article. This process was necessary as policy writers could be identified by their profiles or the particular 'speak' they have established. An intensive content analysis of policy documents for the General Education and Training (GET) band in the Natural Science Learning Area for the two reform periods (C2005 and the RNCS) supported the interview data. The focus of the analysis of the policy documents was how the professionalisation of the policy writers shaped the choices made in the writing of the policy documents, particularly in the development of the concept of scientific literacy.

Discussion and findings

Who were the policy writers in the C2005 process?

The C2005 policy-making process for Natural Science consisted of a number of groups. The National Learning Area Committee (LAC) comprised about 50 individuals who were invited to two or three national workshops. Membership was somewhat fluid: although registers were kept during workshops, different individuals attended different workshops. In Table 1 there are profiles of six participants who were willing to be interviewed. Some members were nominated to the LAC, some attended of their own accord. The brief of the LACs (one for each learning area) was to write a rationale for the learning area, and propose learning area outcomes that reflected the critical crossfield outcomes that overarched all learning areas. As well, five committees were established to promote integration across learning areas: a Foundation Phase committee, Intermediate Phase, Senior Phase, Further Education and Training, and ABET committees. Each Co-ordinating Committee comprised about 26 members representing various stakeholders. To take the work of the five co-ordinating committees further towards one broad curriculum, a Technical Committee was established. Nominations for appointment to the Technical Committee were invited through the Government Gazette. The Technical Committee was assisted by a Reference Group and comprised three members from each LAC, as well as

two practising teachers nominated by each of the eight LACs, and one representative of learners with special needs. As well, a technical team (writers) was appointed to each learning area. The team for Natural Science consisted of three members, two of which are profiled in Table 1 (the third member, a female department official, declined to be part of this research). Through these processes, the curriculum for General and Further Education and Training was announced on 24 March 1997 (DoE, 1997). There was no formal process for the selection of members in the Natural Science technical team. The two members who were interviewed cited reasons for their selection as their involvement in the development of science education and their knowledge of the transformative curriculum processes.

Table 1   Profiling policy actors for the C2005 process by gender, experience of teaching science, qualifications, institute/organization represented, and role in process

Policy Writer/ Maker	Gender	Science teaching experience (yrs)	Representation	Qualifications with specialisations	Role in the process
1	Male	16 – 20	NGO coalition	PhD MLitt (curriculum development) NHED	Chair of LAC
2	Male		SAARMSTE	BSc (Maths, Biol.) MSc (Maths, Biol.) PGCE (Maths Ed.) PhD (Science Ed.)	Chair of Technical Committee for Natural Science
3	Female	Under 10	LAC Gauteng	BSc (Hons) MEd	Member of LAC
4	Male	11 – 15	NGO	BSc (Maths, Phys.) MEd	Member of LAC
5	Male	Under 10	Steering Comm. for Ass. of Sci. & Technology Educators SYSTEM* Nat. Centre for Curr. Res. & Develmt. (DoE) FET Directorate	MEd (Sociology of Education) BEd BSc (Chem., Biochem.) UED (Maths, Physical Science)	Department official
6	Female	11 – 15	Co-ordinated rep. of Unions	BSc (Zoology) HDE (Biol., Geog.) BEd	Member of Tech. Comm. For Natural Science / Repr. Co-ordinated unions

*   Students and Youth into Science, Technology, Engineering and Maths

   Table 1 reflects that policy writers had a strong allegiance to science professional bodies, had qualifications that indicate expertise in particular areas of science (albeit a strong western

Table 2 Profiling policy makers of the RNCS process by gender, experience of teaching science, qualifications, institute/organization represented, and role in process

Policy Writer/ Maker	Gender	Science teach-ing exp. (yrs)	Representation	Qualifications with specialisations	Role in the process
1	Male	Under 10	SAASTE and KASTE	BSc (Bot., Zool.) UED (Bot., Zool.) BEd, MEd (Sci.Ed.) DEd (Sci.Ed.)	Co-ordinator of the working group
2	Male	11 – 15	None	BSc (Botany, Microb.) MEd (Sci.Ed.)	Member of the working group
3	Male	11 – 15	Sethlare	BSc (Maths, Phys.) MEd	Member of the working group
4	Male	Under 10	None	BSc (Chem, App. Maths) TTHD (Phys, Maths) BA (Psych., Eng.) MA (Sci.Ed.) Phd (Curr., Sci.Ed.)	Member of the working group
5	Female	11 – 15	Cognition in Education group Western Cape	DPhil (Educ.) MPhil (Educ.) BSc (Hons)	Advisor
6	Male	Over 20	Public Mandate for environ. education	BSc (Zool., Bot.) BSc (Hons) (Zool.) MEd (Zool.) MEd in EE PhD (in progress)	Advisor
7	Male	Under 10	None	BSc (Biochem., Biol.) STD (Gen.Sci., Maths) Adv. Adult Ed. Dipl. MEd (Sci.Ed.)	Advisor
8	Male	Under 10	Steering Comm. for Ass. of Sci. & Technology Educators SYSTEM* Nat. Centre for Curr. Res. & Develmt. (DoE) FET Directorate	MEd (Sociol. Ed.) BEd BSc UED (Maths, Phys. Sci.) BSc (Chem., Biochem.)	Advisor
9	Female	16 – 20	N/A Member of the MPC	BSc (Bot., Zool.) BEd, MEd, DEd	Mentor, MPC member, Dept. official

* Students and Youth into Science, Technology, Engineering and Maths

influence), some involvement in programmes and workshops in line with the government's agenda for redress (for example policy writer 5 cited his involvement in SYSTEM as a key influence in thinking about what science is worth knowing in an African context).

Who were the policy writers in the RNCS process?

The RNCS process consisted of the Ministerial Project Committee (MPC); Task Team (made up of co-ordinators for each working group); working groups for each of the eight learning areas; groups to address particular issues (for the Foundation Phase, human rights and inclusivity, qualifications and implementation); a support group and a large reference group. Three special transversal groups were formed to provide guidance on ways of addressing human rights, civic responsibility, and inclusivity. The eight Learning Area Statements were developed by small Working Groups, of which the Natural Sciences group was one. The Foundation Phase Working Group developed three learning programmes through interaction with the eight learning area Working Groups and three transversal Working Groups. The reasoning for Learning Area working groups was that a small number of 'experts' would be most appropriate for the central task of 'streamlining' the existing curriculum (C2005). The Natural Science Working Group had five appointed members and a chairperson. Appointments were done through nominations, interviews, and a formal appointment, unlike the C2005 process which comprised invited individuals. The MPC led regular task team meetings, involving chairs from all the working groups and representatives from the Foundation Phase and transversal working groups. Members of the MPC were attached to each of the working groups, as mentors. There were two mentors in Natural Science. In December 2002, following public input to draft documents four advisors were added to the Natural Sciences Working Group. Each advisor was chosen for areas of expertise: science in the Foundation Phase particularly cognitive development and language in that phase; the second on content in life sciences and implications for curriculum and teacher development; the third on content in physical and earth sciences implications for curriculum and teacher development; and the fourth on life sciences, environmental education, human rights, and indigenous knowledge. Table 2 profiles nine members of the Natural Sciences Working Group from whom we were able to get responses to our questionnaires and telephone calls. They brought a range of expertise from professional experiences as consultants, subject advisors, and university lecturers. Seven were males and two were females.

From Tables 1 and 2 it is clear that teachers were not involved in the policy writing for both the C2005 and the RNCS processes, although policy writers did have considerable experience of teaching science at schools or as NGO/Union members involved in professional development of teachers. The professionals for the writing phase were 'curriculum experts'. Whilst those in the classroom were teachers; the teachers who were expected to realize the policy were deemed poorly equipped to contribute to that policy. This had major implications for the devolution of curriculum to schools (a major part of the policy). Our discussion here concerns the policy-writing domain and not implementation and school practice. In school practice, teachers are key professionals in 'treating' the problem, but in writing C2005, teachers were barely involved, since they were 'not available' for the work, and were generally perceived not to have the knowledge required in curriculum policy development. Jansen (1999: 151) commented:

> A small elite of teachers, often expert and white, have driven the Learning Area Committees and other structures in which OBE has developed. The sad reality is that the over-

whelming majority of teachers simply do not have access to information on OBE, or understand OBE in instances where such information may be available. In other words, there is not a process, systematic and ongoing, in which teachers are allowed to conceptualise and make sense of OBE and curriculum policy. In a cruel twist of history, teachers continue to be defined as 'implementers' and even in this marginal role, official support is uneven, fragmented and, for many teachers, simply non-existent.

Thus differences emerged in what constitutes 'professionalism' in science education, and the choice of professionals suited to each task.

For the C2005 process, policy makers commented that some organizations were seen as more legitimate than others to influence the process. There was a feeling, particularly amongst those from the NGO sector who had had many years of classroom experience, expertise and the political right to give input, that the C2005 consultation process excluded them:

The other thing that was happening was that there was at least 15 years of classroom experience among the NGOs. Quite apart from that, right through the 1980s they were thoroughly disliked by the education authorities and yet nonetheless managed to bring about quite a lot of change in the classroom and learn quite a lot about what works and what fails. We were never consulted. We were eager to be consulted but they told us they'd call us in three to four years (Policy writer A – C2005 and member of an NGO).

The position for the RNCS process was different with policy writers being formally appointed to their positions. Here NGOs could be nominated but not necessarily selected:

Yes, we were formally appointed. To get onto the working group there was an advertisement in the newspaper inviting nominations of people to be on such working groups. That was in about October 1999 and I got a call from somebody who would actually have been ideal for the working group saying would I accept being nominated. So I said all right, I'm not sure what it is but put my name down. I contacted other people asking them if they'd like to be nominated and so in this way a network had already begun, starting off from the really public advertisement where anyone can nominate anyone else. It was right at the end of 1999. So how that list was put together, I do not know but I have no doubt that there was some strong debate behind the scenes before the list was finalized. That was not in the Natural Science Learning Area, that was in the Department of National Education, the MPC (Policy writer E on the RNCS).

Part of the reasoning of 'selection' was to choose people whose professional allegiances were consistent with the government's position, at the same time as having credibility among science education professionals. The group consisted of defensible experts who could legitimise and suggest a treatment for the policy problem. Policy writer A – C2005 saw two characteristics as crucial to such professionals: intellectual strength and identification with democracy:

You get terrains of struggle in the streets where the power of the mass counts, then you have terrains of struggle which are intellectual, where you got a committee of ten people who are brought together to do something where, in that kind of forum, the numbers don't count, the muscular strength doesn't count. What counts is your intellectual strength. So even though we were in minority we managed to make sure that the new curriculum was not seen as disinterested [in social values]. *It was part of the transformation, it was part of identifying with democracy. It cannot remain neutral. Either you are with democracy or you are not with democracy* (Policy writer A – C2005).

The data show that the professionals involved in the production of documents were primarily

science education experts — not research scientists or industrial and agricultural scientists or even philosophers.

What policy choices were made by policy writers and how did professionalisation shape these policy choices made?

In this section we attempt to show how the professionalisation of policy writers shaped the choices made in the development of policy. Firstly, we show how the policy problem was constructed; secondly, how public consultation was used to re-legitimise government action; thirdly, what the policy rationalities and practices were and, fourthly what the influence of the rise and proliferation of independent consulting agencies was. Throughout the discussion we allude to policy choices not made, particularly as the choices refer to the development of scientific literacy in an African context.

Firstly, as part of the policy process, a team of education professionals — especially science educators — was established to treat the social problem. In proposing the 'treatment' (a new national policy) they also refined or defined 'the problem', and their definition was largely derived from the international professional literature in science education:

[There was a] *need to address the skewed education system as designed under the apartheid era. Secondly, there was a need to have a curriculum that acknowledged current — on a world scale — philosophy and thinking on education in general, and on science education in particular. I'm thinking of a whole lot of different levels. You know, the need to conceptualise what science really is, what kinds of knowledge you are dealing with ... as well as predominant learning theories like social constructivism ...* (Policy writer B – C2005).

There was a general agreement that Earth Science should become part of the natural science curriculum because internationally that's common. And for the rest we were influenced by the Australian curriculum documents, which is a well worthwhile one called Science Profiles. It has a very broad sweep, it takes in a great deal, and so we were influenced by that, and again you'll see the similarities of the titles of the four themes there (Policy writer C – LAC for C2005).

The point being made here is that in construction and redefinition of the 'problem' the writers stayed close to 'international best practice' that is mostly developed in first-world countries, and consistent with a neo-liberal emphasis on accountability and individualism . They did this not in a highly conscious way, but via their own professionalisation and professional commitments. Thus the conservative forces for discipline-based knowledge did not come directly from within South Africa, but indirectly through the overt political actions of scientists and conservatives in first-world countries. Their professionalism led to a science curriculum not greatly different from the overseas version though with real attempts to graft on African culture and ways of knowing.

Secondly, greater public consultation and communication in policy development are ways to re-legitimise governmental action. In the C2005 process, there were clear intentions to involve as wide a range of people as possible. The extent to which this was a strategy to strengthen policy legitimisation is evident in this description of consultation meetings:

... but the meetings, 90% of such meetings, were taken up with presentations and explanations of what things were and you can't expect people to make a response that is not clear. Well there were comments and submissions. There was input but there was no place to put it in. The process had rolled on (Policy writer A – C2005).

Policy writer B – C2005 spoke about how it appeared that a broad public was consulted but the practical realities of dealing with the submissions and time pressures weighed the process down:

> *There was a lot of response to the documents that were initially floated. ...While the education document's* [documents]*, the Curriculum 2005 preliminary documents, the promulgation of that, the technical committee* [documents] *in early 1997, the documents went out for public comment and debate and then there were responses brought back ... and the reference committee ... looked at that stuff and said there's too much work here and they just threw it away ... there was not a single thing in* [those submissions] *that had any influence on the documents that were promulgated, and so that part of the process was corrupted by the need for speed* (Policy writer B – C2005).

For the RNCS process, there was a renewed and strengthened effort to include public inputs and learn from lessons of the C2005 process. Policy writers L – RNCS and J – RNCS saw this as one of the pluses to the process:

> *One of the pluses I was happy about was the seriousness with which each comment was taken, I also wrote after the first draft, I don't know whether it was the reason why I was invited but I was really impressed with the way, there was a real effort to try and operationalize what people had said* (Policy writer L – RNCS).

> *I think that's what I just said, when you look at the challenges of having such a big group, I mean I don't know of any country that has done it in that way and I think the input of the public was very important, I think that those groups have been very important* (Policy writer J – RNCS).

Interestingly, for the C2005 and the RNCS processes there was no lobbying by pressure groups. Groups that responded to public inputs did so in a spirit of contributing rather than unsettling the process. Perhaps a key point here is that those who participated in the public sessions and provided critiques and inputs were usually science education professionals — from academia and unions much more than from teachers, or from professional associations of scientists, engineers, environmentalists, medical practitioners, and so on. In other words, major influences on the content and definition of scientific literacy of the Natural Science documents in C2005 and the RNCS were the knowledge and commitments of science education professionals (Ramsuran & Malcolm, 2004). The point being made here is that professionalisation acted neither as inside or outside force — but did influence what went into the policy documents from policy writers' own ideological standpoints, for example:

> *I think that many of us felt that science could only redress past injustices and poor levels of education where it would have been virtually made an injury through the apartheid system. Science could only redress that by offering good science, offering itself to those errs* [sic]*, what I mean is by making science accessible to those people. I think there was enough science conservatism on that LAC to say don't go in there with something that is a) accessible and b) science because by making it totally accessible you probably would not be doing science* (Policy writer C – C2005).

For the RNCS process in particular, forums were created, through the media and other publicity for the public to respond to the documents. These inputs — mostly from science education professionals — impacted on the RNCS policy document, especially after the first (disastrous) draft in 2001.

> *Now X and I we decided that we would continue working in September, October, November, December. We continued because we knew that the time they had given us was*

limited. So we managed to get most of the comments that were coming through because we had established a network. People were not only writing directly to the MPC but they were also writing to us. So when we went to the December meeting we had a plan of action on how to proceed (Policy writer N – RNCS).

Public consultation is crucial for revitalizing citizens' sense of political efficacy, and raising the quality of public debate, both essential to building consensus on complex matters and long-term development. Liberatore (2001) outlines three components in the contemporary relationship between knowledge and decision-making that are relevant to the relationships of professionals, the general public, and policy development. First, there is a paradox that science is increasingly called upon to legitimise political decisions even while claims to 'scientific truth' in the social sciences are under duress. Second, the growing call for greater citizen participation has potential to enrich relationships between decision-making and scientific knowledge, but also to further destabilize them. Third, knowledge production and decision-making, especially in areas such as health and environment (and hence in education), have shifted in part at least from the public to the private sector, though societal problems remain essentially public and/or impact on citizens' private lives. With the arrival of South African democracy, expectations of new ways of developing policy were high, including expectations of wide involvement but our data reveal that attempts at public consultation meant that dominant arrangements normalize people and events along the lines of certain interests with the more vocal and more 'professional' being able to influence the process and policy choices in particular ways.

Policy writers may or may not have been aware of the social regularities shaping their subjectivities and practices — interestingly the data reveal that no-one in the interviews was really questioning the basis in Physics, Chemistry, and Biology: the changes in content that they anticipated were Earth Science, applications of science, fuller discussions of the nature of science and some [undefined] notion of African science. Beyond that, their concerns were largely about purposes, and pedagogy: context-based learning, problem-based learning, constructivism ... In other words, their 'updating' of policy was more about purposes (broad social purposes, detailed learning purposes) and curriculum design than curriculum conceptual knowledge. There were complexities in the accounts of policy in that policy writers were less clear on the selection of conceptual knowledge. Although no one in the interviews questioned the basis for Physics, Chemistry, and Biology, there were no major shifts from the broad conception of the discipline internationally. There was a clear emphasis on other ways of knowing (Specific Outcome 8 – C2005), but the notion of African science was undefined. Also undefined was the notion of vocational education and what it would mean in the science curriculum.

Thirdly, in any policy process, new policy rationalities and practices develop, which seem to eclipse older types and styles of policy formation and expertise. Key instruments in the repertoire of the new professionals are the various techniques of accessing and gauging societal attitudes and sentiment. Decision-makers use 'crafted talk' that draws on polling information to convince the public that policy is contiguous with their moods and needs, even when the policy has its origins elsewhere (Jacobs & Shapiro, 2000; Shapiro & Jacobs, 2001). In the RNCS, even as it presented itself as a South African solution to South African conditions and hopes, a determined effort was made to consult international documents and frameworks:

I did Earth and Beyond and I looked around for curricula models. I looked at the Australian model, the New Zealand model and the British material and I looked at quite

strongly the American, what happened in America curricula statements that they had there. So really it came from trying to see ... we've become kind of conventional around these kinds of process, you know, look into those frameworks and look at how we can weave them into what we are trying to do here. But I think behind this is primarily between the American version and the Australians, I found the New Zealand one a bit different and then, ja we tried to make something for ourselves (Policy writer I – RNCS).

The point here is that these documents were not consulted merely as representative of expert professional opinion, but as ways of gaining access to and understanding the source country. The major influences on writers were their own professionalism and the ideology of liberation (a rationality of government) that surrounded them. Thus we focused on the professionalism interpreted in the context of liberation and modernisation. As discussed earlier, public consultation was one such rationality. In the next paragraph we discuss the rationality of using independent agencies in the policy process. The "main problem" is not to investigate if practices conform to rationalities, "but to discover which kind of rationality is being used" (Foucault, 1981:226). In this perspective, rationality does not refer to a transcendental reason, but to historical practices. It does not imply a normative judgement, since it refers to social relations. One isn't assessing things in terms of an absolute against which they could be evaluated as constituting more or less perfect forms of rationality, but rather examining how forms of rationality inscribe themselves in practices or systems of practices, and what role they play within them, because it's true that 'practices' don't exist without a certain regime of rationality" (Foucault, 1991:79).

Fourthly, a critical dimension of policy and the new professionalism is the rise and proliferation of independent agencies engaged in research on public policy, the crafting of policy and the influencing of public opinion. Such agencies can operate at national and global levels (see *inter alia* Bakvis, 1997; Denham & Garnett, 1999; Smith, 1991; Stone, 1996; 2000a; 2000b; Stone *et al.*, 1998; Struyk, 2002). They include think tanks, independent policy institutes and political consultancy firms. Increasingly governments, parties and other organizations have drawn on their services and in some cases become heavily reliant upon them for sourcing policy and its development.

For those that were involved in the process, their involvement was constrained by the rationalities of the government:

So, the people like me who worked in NGOs for much of our professional lives, we knew what the situation was out in the township, we wanted to be seen, to be heard. On the one hand we were trying to make useful constructive input and on the other hand some of us were writing letters saying please don't do it like this, it's not going to work (Policy writer E – C2005).

In the early 1990s, as the power of the apartheid regime was dissolving, the scale of popular protest waned and educational leadership fell into the hands of a few key individuals with organizational ties to the ANC (Unterhalter, 1998; Chisholm & Fuller, 1996). To remedy past injustices, reform required completely overhauling the education system. What was brought in to fill the void was a product of time and power struggles (Spreen, 2001). In the tide of democratic euphoria, NGOs and international aid agents were all trying to get in the door in South Africa and OBE was a likely candidate for their attention. The emerging government needed to legitimise itself through policy frameworks that had wide appeal and provided ready-made solutions. Appropriation of OBE was part of the government's need to demonstrate leadership and accountability and establish a coherent plan to dramatically change education.

In the development of C2005, overseas consultants such as Spady and Bray were heavily sponsored by aid programmes. In the RNCS, important work carried out by the Gauteng Institute for Curriculum Development, Research and Development in Maths, Science and Technology Education and other units were quoted in the guideline documents of the department of education as critical documents for consultation by the working groups. This added dimension was critical to the work of the professionals, the policy writers.

These 'independent' consulting policy agencies are not just sources of expertise, research, and advice. While some are notable for their ideological orientations, many become sources of political pressure themselves, propagating research on policy issues, setting policy agendas, and cultivating communities of opinion. This blurs the roles of research competence/input and policy advocacy. It poses questions of the accountability of non-official expertise in a democratic polity (Considine, 2002). For the C2005 process, international consultants participated in the Curriculum Co-ordinating Committees, Reference groups and Learning Area Committees but, with some exceptions, took a background role — possibly to legitimise the process as a local, internal initiative for a post apartheid South Africa. International consultants did however play a key role in legitimising[2] the problem and the problem group by participating in debates (in the media), workshops and national conferences:

> *So what you have John Bray, they invited him to speak at one of the conferences at SAARMSTE, his message was you know how many ingredients are common for you to put together for a curriculum to have outcomes, assessment criteria, performance indicators, you know what do you need but really what can it do without. Now I thought that was a very important message that he said to us* (Policy writer D – C2005).

Governmentality and professionalisation as regularities shift in influences, on the one hand setting policy agendas in line with the rationality of government and on the other by being drawn to a particular professional allegiance.

Conclusion

We have shown how the activities of professionals in the policy process and those influencing the policy process, to large extent, constructed the policy problem and shaped the resulting policy. Whilst the key actors (the various writers, consultants, and respondents) were South African science educators well attuned to overseas practice as well as South African conditions, the 'profession' extended well beyond South Africa, influencing policy directly and indirectly, through intended and unintended contributions for example in retaining the three broad areas of science (Physics, Chemistry, and Biology) and the struggles in defining indigenous knowledge. There was oblique mention of Indigenous Knowledge Systems in the policy documents and interview data but the underlying structure of this way of knowing was not made explicit. In the main, conceptual knowledge was localized rather than re-defined. The RNCS definition of scientific literacy is not greatly different from overseas versions such as the Australian one — which also incorporated Science Technology Society Education, applications of science, Nature of Science, and Earth Science, but remained centred on traditional topics and ideas from Physics, Chemistry, Biology, and Earth Science. Therefore the pressures for 'updating' were guided by overseas developments more than local conceptions of science, and equity was viewed mostly in these terms (access to the same kinds of science that exist overseas). In many ways, the C2005 definition of scientific literacy was wider than the RNCS definition. But even there, the writers' comments (in interviews) tend to imply a 'universal' definition of scientific literacy (which they sought to express better than anyone else had) rather than a localized,

contextualised one. We have demonstrated the power of international profession of science education, operating as a social regularity and illuminated the ways in which government and society use professionals, and the way in which professionals play out this role and responsibility.

We have argued that these contributions were not simply ideological, nor technical. They are part of a social regularity that is but one of the social regularities that comprise the dominant liberal social order, which constitutes that which has become visible and acceptable within that social order. Regularities are epistemological and ontological; they constitute both who the identified problem group is and how the group is seen or known as a problem; they anticipate the policy solution even as it defines the problem. As newspapers and television programmes and other analysts make socially visible this problem, academics both legitimise the designation (through journal articles, books, and conferences) and legitimise themselves (Scheurich, 1997). Through it all, the identification of the social problem and the labelling of the target group are critical to the maintenance of the social order. The largely unconscious and unquestioned ways in which professionalisation played itself out in the writing process is an inherent weakness in terms of African scholarship and the involvement of teachers in the policy development process. Following the framework used by Scheurich (1997) we observed how deeply the collective unconscious operates and how much was influenced by modernism and beliefs in 'one right (universal) answer' even when we seek to work in a different paradigm. We have shown how the theory we have used illuminated the data and how the data strengthens the theory. The insights offered by the theory when applied to the analysis of data have shown us how the two regularities (professionalisation and governmentality) intersect and coalesce in new and different ways.

Notes

1. Foucault wrote extensively on governmentality, developing the idea through a large number of publications. One of the earliest was Foucault (1976).
2. The international expert is another professional brought in to treat the problem. The point here is not to discount the leadership of experts but to indicate that their presence and practices (e.g. through workshops, publications, etc.) make the policy problem 'visible', and in so doing they define the problem as part of offering a solution to it.

References

Bakvis H 1997. Advising the Executive. In: P Weller, H Bakvis & RAW Rhodes (eds). *The Hollow Crown: Countervailing Trends in Core Executives*. Basingstoke: Macmillan.

Chisholm L & Fuller B 1996. Remembering Peoples Education? Shifting Alliances, State Building and South Africa's Narrowing Policy Agenda. *Journal of Education Policy*, 11:693-716.

Considine M 2002. The End of the Line? Accountable Governance in the Age of Networks, Partnerships, and Joined-Up Services. *Governance*, 15:21-40.

Denham A & Garnett M 1999. Influence without Responsibility: Think-Tanks in Britain. *Parliamentary Affairs*, 52:46-57.

Foucault M 1976. *The History of Sexuality. Volume I: An Introduction*. Translated by R Hurley. New York: Pantheon.

Foucault M 1981. *The History of Sexuality. Vol. 1*. Harmondsworth: Penguin.

Foucault M 1991. Governmentality. In: G Burchell, C Gordon & P Miller (eds). *The Foucault Effect: studies in governmentality*. Chicago, IL: University of Chicago Press.

Jacobs LR & Shapiro RY 2000. *Politicians Don't Pander: Political Manipulation and the Loss of Democratic Responsiveness*. Chicago & London: University of Chicago Press.

Jansen JD 1999. The school curriculum since apartheid: intersections of politics and policy in South

African transition. *Journal of Curriculum Studies*, 31:57-69.

Liberatore A 2001. From Science/Policy Interface to Science/Policy/Society Dialogue. *OECD Proceedings, Social Sciences for Knowledge and Decision Making*. Paris: OECD.

Popkewitz TS & Simola H 1996. Academic discourses, professionalization, and the construction of the teacher in the USA. In: H Simola & TS Popkewitz (eds). *Professionalization and education*. Helsinki: University of Helsinki.

Ramsuran A & Malcolm C 2004. Locating Scientific Discourses within Educational Discourses. Paper presented at the *12th Annual SAARMSTE Conference*. Cape Town,11-15 January.

Scheurich JJ 1997. Policy Archaeology: A New Policy Studies Methodology. In: JJ Scheurich (ed.). *Research Method in the Postmodern*. Washington DC: The Falmer Press.

Shapiro RY & Jacobs LR 2001. Source Material: Presidents and Polling: Politicians, Pandering, and the Study of Democratic Responsiveness. *Presidential Studies Quarterly*, 31:150-167.

Smith JA 1991. *The Idea Brokers: Think Tanks and the Rise of the New Policy Elite*. New York: The Free Press.

Spreen CA 2001. Globalisation and Educational Policy Borrowing: Mapping Outcomes Based Education in South Africa. PhD thesis in Comparative and International Education. New York: Columbia University, Graduate School of Arts and Sciences.

Stone D 1996. *Capturing the Political Imagination: Think Tanks and the Policy Process*. London: Frank Cass.

Stone D 2000a. Non-Governmental Policy Transfer: The Strategies of Independent Policy Institutes. *Governance*, 13:45-62.

Stone D 2000b. Think Tank Transnationalisation and Non-profit Analysis, Advice and Advocacy. *Global Society*, 14:153-172.

Stone D, Denham A & Garnett M (eds) 1998. *Think tanks across nations: A comparative approach*. Manchester: Manchester University Press.

Struyk RJ 2002. Transnational think-tank networks: purpose, membership and cohesion. *Global Networks*, 2:83-90.

Unterhalter E 1998. Stakeholding and school governance in South Africa: devolution, democratisation or disguise. Paper presented to the *World Comparative Education Conference*, Cape Town, 14-18 July.

Authors

Anitha Ramsuran is Lecturer in Science Education in the School of Mathematics, Science and Technology at the University of KwaZulu-Natal. Her research interests are in science education with a social justice focus. She is a Spencer fellow.

Clifford Malcolm is Research Associate at Deakin University, Melbourne, Australia. Until recently he was Professor of Science Education and Director of the Centre for Education Research, Evaluation and Policy at the University of KwaZulu-Natal, Durban.