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The politics of discourse: Marketization of the New Zealand science and innovation system

Shirley Leitch and Sally Davenport

ABSTRACT

The politics of change are both played out within the arena of discourse and dedicated to transforming that arena. In this article, we bring together critical discourse theory and political process theory in order to highlight the ways in which a process of discourse transformation can be deployed by organizations to effect political and economic change. In the process we examine the discursive interplay between the actors as well as the discursive constraints on action. The context for our analysis was the attempt by a national science funding body to transform the New Zealand discourse of science and innovation in order to significantly change the behaviour of multiple stakeholder organizations. This discourse transformation had internal and external dimensions and required a radical restructuring of the organization to create a structure capable of driving and supporting the desired changes.

KEYWORDS

change ■ discourse transformation ■ innovation systems

Introduction

The research choices that underpin a nation's future technological options are generally made within the context of the national discourse of science and innovation. In New Zealand – as elsewhere – the goal of national science policies has significantly changed over the past decade as governments have

sought to more directly harness the potential economic benefits of scientific discoveries in order to create 'knowledge economies'. As the discourse of science and innovation has become increasingly economic in character, research organizations have been required to demonstrate the 'relevance' of their research programmes to 'users' of the research rather than just the 'excellence' of their work to scientific peers. In this article, we explore the role of discourse as a 'strategic resource' (Barry & Elmes, 1997; Hardy et al., 2000) in the political struggle that occurred during a change process involving multiple organizations.

In 1999, the Foundation for Research, Science and Technology (the Foundation) set out to reorient the New Zealand science and innovation system so that it more directly and explicitly served economic goals. Organizational change is an inherently political process (Buchanan & Badham, 1999) and, arguably, the politics become more complex when the interests of multiple organizations are involved. In the case of the Foundation, New Zealand's universities and Crown Research Institutes had varying levels of interest in the outcome of the change process according to their degree of financial dependence on Foundation contracts. The national discourse of science and innovation became the site of a major struggle between these various organizations as they sought to implement, resist or comply with the change process. The discourse also constituted a prize in the struggle, in the sense that its transformation – or preservation – was a goal for all discourse subjects (Fairclough, 1992).

Discourse and change

There are numerous competing models of discourse, and the strengths and weaknesses of each model have been well rehearsed elsewhere (e.g. Fairclough, 1992; Heracleous & Hendry, 2000; Pennycook, 1994). In this article we are interested in the deployment of discursive techniques to effect social and economic change. Therefore, we have elected to draw primarily upon Fairclough's (1992, 1995) model of critical discourse analysis (CDA), which is designed to investigate the relationship between discourse and change. Fairclough (2003) argues for the importance of a focus on language to any analysis of contemporary social life while explicitly rejecting the notion that social life can be reduced to language or to discourse. He states:

One might see an enhanced role for discourse in initiating social change as implied in the characterizations of contemporary economies as 'knowledge economies', or contemporary societies as 'knowledge' or

'information societies'. The greater salience of 'knowledge' or 'information' in economic and social processes and changes amounts in practical terms to the greater saliency of language and discourse – this is the domain in which 'knowledge' is produced, distributed and consumed.

(p. 204)

Fairclough's three-dimensional CDA model encompasses the analysis of texts, discourse practices and socio-cultural practices. Texts include written and spoken examples of language use. Discourse practices include the processes of text production, distribution and consumption or interpretation. Socio-cultural practices involve considerations of power and ideology. Analysis of the three dimensions is closely interrelated so that, for example, a textual analysis may also involve investigation of the circumstances of its production and the power relationships between the discourse subjects. Therefore, in this article we analyse the texts, discourse practices and socio-cultural practices produced or invoked by the organizations that were subjects within the New Zealand discourse of science and innovation during a period of change.

One of the most pronounced features of the discourse transformation under study here is what Fairclough (1992, 1995) termed 'marketization'. This concept refers to the process by which a discourse is changed according to the market model. Marketization involves the introduction of economic factors as the basis for decision-making as well as deployment of the techniques of business such as marketing and public relations. The progressive introduction of market concepts into the discourse of science and innovation has a long history (Rip, 1997, 2000), but in New Zealand has its origins in the neo-liberal reforms of the public sector begun in 1984 (Boston et al., 1996; Evans et al., 1996; Walker, 1996). It was not until 1999, however, that full-scale marketization occurred. The global shift has been portrayed in a number of ways, including as a decreasing level of emphasis on knowledge and an increasing level of emphasis on relevance, and as a change from 'Mode 1' to 'Mode 2' knowledge production (Gibbons et al., 1994) or from 'pure science' to 'strategic science' (Irvine & Martin, 1984; Rothschild, 1972).

Pure science is science orientated towards extending the frontiers of human knowledge. Strategic science is science oriented towards solving existing or future practical problems. It is evaluated according to its ability to enhance the wealth and well-being of economies and societies and has given rise to a new vocabulary of concepts – such as 'investment', 'outcomes' and 'users'. These concepts are intended to indicate that science must serve

economic and, to a lesser extent, social goals and that it should be evaluated and funded in new ways. Examples of the use of these market concepts within the discourse of science and innovation are used to illustrate the nature of the shifts that have occurred. The political strategies deployed by research organizations, which ranged from passivity, to co-operation, to outright resistance, were reflected in their discourse responses and are also outlined.

CDA and political process theory

Political process theory, which conceptualizes organizational change as the outcome of conflict between competing groups, interests or value systems (Dawson, 2003), differs from more technical theories of change in that power relations are a central focus for analysis (Buchanan & Badham, 1999; Dawson et al., 2000; McLoughlin et al., 2000). Similarly, Fairclough's (1992) model of CDA differs from traditional linguistics by introducing the concept of power to discourse analysis and extending the scope of analysis beyond the text:

Discourse analysis is concerned not only with power relations in discourse . . . but also with how power relations and power struggles shape and transform the discourse practices of a society or institution.
(p. 36)

CDA's three levels of analysis also potentially address some recent concerns within political process theory. In a special issue of *Technology Analysis & Strategic Management*, devoted to 'political processes in management, organization and the social shaping of technology', editors Dawson et al. (2000) argued that the papers selected had demonstrated the need to expand our understanding of technology and political process:

The political process of packaging and presenting technology to wider audiences, of forming and promoting coalitions and reconstructing history to shape current interpretive frames, are all identified as shapers of this complex dynamic. Importantly, it is shown how the focus should not simply be on the internal aspects of change but also, on how the external context forms part of the political process.
(p. 14)

The CDA framework of analysis allows both a focus on specific instances of change while also positioning change within the broader

socio-economic context. Thus, we would argue, CDA with its focus on change, concern with power relations, and emphasis on context is not only compatible with political process theory, but also has much to offer as a methodological lens on organizational change. In this article, we deploy CDA and political process theory to analyse a change process that involved the internal restructuring of an organization to support an external discourse transformation involving multiple organizations, which was driven by the political and economic goals of the government.

The research project

The broader research project on which this article draws was entitled 'Discourse change and strategy at the Foundation for Research Science and Technology'. This project examined the Foundation's strategic use of communication during a change process that was embarked upon in 1999 and continued until 2004. The project took account of the discourse practices of a variety of interrelated organizations including the nine Crown Research Institutes (CRIs) and eight universities that are New Zealand's major research organizations. The research project was begun in 2000 – at the invitation of the Foundation – and was extended in 2001 to include a detailed case study of the significant shifts in research direction and funding between the Foundation, a CRI called Forest Research (FR) and members of the forestry industry. During the first phase of the project, semi-structured interviews were carried out with 42 individuals. Interviews lasted for between one and three hours and were transcribed in full. Current Foundation staff interviewed included the Chair of the governing Board, the Chief Executive, all of the senior management team and all but one of their direct reports, as well as a sample of other employees (designated as 'FT' after quotations). Four managers who had previously worked for the Foundation in key senior positions were also interviewed. Twenty-three representatives of 13 organizations deemed 'stakeholders' by the Foundation were interviewed with almost all of these interviewees having a direct communication responsibility for their organization with the Foundation (designated as 'SH'). As part of phase II, five key representatives of forestry industry organizations were interviewed (designated 'FI'). Quotations from representatives from Forest Research are designated 'FR'.

A significant volume of printed and web-based material – many thousands of pages – augmented the interview data. From this extensive collection, texts were selected for analysis on the basis that they were created at points in time when key discourse change decisions were made. These texts

included official Foundation publications such as annual reports and statements of strategic intent, discussion documents released to the public during the transition, Foundation presentations to stakeholders, Foundation management documents, transcripts of a Foundation-wide email discussion forum on the change process and a range of communication and media material. For phase two, forest industry and FR documents were added to the data set. A thematic analysis was conducted on the interview transcripts and the written texts by both authors and by a research assistant. Seven major themes and 46 sub-themes were identified. For the purposes of this article, only three themes – Communication, Stakeholders and Strategy – provided the focus for our analysis.

The origins of marketization: From excellence to relevance

The creation of the Foundation in 1989 signalled the beginning of the deliberate marketization of science and innovation by a New Zealand government with a neo-liberal economic agenda. The purpose of the Foundation was to ‘purchase’ science outputs from research organizations according to government priorities. In 1992, as part of this same change agenda, the government departments responsible for conducting research were recast as 10 (now nine) CRIs. In the process, their formerly discipline-based research programmes were reoriented so that they were more directly linked to economic, environmental or social sectors. The CRIs were set up to mimic the private sector model of corporations, intended to generate value for their shareholder government ministers and governed by boards of directors.

The Foundation may have been set up to operate in a market environment in which it purchased science from competing research providers but in practice it initially operated primarily as a fund manager. Indeed, the major goal identified in the Foundation’s 1989 *Statement of intent* was ‘To establish an organisation to allocate funds to research organisations’. Moreover, the Foundation did not have an explicitly economic focus. As one CRI manager explained:

What the Foundation achieved through to 1993 – its first great tranche of benefit – was by basically refusing to fund poor quality science. It wasn’t even a relevance argument; it was a quality argument.

(SH1)

Foundation managers saw enhancing the quality of New Zealand research as their primary goal because of perceived variable quality problems with the predecessors of the CRIs. The discourse of science and innovation

during this period of the Foundation's history was dominated by the concept of 'excellence'. Thus, the Foundation was still placing more emphasis on the values associated with pure science rather than on those associated with strategic science (Rothschild, 1972).

In 1995, the Foundation made its first significant shift away from the 'excellence' focus by insisting that research projects must not only be of international quality but must also have 'relevance' to research 'users'. A Foundation manager explained that:

There were two criteria: scientific excellence of the work and the relevance of the work. We use scientific excellence as a hurdle if you like. So if you get above a certain level, the funding is based on the grading it got for relevance.

(FT1)

The rise of relevance was reinforced by perceived problems with peer review. The small size of the New Zealand science and innovation system was said to have led to grade inflations and cronyism and these were seen to be hampering the Foundation's ability to delineate between proposals. Thus, the goal of the 1995 *Statement of intent*, which introduced the relevance concept, was 'To build integrity in how the organisation allocated funds and satisfied the *Public Finance Act*' (FRST, 1999: 7). This 'relevance is good' phase saw the appointment of user representatives on to the advisory committees that recommended funding decisions to the Foundation Board. In practice, however, 'relevance' was primarily determined by letters of support from users attesting to the potential usefulness of the research that were submitted with the research proposals. A Foundation manager described the shift to this phase:

When it was simply science you started at the top and worked your way down and when you ran out of money you stopped. With relevance they introduced a concept around science called 'fitness for purpose' because they didn't get a weighting towards the really high tech, really fundamental gee-whiz science because sometimes you might have something [that] was relevant to an industry but the solution wasn't high tech necessarily, it wasn't basic science. So they introduced 'fitness for purpose' which said the science has to be fit for the purpose.

(FT2)

Thus 'relevance' was initially determined by its fitness for purpose for 'users'. However, while the users of the research were in a good position to

judge whether or not they could make use of the research, they were not necessarily going to have a long-term perspective on what that purpose should be. Users soon learned that they could obtain funding for projects that were more akin to consulting than to scientific research simply by emphasizing the relevance of the project to industry needs. Consulting research was also attractive to the private sector and so, by engaging in this kind of research, CRIs were able to tap into both public and private sector sources of funding.

By the late 1990s, senior managers inside the Foundation were increasingly recognizing that the term 'relevance' was being interpreted by research organizations and research users in ways that were considered undesirable. This realization marked the beginning of the 'relevance can be bad' phase in which Foundation managers began to talk about the 'relevance trap'. However, the Foundation had just been through a very public process of shifting towards relevance and so had to carefully manage this new shift or risk losing credibility. In what can be seen as a move to manage the external relevance story line, relevance was redefined into two types: strategic and tactical (Rothschild, 1972). Strategic relevance was 'good' and oriented towards the long term. Tactical relevance – defined as delivering immediate benefits to identifiable users – was definitely 'bad'. The following quotation from a Foundation manager captures this phase:

[The providers] were listening to industry needs but those industry needs were very much now and they weren't future-focused at all . . . We've called that the relevance trap. So in '95 when we introduced relevance as the dominant criterion, it got interpreted in that way [even though] we went round saying, we need to do the research now that will underpin what's needed in 15 to 20 years time. But people had to demonstrate relevance, and you can demonstrate relevance more easily by getting, particularly a conservative sector, to talk about their needs now and showing you're meeting them. We did push the research spectrum down toward immediate needs in a way we didn't intend to. So in the '98/2000 round, that's one of the reasons we shifted from talking about relevance to delivering outcomes. That was quite deliberate because they [outcomes] had that longer-term focus of stretch.

(FT3)

From this point onwards, the word relevance was phased out of the Foundation's discourse. As a senior Foundation manager appointed in 1999 stated, 'relevance hasn't been the word we've used in my time obviously –

that was '95 through to '99' (FT4). The stage was thus set for the latest round of marketization, which is the focus of this article.

From relevance to investment

The Foundation's 1999 *Statement of intent* marked another major shift in the discourse of science and innovation. In contrast to the 1989 and 1995 Statements, which had placed emphasis on the science itself and on robust processes, the goal of the 1999 Statement was 'To embrace a new role as a leading investor, facilitator, catalyst and integrator which gives life and meaning to the Government's vision and goals for the Science Envelope' (FRST, 1999: 7). Publicly funded science was now to be a tool for achieving the government's social, economic and environmental objectives. The outcome the Foundation was charged with producing for the government was 'Wealth for New Zealand through delivery of excellent research of benefit to New Zealand.'

Following the release of the 1999 *Statement of intent*, the Foundation reframed its primary purpose as managing 'investments' on behalf of the government. The three other roles that the Foundation had identified for itself within the science and innovation system – 'facilitator, catalyst and integrator' – were downplayed. In order to create the organizational framework that would support the new investment discourse, the Foundation launched a major process of internal restructuring. Simultaneously, the Foundation entered into negotiations with its research providers – particularly the CRIs – to move their programmes into the new structure. Thus, the Foundation's discourse transformation had both internal and external dimensions to it. The reasons for change were not, however, always well understood and the direction of change not necessarily supported by those it affected most. The change process itself was driven by the Minister of Science and Technology, who had appointed a new Foundation Board charged with effecting significant shifts in stakeholder behaviours.

Internal change

The Foundation's staff were involved in the change process through a variety of mechanisms including organization-wide meetings, individual meetings, calls for submissions, a cross-organizational change team involving staff at different levels of seniority, and a 'Change Zone' set up on the Foundation's

Intranet. Consultation and information sharing about change occurred continuously over a 10-month period but some Foundation staff expressed a high degree of suspicion and a sense of powerlessness in relation to the process:

It was obvious – possibly only to the most cynical of us – that it was a discussion so we could be seen to be doing the right thing but really the decisions had been made and we were going to have to live with it.

(FT5)

A senior manager within the Foundation indicated that staff were justified in believing that change was inevitable. He argued, however, that the consultation process was genuinely designed to involve staff in the change process, that the restructuring plan evolved over time and that it did rely on input from staff:

The change has happened as a kind of a slow revealing of meaning. In other words we started with the theory of how the organisation was going to work and then we asked ‘so what does this mean, what does this mean?’ as we’ve gone through the process. And it’s not as though we had the complete model of how everything was going to work right from the start . . . So that’s why I say it’s been a bit of a slow revealing of meaning.

(FT4)

According to senior managers, the Foundation had not pre-determined how the investment discourse might be put into operation in practice, only that it should be. In calling on staff to contribute to the process of organizational redesign, however, the Foundation first had to persuade staff that a new structure was needed:

People could understand the rationale for the change in direction – strategic direction – but they couldn’t understand the rationale for the change in structure and they didn’t understand why the structure needed to change in order to effect the strategic direction.

(FT6)

Gaining staff support for change was made more difficult by the fact that the structure that was eventually selected saw a new layer of managers appointed over existing managers and involved significant changes in job content and focus. Staff were, in effect, asked to contribute positively to a

process that might benefit the Foundation but negatively impact on their own status or job satisfaction. Both during and after the change process, there was a high degree of staff turnover, which was, perhaps, an indication of the fundamental nature of the shift from 'relevance' to 'investment'. Prior to 1999, staff turnover stood at around 12–14 percent per annum. This rose to around 25 percent in 2000 and 19 percent in 2001. By 2002, staff turnover had dropped back to 11 percent. Three years after the change process began, only 15 of the 1999 staff of 47 remained. Staff numbers had also increased to 69 to deal with the increasing scope of the Foundation's activities. Staff resignations enabled the Foundation to appoint staff with skills that were more aligned with the new investment-oriented mission. However, there is no doubt that the Foundation also experienced a significant loss of institutional knowledge.

In 2000, the Foundation restructured into four functional areas: Portfolio Management; Policy, Strategy, Evaluation; Investment Operations; and Corporate Development. Policy, Strategy, Evaluation was given the role of developing the Foundation's overall 'innovation strategy' and its evaluation framework. Portfolio Management was charged with developing the research strategies for each of the 26 Strategic Portfolio Outlines (SPOs) into which the Foundation had segmented what it termed 'the innovation market'. Investment Operations was set up to ensure that the Foundation delivered against the SPOs, which involved determining the nature of the investment processes (e.g. contestable, negotiated or tendering processes) and managing the relationships with research organizations. The Corporate Development group included the internal operations of the Foundation such as information systems, human resources and financial services.

The old structure had divisions demarcating the three main types of funding schemes managed by the Foundation with little interaction between the fund 'silos'. Under the new structure Foundation staff were charged with managing portfolios of investments across all of the schemes rather than allocating funding. The various funds administered by the Foundation became known as 'investment instruments': the mechanisms through which the Foundation hoped to assist the transformation of New Zealand into a 'knowledge economy'. The term knowledge economy was used interchangeably with the somewhat broader term 'knowledge society'. However, discussion in relation to this concept inevitably focused on economic issues such as New Zealand's declining status within the OECD GDP rankings. For example, under the heading 'The dynamics of the knowledge society' the Foundation's CEO mentioned only economic issues such as the lack of investment in research and development by New Zealand companies, the dependency of the nation on export income and the small size of the local market

(Thompson, 2000). The Foundation's central mission was now to address these economic issues by 'investing in innovation'.

External change

At the same time as it was restructuring internally to support its new investment focus, the Foundation was undertaking an external change process with its research providers. In 2000, the Foundation released a paper entitled *Investment approach for economic innovation and FRST [Foundation] investment change process* in which it announced that:

The Government has articulated a strong desire to transform New Zealand's economy and sees research, science and technology (RS&T) as one of the key drivers in making this happen. The Foundation, together with the entire RS&T system, has a critical role to play in this process.

To help achieve this transformation, the Foundation intends to make a substantial contribution to the generation of wealth through investing in innovation and by facilitating coordinated change. New Zealand produces excellent science outputs but its performance has been uneven at transforming this knowledge into wealth. The Foundation will play a key role in improving this performance through greater partnering with other government agencies, the private sector and research providers.

(p. 1)

The document went on to outline the way in which the investment discourse would be put into practice with the Foundation's research providers. As occurred with the internal restructuring process, the CRIs and universities were presented with the nature and direction of change as a *fait accompli* but were invited to comment on the 'approaches' to implementation offered by the document.

The Foundation advised its research providers that it would not be calling for competitive proposals for the year 2000/01. Instead, the Foundation invited providers to review and substantially renegotiate their research in order to form portfolios that would contribute to the new wealth creation focus. This decision provided short-term financial certainty to research organizations because their Foundation funding was assured for a further year. However, the renegotiation process introduced longer term financial uncertainty. In particular, the Foundation (2000) introduced the

concept of ‘disinvestment’, which was framed as a logical component of the investment strategy, into the renegotiation process. The Foundation intended to review its portfolio to identify areas in which it should not remain the lead investor stating that ‘The disinvestment process is designed to assist in boosting private sector involvement in research’ (2000: Section 2: 2). An ‘exit strategy’ model was proposed that gradually reduced the target programme’s funding over a number of years. Disinvestment – a word that signalled possible loss of funding – proved to be the most controversial element of the new investment discourse. In late 2000, the Foundation Chairman explained that:

Disinvestment is a reality in any innovation system. It was important that we had a dialogue about how disinvestment and the transition to new investments should take place in the unique NZ innovation system. Why did we use the word ‘disinvestment’? Same reason we used investment in the first place – to clearly and unequivocally address a major issue that affected all stakeholders. We wanted to move the conversation forward to be future and action focused. Our strategy on disinvestment was communicated widely to signal that the issue was to be addressed and to commence a system-wide conversation about how disinvestment and transition should be undertaken . . . When we started to use the word ‘disinvestment’ we found that it could be misinterpreted and misused by people in a manner not intended by the Foundation. As a result we quickly progressed the discourse to a new level that built upon the ‘disinvestment-reinvestment’ strategy but made the specific term ‘disinvestment’ redundant.

Thus, when stakeholders deployed ‘disinvestment’ as a political weapon to defend the status quo, the response was to retire the term from the Foundation’s discourse. However, disinvestment under a variety of new headings, such as ‘redirecting funding’ continued to be an important component of the investment strategy and discourse.

Research organization responses

The backlash experienced by the Foundation against the word ‘disinvestment’ was an example of the discursive strategy of resistance used, for the most part, by the CRIs to oppose this aspect of the change process. In contrast, many of the universities remained passive unless required to act by the Foundation. The Foundation viewed this passivity as a reflection of the different style of research management within universities:

Now universities wouldn't necessarily select whom they would put up on the basis of what we were requiring. It would be on the basis of who had the power in the university and that remains, that sort of flavour. It's not so much what we require as what the university wants to promote. Then in the situation where the university isn't required to change its portfolio, they're unlikely to do it because of those internal politics.

(FT5)

It was no coincidence that the passive response was characteristic of organizations not initially targeted for disinvestment and who were least reliant on Foundation funding.

The more commercially oriented CRIs and universities saw some advantages in the Foundation's new investment orientation, which might lead to a longer-term view of research programmes accompanied by longer-term funding contracts. Investment was welcomed – it was disinvestment that research organizations opposed. Their resistance was, therefore, specific rather than universal and was aimed only at the aspects of the change process that might damage their financial interests:

I'm quite positive about the concept of understanding the investment and where the outputs and outcomes of Government [will arise] in terms of the future and having a much more structured and negotiated process to actually get some clarity around what is a reasonable amount of government investment in research. So the intent is there.

(SH2)

However, by far the most common discursive response took the form of public denouncements of the investment terminology itself as an inappropriate metaphor to apply to the science system. Investment and related 'market-like' terms such as 'portfolio' were conflated to imply that the Foundation intended to act like a merchant bank and impose the analytical tools used in the stock market to the selection of investments in the science system. Despite repeated denials from the Foundation that this was not the intent, resistant stakeholders widely promoted this interpretation:

An investment strategy for science is a vastly complex, multi-disciplinary field. And to try to shoe-horn it into an investment strategy model drawn from the private sector tangible asset management is farcical.

(SH10)

It isn't a biscuit factory. It may be trite to say science is different, but there are some creative elements to the whole affair that mean it's not like money in plus wise investment equals money out.

(SH6)

Stakeholder representations of the Foundation's investment discourse, particularly the 'disinvestment' component as outlined above, were successful in modifying some of the Foundation's terminology. This discursive resistance was politically motivated, intended to convince powerful stakeholders, such as the Minister of Research, Science & Technology, that neither the changes, nor the need for them, were universally accepted. Direct resistance through failure to comply with Foundation directives would have cost research providers a significant proportion of their funding. In the face of this funding threat, providers adopted a political strategy of directly lobbying those who set the Foundation's policy framework and budget.

Relevance reincarnated as horizons

The changes to the science system were initiated with a negotiation year which was used by the Foundation to effect significant movement in the research portfolios of providers. Negotiations occurred within a highly charged political context, which saw stakeholders deploying a range of discourse strategies including public attacks on the Foundation. Forest Research (FR), which as its name implies was the CRI responsible for most of New Zealand's forest-related research, was an early target for Foundation attention and for disinvestment (Davenport & Leitch, 2002). If the Foundation was to effect the changes it sought – as opposed to simply reducing funding to a CRI it viewed as insufficiently focused on long-term wealth creation – then it required both FR and the forest industry to engage positively with the change process. The Foundation's interactions with FR saw the introduction of a new concept into the investment discourse – 'horizons' – which played a significant role in the co-creation of a new strategic direction for forest industry research that was acceptable to all.

The horizon concept was, in many ways, a more sophisticated reincarnation of the now discarded 'relevance'. Consulting group McKinsey & Company introduced the forestry sector to the concept but it originated in the book *The alchemy of growth* (Baghai et al., 1999), a manual for organizational change. Horizons were used to categorize supposedly discrete stages of growth: the embryonic, emergent and mature stages of a business's life.

Horizon 1 (H1) referred to extending and defending core businesses, Horizon 2 (H2) involved building emerging businesses and Horizon 3 (H3) was the domain of creating viable future options for new businesses. The authors described a cascade of horizons and argued that:

To create more robust and healthy business pipelines, the most successful growers identify three horizons for each of their businesses . . . Initiatives in the three horizons pay off over different time frames. However, focusing on Horizon 1 and delaying time and energy investments in the others is dangerous. It confuses the task of stewarding a pipeline of business creation with short-, medium-, and long-term planning. The goal of the three horizons approach is to develop businesses in parallel.

(Baghai et al., 1999: 7)

During the 1990s, McKinsey & Co had acted as consultants to Carter Holt Harvey (CHH) and Fletcher Challenge (FCL), the two large corporations that dominated New Zealand's forestry sector. The terminology had permeated these two companies and then migrated to the Forest Industry Council (FIC) and FR also. With representatives of both CHH and FCL on FIC's Board, it was not surprising to find that the horizons language became a part of the user strategy developed by FIC in response to the Foundation's calls for change.

The horizons terminology was so pervasive throughout the forestry sector and FR that it was naturally used in conversations and interactions with the Foundation. As a FIC board member remembered, 'we used it in our presentations to [the Foundation] and in the early drafts of the strategy when we were talking to them about what should the ratio of government to industry funding be if it's an H1 business versus as H3 business' (FI). Even though there were variations in understanding of the terminology, which evolved over time, it seemed to provide a common platform upon which to discuss the relevance issue. For example, an FR manager described the FIC strategy frameworks:

The H1, H2, H3 is not pure McKinsey and this has been a slightly [adapted] version. It also depends on which particular people you're talking to as to what it means. The sort of McKinsey that is in there is, I guess, the H1 existing clients and existing products but this is actually taking more of a time-frame approach and it's also subtly a high risk, low risk, medium risk type. So it's got all those things mashed and blended into it. But it doesn't matter because I think people get a

feeling for what it means anyway. And, of course, the Foundation was using similar words like . . . ‘solution development’ or ‘adding value’ or ‘business as usual’.

(FR)

The horizons concept was thus adopted and subsequently adapted by the Foundation because it formed a point of connection with this research provider. A Foundation manager described how the concept entered the Foundation’s investment discourse:

A meeting with FIC was the first time I came across H1 . . . We’re using H1, H2, H3 as purely economic horizons so it’s nothing to do with science, its pure economics. My interpretation of H1, H2, H3 was actually science-based when I first heard it from FIC but I suspect that they were using it in terms of economic horizons so we’ve moved into line with the economic horizons.

(FT7)

Foundation managers increasingly recognised that this concept might provide a useful framework to reinforce the desired future orientation of the research they wished to fund and that using a language that was commonplace (with at least some) users was potentially less likely to be misunderstood or resisted.

The use of the horizons terminology by the Foundation in 2000 marked a new, more sophisticated phase for the relevance concept by providing a framework that divided research into three relevance-like bands, replacing the strategic and tactical categories. This phase, can be characterized as ‘relevance reincarnated as horizons’. Guidelines published by the Foundation in 2002 for the development of research proposals used horizons as a way of categorizing research in relation to economic outcomes (Figure 1). Rather than adopting the McKinsey definitions, the Foundation had developed its own version of the economic horizons and introduced a fourth category, H0, for the environmental and social research that supports economic outcomes.

The horizons version of relevance marked a fifth (but possibly not final) stage in the evolution of the discursive usage of the term by the Foundation (Figure 2). The introduction of the relevance concept marked the emergence of a market orientation for the New Zealand science and innovation system. The metamorphosis of this concept can be seen to reflect ‘systemic learning’ about how to use discourse strategically to effect change. Over a relatively brief period of time, relevance evolved from an apparently simple concept, that was introduced and quickly elevated in status above the traditional

The economic horizons capture the intended target of the research in terms of economic outcomes. They should relate to the New Zealand situation and the generation of offshore revenues into New Zealand.

Horizons definitions:

H0: Research targeted on sustaining the economic model in terms of its environmental and social impacts. This will not result in new revenues per se.

H1: This is research that is primarily extending and defending the current New Zealand business models, often business-as-usual work. It would also encompass the application of new technologies to significantly improve the competitiveness of existing New Zealand sectors, e.g. through efficiency gains, enhanced quality or product safety issues. Horizon 1 is about supporting those large New Zealand businesses that are generating revenues and profits today.

H2: This is research that is about building emerging businesses, adding value to New Zealand export products and services and stretching the boundaries but it is still largely operating within existing paradigms. Horizon 2 is often about building new capabilities and encouraging entrepreneurial behaviour.

H3: This is research that seeks to create completely new options for future economic growth for New Zealand, often transformational in nature leading to new platforms of knowledge or embryonic business opportunities beyond current paradigms.

Not relevant: Research that is not relevant to economic outcomes.

Figure 1 Economic horizons

Source: Foundation for Research, Science and Technology (2002: 32–3)

scientific measures of research excellence, through a phase when it was perceived to have been misinterpreted, becoming a 'trap' in some forms, and then was supplanted by outcomes. However, outcomes proved to be too ephemeral as a way of categorizing research, so the Foundation resurrected relevance in the more complex form of horizons, a term that was already in common usage by some research organizations and 'users' and was, therefore, less likely to be resisted by them.

Conclusions

The evolution of the relevance concept illustrates the role that discourse can play in change processes. Concepts are deployed to effect change but their deployment can be resisted as other discourse actors deploy discursive strategies of their own. With its rise and fall and reincarnation, the changing usage and apparent meaning of the relevance concept reflects the semantic instability that can arise as the discursive interplay between actors shapes and manipulates the actual path of change. In this case, the most recent shift to a much more complex and richer understanding of relevance, described

Year	Publication	Usage	Relevance phase
1995	94/95 Foundation Annual Report, p. 4.	[The Foundation manages] a number of complementary funding schemes that each occupies a different part of the basic-strategic-applied research spectrum and contributes to the mix of benefits – new knowledge, new skills, innovation – that New Zealand seeks from its investment in research, science and technology.	Pre-relevance Traditional view of the role of science.
1996	Foundation News, 24 May, p. 6.	[The Government] required a change in the way applications were assessed this year, with a benchmark for scientific excellence being set . . . above which relevance rather than scientific excellence was to be the primary criterion.	Relevance is good Relevance elevated as the differentiating criterion above scientific excellence. Relevance seen as 'fitness for user purpose'.
1996	95/96 Foundation Annual Report, p. 6.	Significant changes include [the] use of ' relevance ' as the primary criterion for selecting between proposals of satisfactory scientific or technological merit.	
1997	96/97 Foundation Annual Report, p. 4.	The new Minister . . . has reinforced and extended the increasing emphasis now being placed on the relevance to New Zealand and New Zealand enterprises of the research funded by the Foundation. The agency is to develop a strategic, far-sighted and pro-active strategy for focusing on the achievement of . . . ' outcomes ', the longer term consequences arising from the use of the outputs.	Relevance and outcomes are good Relevance still used generically but 'outcomes' are introduced.
1999	Guidelines for PGSF contracts, 1999/2000, October, p. 5.	Delivering Outcomes. The major focus is on the potential contribution of what is proposed toward achieving outcomes of benefit to New Zealand (strategic relevance). Relevance of a proposal can be defined as the potential contribution to achieving the Target Outcomes . . . and/or the likely contribution to outcomes desired by end-users . . . Where research is directed toward identifiable sectors, another aspect of relevance is tactical relevance – the relationship between the provider and end-users . . . and focuses on how benefits will be delivered by working with users.	Relevance can be bad Outcomes take prominence over relevance. Two types of relevance are defined. Difference between strategic relevance and tactical relevance introduced.
2000	Foundation Investment Change Process, Appendix p. 9.	[The proposal] should relate to providing the underpinning science platforms (i.e. skills that are applied across a range of 'R&D horizons ' – H1, H2 and H3) and, in the areas of innovations that are more future-focused, to adding value or creating new opportunities (i.e. in the H2 and H3 areas) . . . The private sector partner's contribution to the programme may be targeted towards R&D that is more in the H1 realm.	Relevance is dead, long live horizons First official use of the horizons terminology further developed in later documents.

Figure 2 The evolution of relevance as reflected in extracts from Foundation publications

mainly in terms of economic horizons, could be perceived as representing stabilization of the relevance concept, albeit using different terminology. It can also be perceived as the latest outcome of an ongoing process of political negotiation between the various actors that has – for now at least – resulted in the co-creation of a mutually acceptable definition of relevance. The complexity of the horizons concept, in contrast to the much simpler earlier interpretations of relevance, created a richer platform for argument and negotiation between the various players and eventually provided a framework within which the various positions, interests and rationales for investment, research provision and use, could be accommodated.

Discourse was a very powerful strategic resource deployed by the different players in their explicit and covert strategies to wield influence over the Foundation's change process. For those attempting to initiate – or resist – change, this study highlights the importance of the negotiation of systems of meaning through discursive interplay. Focusing attention on the 'texts of change' by considering, for example, their impact on those that need to be engaged with the change process, and potential issues ripe for resistance, may therefore be an important step in implementing a change process. For those that wish to resist change processes, identifying and exploiting vulnerabilities in the central change discourse, as some of the research organizations were able to do with the 'investment banker' and 'disinvestment' aspects of the Foundation's investment discourse, potentially provides a strategic resource to increase the resistant player's power in the subsequent change negotiations. As indicated in this study, such a discursive resistance strategy may, in fact, be a more effective approach to opposing change, than non-compliance.

Discourse transformations, such as the one sought by the Foundation, are not, however, solely about changing language or about creating new kinds of texts. Discourse transformation also involves effecting change in the discourse practices associated with the creation, distribution and consumption of texts. For political process theory, discourse is thus central to the 'packaging and presentation' of change efforts and is also inherently a part of the politics, context and substance of change (Dawson, 2003). In this case, the Foundation underwent a radical internal restructuring process that would support and give substance to the new investment discourse. Completely new funding processes were implemented, giving external effect to the investment discourse, and radically altering the operating context of a range of other organizations. Discourse transformation, therefore, can have far-reaching implications for change politics and power relationships. Thus, this study demonstrates the usefulness of CDA, and indicates its suitability as a methodological lens for inclusion in the suite of research approaches used by political process theorists.

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