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Introduction

There appears to be general consensus among governments, universities and industry that engaging with the entangled problems of the postmodern age requires creative interdisciplinary thinking and approaches (Gibbons, 1998; Nowotny et al., 2001). Debates rage, however, about how best to reconstruct research environments within and beyond the university sector that will facilitate this creative synthesis of disciplinary, professional and industrial knowledge. A number of authors have sought to move conceptualisations about knowledge construction and research beyond binary notions of Mode 1 (pure, disciplinary-based, accumulated knowledge) and Mode 2 (applied, contextualised and transdisciplinary knowledge) (Fuller, 2002; Rip, 2004). However, further investigation is needed to re-imagine the future dimensions of cutting edge research and how we might prepare existing and new researchers to engage effectively in this unknown terrain. So too, there has been very little exploration of what these features of future research activity might mean for the identities and lived experiences of researchers (Brew, 2001; Henkel, 2000; Lucas, 2006). Indeed, we know very little about the current transitions early career researchers are making into the world of research and whether their employers are convinced they have the skills to rapidly adjust.

This article seeks to apply the post-colonial notion of the ‘contact zone’ to rethink 21st century research and the kinds of knowledge, attributes and ways of being researchers will need to operate effectively in this new research environment. In particular, it draws on notions of difference as productive and explores the cultural exchange and new integrated knowledge creation that is possible within the research intercultural contact zone. It outlines the many cultural layers researchers need to engage with in

order to wrestle creatively with the intertwined social, environmental and economic problems of our postmodern era. The article demonstrates how post-colonial theory allows investigation of the innovative deconstructive possibilities of working at or beyond the limits of current knowledge. It also argues that post-colonial theory opens up the opportunity to examine the symbolic violence, exploitation and assimilation that is part of the current research environment. This new conceptual framework, therefore, has significant ramifications for research training and for ongoing professional development for researchers.

Constructions of research

Current constructions of research acknowledge the necessity of interdisciplinary approaches (Klein, 1996; Nowotny et al., 2001); the impact of globalisation (Marginson & Rhoades, 2002) and the significance of university and industry links (Harman, 2001). The dominance of neo-liberal drivers that position research in an instrumental fashion as serving the knowledge economy (Gibbons, 1996; Marginson & Rhoades, 2002; Nowotny et al., 2001) and emphasise accountability and performance are also delineated. Indeed, there have been a number of studies of the operations and consequences of accountability exercises such as the RAE in the UK (Henkel, 2000; Lucas, 2006) and the Performance-Based Research Fund (PBRF) in New Zealand (Duncan, 2007), particularly arguing that these exercises have reinforced hierarchies between and within universities and resulted in less innovative research.

Attempts have also been made to go beyond Gibbons' (1998) binary characterisations of Mode 1 and Mode 2 knowledge. For example, Rip (2004) has argued that there are three interconnected modes of knowledge production. These include traditional, applied professional knowledge and skills; interdisciplinary and intercultural knowledge where knowledge patterns are recognised across different disciplines, population groups and locations; and knowledge produced in controlled environments like labs or experiments (Rip, 2004). Researchers working in teams need to develop the capabilities of working across and between each of these three modes of knowledge production. So too, Marginson and Rhoades (2002) sought to capture the interconnected nature of contemporary higher education in their 'glonacal agency' framework, which emphasises the reciprocal flows of influence and agency of global, national and local actors.

However, some of this research continues to rely, often unconsciously, on modernist assumptions about the nature of knowledge and research, which are no longer adequate in our postmodern age and which constrain the possible ways in which research can be portrayed and engaged with. Modernist interpretations of knowledge "proceed from the belief that objective scientists from particular disciplines undertake neutral investigations" and that this knowledge is produced in an accumulative fashion (Tierney, 2001, p. 355). The key features of modernism include a "deterministic logic, critical reasoning, individualism, humanistic ideals, a search for universal truths, overarching theories about knowledge, and a belief in progress" (Tierney, 2001, p. 358).

Instead, Tierney (2001) recommends the application of five tenets of critical postmodernist theory to comparative higher education research. These key principles include perceptions that:

- knowledge is created, has political roots and is socially constructed and contested not additive and should be investigated in local contexts rather than meta-national ones
- power frames situations, which institutions and individuals and groups can chose to resist or comply with
- identity is fractured and constructed and the role of the university is to facilitate dialogue between diverse perspectives rather than acting as ‘a repository of truth’
- change is constant and that time ‘ruptures, fragments and moves in fits and starts’
- universities have become more “transnational and ... bureaucratic” and that nation states have become “more managerial” (Tierney, 2001, pp. 359-365).

Tierney (2001) argues that these ways of understanding knowledge construction and research generate three key directions for comparative higher education research, which can be usefully applied to this article’s aim of reconceptualising the nature of contemporary and future research. These include the need to capture the heterogeneity of universities and particularly researchers’ lived experience so that “localized identities and cultures are enabled voice” (Tierney, 2001, p. 367). Some research has begun the task of capturing the lived experience of a diverse range of researchers. For example, Brew (2001) has explored researchers’ cognitive conceptions of research. Lucas (2006) has used Bourdieu’s (1988) notions of habitus and symbolic capital to explore the impact of the 1996 and 2001 RAEs on the lived experiences of UK researchers. So too, Henkel (2000) investigated the impact of policy change in higher education on academics’ identities, using Hall’s (1992) post-colonial conception of identity as fractured and always in flux.

While this direction is important and will feature in my research project for which this article provides the conceptual framework, the second and third directions for future research Tierney (2001) outlines are particularly central to my argument for the possibilities of using the post-colonial idea of the ‘contact zone’ to reconceptualise research. These are the need for researchers to develop hybrid notions of knowledge and identity and the ability to work across disciplinary, cultural and social boundaries; and the need to incorporate methods such as life history and ethnography to broaden understandings of researcher identities (Tierney, 2001, pp. 368-369).

Post-colonial notions of the ‘contact zone’

The post-colonial construct of the ‘contact zone’ provides a valuable theoretical tool to reconceptualise the nature of research. Originally developed by Mary Louise Pratt (1992), the contact zone is used to refer to the cultural space of contact between different cultures during the process of colonization. Neo-liberal scholars would argue that we have long since emerged from colonial practices through the process of decolonisation in the 1960s and 1970s. However, as Canagarajah (1999, cited in Singh & Doherty, 2004, pp. 11-12) indicates, some of the major features of Western neo-colonialism can be traced within current “market-driven imperatives of Western higher education” where perceptions of education have shifted from “aid to ... trade”

and where the English language and Western knowledge dominate the global knowledge economy. This is not a completely one-way process, although it is an asymmetrical one. Former colonised people also acknowledge the many “economic and social rewards” the English language can give them and seek to use it “according to their own aspirations, needs and values” (Canagarajah, 1999, pp. 173 & 176).

It is also important to note that post-colonialism does not refer to a particular linear time period. Post-colonial theory seeks to break down comfortable binaries between “inside/outside ... then/now, here/there, home/abroad” (Hall, 1996, p. 247), encapsulating the fluidity and blurring of boundaries evident in our postmodernist world. It explores the effects of how global, national and local forces mutually reconstruct each other. In this sense then ‘post’ does not only mean coming “after but also going beyond the colonial” (Hall, 1996, p. 253).

In developing the notion of the ‘contact zone’, Pratt (1992, p. 7) was seeking a broader way to describe the colonial frontier that went beyond European expansion concepts and captured the “interactive, improvisational dimension of colonial encounters” as well as the oppression and conquest of colonized peoples and their lands. In particular, she defined the contact zone as “social spaces where disparate cultures meet, clash and grapple with each other, often in highly asymmetrical relations of domination and subordination” (Pratt, 1992, p. 4).

Rather than only seeing this colonial contact zone as a space of subjugation, Pratt emphasises the importance of transculturation in colonial relations. Transculturation is a term used to describe how

subordinated or marginal groups select and invent from materials transmitted to them by a dominant ... culture. While subjugated peoples cannot readily control what emanates from the dominant culture, they do determine to varying extents what they absorb into their own and what they use it for (Pratt, 1992, p. 6).

Pratt argues that transculturation has profoundly affected the identities and cultures of people both in the colonial periphery and in the European metropole. These colonial relations may be understood “not in terms of separateness or apartheid but in terms of copresence, interaction, interlocking understandings and practices” (Pratt, 1992, p. 7).

Theories about the contact zone have been applied to the general higher education context. The key themes from this literature that are relevant to the reconceptualisation of research include the perception of cultural difference as productive rather than as a deficit and an emphasis on the deconstructive and creative possibilities of cultural exchange, transculturation or cosmopolitanism.

Difference as productive

There are long traditions in Western pedagogy that regard cultural difference as problematic. Difference is something to be suppressed where possible or ‘tolerated’ when necessary (Manathunga, 2006). This has produced a great deal of literature on Indigenous, culturally and linguistically diverse (CALD) and international students as deficient learners (eg. Ballard & Clanchy, 1991). There is also a liberal tendency to minimalise or disavow difference, where authors argue

that the needs of all students are the same regardless of culture (Chalmers & Volet, 1997). Homogenisation is a fundamental part of stereotyping and othering because it allows the colonisers' subjectivity to be portrayed as the norm (Kenway & Bullen, 2003).

Post-colonial theorists instead regard difference as a key site for creativity and growth. As Kenway and Bullen (2003, p. 10) argue, "the goal of those teaching in ... the contact zone is ... to focus on ... how students, texts or cultures might come together in productive dialogue – without glossing over difference". These forms of intercultural dialogue are highly productive because of the new kinds of cultural and intellectual identities that become possible. It is therefore likely that rigorous but respectful dialogue about cultural, disciplinary and other differences has the potential to create exciting new forms of knowledge construction. While this is a positive reading about the creative potential of difference, post-colonial theory also seeks to acknowledge and emphasise the asymmetrical operations of power within the contact zone (Pratt, 1992). Western and male perspectives remain dominant within and across most disciplinary and cultural interactions and post-colonial theory seeks to make these inequities visible.

Cultural Exchange and transculturation

Most significantly, these applications of the idea of the contact zone to higher education highlight the cultural exchange and transculturation that becomes possible when difference is actively engaged with and where the operations of power are investigated. In particular, the contact zone construct breaks down notions that cultures are tightly bounded, unchanging and sealed off from each other. The impact of colonisation has ensured that cultures have become hybrid and mutually transformed. This process has only been accelerated by recent, rapid flows of symbolic, material and social resources via the global reach of electronic technologies or "technoscapes" (Singh & Doherty, 2004, p. 16).

Instead, transculturation represents "a dyadic relationship, a mutual entanglement of cultural practices and modes of representing cultural identity" (Singh & Doherty, 2004, p. 12). New cultural knowledge, research and identities become possible in this "third space" (Bhabha, 1994, p. 37). This takes cultural interaction beyond dichotomous homogenisation and assimilation on the one hand or the polarisation that comes from active resistance to Western domination on the other (Singh & Doherty, 2004). It proposes a form of cultural hybridity (Bhabha, 1994; Hall, 1996). Other scholars have defined this process as cosmopolitanism or an "ironic distancing from one's own cultures and the capacity to interrogate 'unreflective identifications with local and national cultures' while maintaining an ethic of care based on recognition of human and cultural vulnerability" (Matthews & Sidhu, 2005, p. 54). Somerville and Perkins (2003, p. 257) recommend the need for both "border maintenance (a focus on difference) and border crossing (a focus on hybridity)". These two forms of interaction are also common in productive interdisciplinary and industry, government and university research collaborations (Manathunga et al., 2006).

Research as an intercultural 'contact zone'

Research is productively reconceptualised as an intercultural contact zone because the intercultural dimension captures the extent of boundary crossing required in contemporary and future research. It is also useful because it provides us with the theoretical tools to explore not only the deconstructive, creative possibilities of working at or beyond the limit of current knowledge, but also the symbolic violence, exploitation and assimilation that goes on in the contemporary ‘research game’ (Lucas, 2006).

Researchers have to work increasingly across blurred boundaries between disciplines, universities, industries, professions and other workplaces in order to wrestle creatively with the complex problems of the postmodern age. It is widely acknowledged that research career pathways are no longer linear (Rip, 2004; Tyler, 1998). It is likely that current trends for research graduates to traverse multiple pathways in and out of globalised industries and diversified universities during their research careers will become more common. Even if researchers remain in universities for their entire careers, they will probably engage with government departments, public sector research organisations, industry, the professions and the community for funding opportunities, secondments and joint appointments and to communicate their research to appropriate policy and commercial audiences (Altbach & Chait, 2001; Enders, 2002).

As a result, the core business of researchers will increasingly become communicating and interacting within, across and between many layers of cultural difference. These cultural layers include:

- ethnic cultures within our multicultural local and national societies and within our globalised world
- disciplinary cultures as the pressure grows to engage in interdisciplinary research
- university cultures, which are becoming different combinations of corporate managerialist and collegial organisations (Lucas, 2006)
- industry cultures, which are shaped by a range of commercial and other imperatives
- professional cultures, which have particular discourses and values
- workplace cultures, which have their own rituals and norms.

Marginson and Rhoades (2002, p. 290) have attempted to capture some of these overlapping cultural layers in their “glonacal agency heuristic”, which positions higher education as “a set of interconnected hexagons in three-dimensional space”. They depict higher education and human agency or choice as operating within a central hexagon of agencies or organisations operating at global, national and local levels. In common with my argument, they emphasise the reciprocity of the connections between each of these levels of organisation and individual or collective human agency. They also attempt to capture the complexity of the multidimensional overlap by referring to blend of historical and current forces, trends and cultural features that impact upon flows of interactions at global, national and local levels. Their model, however, does not go down to the level of disciplinary, university-industry, university-professional and workplace interaction.

Intercultural understanding and skills

In order to operate effectively across these many cultures, all researchers will need to develop highly effective intercultural understanding and skills. Researchers will require the ability to cross boundaries and to “deal with identity and knowledge from multiple vantage points” (Tierney, 2001, p. 368). This ensures that the types of skills and attitudes required to work sensitively across ethnic cultural boundaries (MacKinnon & Manathunga, 2003) will also enhance researchers’ abilities to operate between disciplinary, university, industry, professional, workplace and community cultures. This means that the characteristics Paige (in Weinstein & Obeir, 1992) identified as those belonging to interculturally competent people are equally required by researchers. These characteristics include:

Tolerance of ambiguity, cognitive and behavioural flexibility, personal self-awareness, strong personal identity, cultural self-awareness, patience, enthusiasm and commitment, interpersonal sensitivity, understanding of difference, openness to new experiences and peoples, empathy, sense of humility and sense of humour (Paige, 1986. Cited in Weinstein & Obeir, 1992, p. 49).

Effective research will also require complex understandings of identity that are encapsulated in post-colonial theory. Instead of perceiving identity as a fixed, one-dimensional phenomenon, post-colonial theory suggests that it is “a process never completed ... a process of articulation, a suturing, an over-determination” (Hall, 1996a, pp. 2-3). As a result, every researcher has multiple identities and roles that produce flexibility and growth but also ambivalence, contradiction, and internal turmoil. As researchers engage across cultures that are present in the research environment, they need to become used to the simultaneous excitement and discomfort that results from having dynamic, shifting identities and collaborating with others with similar multiple roles and perspectives. Therefore, researchers will need to become “multilingual” and develop sophisticated “communication and translation” skills (Tierney, 2001, p. 368).

Transculturation and creative research possibilities

Equipped with these intercultural understandings, researchers will be able to make the most of this rich, productive environment within which to conduct cutting-edge, creative research. There are significant deconstructive possibilities involved in thinking beyond the limit of current cultural, disciplinary, university, industry, professional and community knowledge boundaries. Engaging in research in the intercultural contact zone enables researchers to harness synergies, interconnections and relationships to develop new knowledge and ways of conducting research. As a result, researchers are likely to experience a process of transformation where ideas and ways of operating are critically blended.

A particularly insightful example of this opportunity to create new knowledge and ways of researching in the intercultural contact zone was described by Somerville and Perkins (2003). Somerville and Perkins were involved in an interdisciplinary, intercultural research collaboration on the north coast of New South Wales in Australia involving Indigenous archaeology and oral history and eco-tourism with the local Yarrawarra Aboriginal Corporation. Tony Perkins, the leader of the Yarrawarra Aboriginal Corporation, indicated how the research project to recover archaeological

and oral history evidence of Indigenous knowledge and culture was located within the Aboriginal land-rights struggle. This evidence could be used to re-establish physical claims over particular land and to educate the broader Australian community and potentially change their attitudes towards Indigenous peoples and their rights, particularly though their ecotourism venture. Engagement in these two contact zone sites created new understandings of the Indigenous culture and history in this area.

This project also led to new ways of conducting research in Indigenous communities. Non-Indigenous archaeologists and oral historians Dee Murphy, Wendy Beck and Margaret Somerville described how they sought to “deconstruct and translate the ‘rules’ of archaeological [and oral history] research and make them more transparent for Yarrawarra people” (Somerville & Perkins, 2003, p. 260). Indigenous researcher, Cheryl Brown, explored how the ways of conducting research were transformed. For example, she indicated that she was able to change the usual practice of taking Indigenous artefacts off-site for analysis. She also emphasised how important recovering her Indigenous cultural knowledge was particularly in light of her experiences in school where her culture was devalued and ridiculed. The researchers highlighted how the actual collaboration did not take place in the physical “formal and proscriptive rituals of joint meetings and consultation” but in the “cultural and intellectual spaces and border maintenance and crossing inherent in the contact zone” (Somerville & Perkins, 2003, p. 265). As a result, new research knowledge was created and disseminated to a range of political, educational and community audiences and the ways of conducting research in Indigenous communities were transformed.

This account begins to demonstrate the actual embodied emotional and intellectual experiences of researchers involved in the intercultural research contact zone. However, there is a need for more research that tracks the movement of bodies in these research environments. In particular, there is a need to broaden the methodologies used in higher education research to go beyond case studies and interviews to life histories and ethnographies (Tierney, 2001). As a result, a team of researchers I am leading plan to conduct some ethnographic research about a number of early career researchers in universities, public sector organisations and private companies in order to provide richer accounts of the cultural contacts and transformations that occur in the intercultural contact zone of contemporary research.

Symbolic violence, exploitation and assimilation in the research arena

Portraying research as an intercultural contact zone also enables us to investigate the problematic or ‘shadow’ side (Grant, 2007) of the research environment. Just as the colonial frontier involved violence, cultural and ethnic genocide and appropriation, so too research also involves moments of symbolic violence, incidences of exploitation and forces of assimilation. Levels of severity vary in the negative under-side of research, ranging from outright racism, sexism and exploitation to the tension and discomfort of working across cultures. Only fairly recently has research begun to delve into the problems and inequities involved in playing the research game. With the dominance of the English language and Western knowledge in the global higher education sector and in many disciplines (Canagarajah, 1999), research continues to be white and Western.

Researchers from culturally and linguistically diverse backgrounds, particularly Indigenous researchers, continue to struggle with alien epistemologies and research practices in many disciplines (Haig-Brown & Archibald, 1996; hooks, 1990). Disciplinary canonical knowledge tends to marginalise Eastern and Indigenous knowledge and discourses (Canagarajah, 1999), placing non-Western researchers permanently at the 'edge' of the discipline (hooks, 1990). This can result in the ongoing symbolic violence experienced by some non-Western, working class or women researchers (Reay, 2004). As Bourdieu (1998 cited in Reay, 2004, p. 36) argued, symbolic violence is the "capacity to impose the means for comprehending and adapting to the social world by representing economic and political power in disguised, taken-for-granted forms". In other words, symbolic violence is enacted within disciplines and cultures when one particular perspective is legitimised as the only sensible approach. However, this is not just the action of those who are dominant in the field. According to Bourdieu (Reay, 2004), symbolic violence operates so subtly that less powerful members of the discipline or culture internalise this norm and unconsciously accept their own subjugation as well. As a result, greater levels of border maintenance can be required for marginalised groups engaging in intercultural and interdisciplinary research and Western researchers need to engage in more respectful border crossing (Haig-Brown & Archibald, 1996; Somerville & Perkins, 2003).

Disciplinary chauvinism can be as much a part of interdisciplinary research as racism can be in intercultural interactions. Even within the literature on interdisciplinarity, evidence of this kind of chauvinism exists. For example, Snow (1964, p. 12) claimed that "this [scientific] culture contains a great deal of argument, usually much more rigorous, and almost always at a higher conceptual level, than literary persons' arguments". These often-implicit assumptions about the superiority of one's own disciplinary norms and practices can be one of the most difficult barriers to effective interdisciplinary research (Grigg, 1999). It can either result in the colonisation of the project by a more socially powerful discipline (Younglove-Webb et al, 1999) or its paralysis through cultural misunderstandings and miscommunications.

There are also gendered dimensions to the exploitation that can take place in the research environment. Research is a male game that men and women experience very differently. In his study of research productivity, Fisher (2005) found that male research scientists enjoyed higher levels of research productivity, even though the quality of female research scientists' output was higher when measured by citation rate. The reasons for this included the fact that women were not as often encouraged to engage in research higher degrees until quite recently in many fields so there is often a lack of senior female role models in their disciplines. This was doubly problematic because women were more likely to wait for encouragement and legitimisation by senior scientists before embarking on a research project. 68% of women reported that it was important that "respected colleagues urged work on the [research] problem" as opposed to 34% of men (Fisher, 2005, p. 204). Women tended to experience more interference in their research problem selection than men and more difficulties in accessing research resources. Because women may need to work harder to prove their scientific worth, they usually spent longer meticulously planning their research and gathering symbolic and social research capital (Lucas, 2006). Women also selected research problems differently to men. In Fisher's (2005, pp. 204 & 206) study, he found that women were more attracted to "studies related to

public controversies” and were more willing to engage in multidisciplinary research, especially as they may encounter less competition with dominant males who were more likely to have access to the most promising research topics within disciplinary boundaries (Fisher, 2005).

The gendered nature of the contemporary research arena is particularly evident in discussions about research leadership. Just as Sinclair (2004, p. 7) argued that “leadership discourses ... [are] too often disembodied, de-gendered and de-sexualised”, the small body of work on research leadership generally represents research leaders as rational, autonomous, individual minds that make huge leaps forward in knowledge construction (Mann, 2005). Although not usually explicitly stated, those who are hailed as research leaders often tend to be male and, very often, white. Female or diverse ethnic researchers who have been acknowledged as research leaders have had to “play male ... and act white” (Williams 1991 cited in Reay, 2004, p. 31). Research leaders, while they might manage large teams of researchers, are often perceived as alpha beings.

If we map this discourse onto Sinclair’s sharp insight into Australian notions of leadership – “the lone frontier settler who is stoic but resolute in the face of hardship” (Sinclair, 2004, p. 9) – we have a picture of the lone research leader who battles all kinds of adversity as they accumulate the symbolic, material and social research capital necessary to push forward the frontiers of knowledge. There are many intriguing elements to this image. First of all, the male Australian settler was usually supported by a vast number of people and institutions rendered invisible in this account (eg. colonial troops, colonial law granting them huge tracts of ‘uninhabited’ land, wives and children, itinerant labourers, unpaid Aboriginal labourers). The typical research leader’s work is bolstered by large teams of research students and research-only staff that are frequently denied recognition. These researchers are often female contract labourers, working as a kind of proletariat or working class for the largely male “cultural capitalist class of academic researchers” (Reay, 2004, pp. 32). Their contribution to research capital serves to enhance the stella reputations of academic researchers rather than their own (Reay, 2004).

Rather than functioning as an egalitarian team which is based upon mutual recognition and gain, many research teams take on hierarchical characteristics where people have preordained roles and rights according to their status and experience (Manathunga et al., 2003). As Reay (2004, p. 34) argues, “the research team often operates as a mythologising discourse operating to ensure compliance”. In other words, the notion of teamwork is routinely used to discipline academic workers (research students and contract staff) into becoming willing participants in their own exploitation. The system works because of the levels of “self-seeking sycophancy” necessary to retain access to piecemeal contract work (Reay, 2004, p. 33).

Secondly, as Sinclair (2004, p. 9) points out, this archetype of an Australian leader “renders improbable a garrulous, emotionally expressive or more collectively orientated leader”, which may include women and people from group-based cultures. The same can be said for the stoic, rational, reasonable notion of a research leader. As Reay (2004, p. 34) argues, “reason, rationality and the production of knowledge are disembodied, masculinised, academic qualities” reserved for “real” research leaders. By contrast, the work of contract researchers “evokes a wide repertoire of

feminised, embodied activities; gaining access, interviewing, listening, collecting data, and that least acknowledged, but constantly present, job of work in the field; the managing of emotions, both our own and others” (Reay, 2004, pp.34-35).

Another feature of this disembodied, lone research leader figure is their disconnection from other people. These lone super humans are depicted as being devoid of partners, families, friends and connections with people and places. If they do have these encumbrances, they are required to ensure that they do not interfere with their great research enterprises. Thirdly, the discourse about pushing forward the frontiers of knowledge shares a progressivist, Western notion of the linear accumulation of knowledge that echoes colonial notions of Western ‘exploration’ and progress. If we accept that knowledge is created, has political roots, is socially constructed and contested rather than simply additive (Tierney, 2001, p. 359), then there is a need to displace these dated modernist notions of progress. This paper represents just a brief examination of the ‘shadow side’ (Grant, 2007) of the contemporary intercultural research contact zone. There is a need for much more research utilising different methodologies and theoretical lenses to bring these undertones of exploitation and symbolic violence to the fore.

Implications for research training

This reconceptualisation of research as an intercultural contact zone has significant ramifications for the design of research training programs. If we are to prepare research graduates adequately for unknown research futures and intercultural roles, then we need to imagine what scientific and societal innovations will be required, predict possible long-term trends and then back-engineer research training programs (Rip, 2004). In particular, research higher degree programs will need to develop students’:

- intercultural knowledge and skills
- abilities to work in interdisciplinary research teams
- capabilities to work with industry and the professions as well as academe
- abilities to cross intellectual, cultural, social and professional borders
- competencies to deal with multiple identities, roles and responsibilities
- abilities to deal with the simultaneous joy and discomfort of working across multiple spheres of cultural interaction.

Postgraduate supervisors will be expected to specifically design learning experiences for students so that they enhance and practice the intercultural skills described above. Supervisors will also need to encourage research students to investigate interdisciplinary research topics. They should incorporate into research higher degree programs the four dimensions of an interdisciplinary doctoral pedagogy described by Manathunga et al. (2006). All researchers must become familiar with different disciplinary languages and understanding of identities and ways of knowing. As the next generation of research leaders, they have to be conscious of the symbolic violence, exploitation and assimilation that is also part of the research environment and devise ways to reward those who work towards respectful cultural sharing and the creation of new hybrid knowledge.

As a result, there is an urgent need to revise the traditional ways in which research higher degree programs are delivered. The effort to redesign or even imagine an

intercultural curriculum in research training programs will require a great deal of further research and experimentation. Too little is currently known about the working conditions and experiences of recent research graduates to re-engineer research training programs. My research team is currently examining the perceptions and experiences of recent PhD graduates and employer who hire them and who are all active in the rapidly changing context of current research. The findings of our study will assist the efforts of government and university policy makers to implement more relevant, future-oriented research training policies and practices.

Implications for ongoing professional development for researchers

There are also significant implications for the ongoing professional development of experienced researchers. In particular, senior research leaders have to address the symbolic violence, exploitation and assimilation currently present in the research environment. As Reay (2004, p. 38) argues, it is necessary to shift “the onus of responsibility off women and on to male academics” in order to create a more equitable, inclusive research culture that learns from women’s and ethnically diverse people’s perspectives rather than seeking to silence them. The current and prevalent model of research leadership, indeed the cult of the sole, white, male research star must be broadened so that more women and culturally diverse people gain recognition for their different forms of research leadership. In particular, “an intrinsic ethic of care” and genuine collegiality that “requires emotional capacities such as empathy, intuition, trust and patience” needs to replace the dominant academic culture of “individualistic, competitive self-interest and self-promotion” (Reay, 2004, pp. 37 & 35).

Similarly, experienced researchers must enhance their epistemological flexibility and intercultural understanding to continue operating effectively in the intercultural research contact zone. They are likely to require ongoing access to intercultural research experiences, exchanges and secondments that will more effectively enable their working with industry, the professions and within different countries and disciplines (Manathunga et al., 2003).

Conclusion

Contemporary research involves working across many different cultural boundaries. These boundaries are ethnic, disciplinary, professional, industrial, workplace and community-based. Each of these domains has its own cultures, discourses and practices. The successful 21st century researcher must develop the intercultural knowledge and skills to operate effectively and sensitively in this complex research arena. The post-colonial notion of the ‘contact zone’ serves to reconceptualise the nature of knowledge production. Viewing research as an intercultural contact zone has allowed exploration not only the deconstructive possibilities of working at the limit of current knowledge, but also of the symbolic violence and exploitation that is part of the research arena.

This article has provided a new conceptual framework with which to begin investigations into the design of future research training programs and ongoing professional development for researchers. It echoes calls for ethnographic studies of researcher identities and experiences, drawing upon the nuanced insights post-colonial

theory offers about the intercultural interactions and identities that are central to the workings of contemporary and future research.

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