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Epistemic cultures in complementary medicine: knowledge-making in university departments of osteopathy and Chinese medicine

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ABSTRACT

There is increasing pressure on complementary and alternative medicine (CAM) to follow the evidence-based approach promoted in allied health and medicine, in which the randomised control trial represents the evidence gold standard. However, many CAM advocates see these methods as undermining the holism of CAM practice. This paper explores how such tensions are managed in CAM university departments – settings in which particular forms of knowledge and evidence are given ‘official’ imprimatur by CAM educators and researchers. By comparing two types of CAM, the paper also unpacks differences within this broad category, asking whether CAM academic disciplines comprise different ‘epistemic cultures’ (Knorr-Cetina, K. (1999). *Epistemic cultures: How the sciences make knowledge*. Cambridge, MA: Harvard University Press). Interviews were conducted with 20 lecturers in Chinese medicine and osteopathy, across five Australian universities, and augmented with observation in two degree programs. Findings reveal contrasting ontological and epistemological perspectives between the two academic fields. Chinese medicine lecturers had largely adopted bioscientific models of research, typically conducting laboratory work and trials, although teaching included traditional theories. Osteopathy academics were more critical of dominant approaches and were focused on reframing notions of evidence to account for experiences, with some advocating qualitative research. The study illustrates CAM’s ‘epistemic disunity’ while also highlighting the particular challenges facing academic CAM.

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Introduction

The forms of knowledge that underpin complementary and alternative medicine (CAM) are subject to continual contestation and controversy. There is increasing public and political pressure on CAM to align itself with the evidence-based approach promoted in allied health and medicine, in which the randomised control trial is the gold standard test of

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therapeutic efficacy. However, many CAM advocates see such methods as undermining CAM's holistic and esoteric practices. Research has examined how tensions between these different epistemological stances are managed in CAM clinical practice and by consumers, but curiously underexplored are the central sites of CAM knowledge production and transmission: higher education settings in which CAM research and teaching are conducted. It is here that various forms of knowledge and ways of knowing are given 'official' imprimatur by CAM educators and researchers. This paper therefore aims to identify the types of knowledge and knowledge-making that are legitimated within university departments of CAM, in order to understand how those charged with developing CAM's knowledge base and training the next generation of practitioners go about resolving the epistemological tensions that plague contemporary CAM.

A second aim of the paper is to develop a deeper theoretical understanding of similarities and differences between CAM types, in terms of their orientation towards evidence. 'Complementary and alternative medicine' is an umbrella term encompassing a broad range of therapies, from naturopathy, acupuncture and osteopathy, to reiki, homeopathy and crystal healing. Generalisations about CAM are common, while comparative analyses of CAM types are scarce (Welsh, Kelner, Wellman, & Boon, 2004). This paper compares processes of knowledge-making in university departments of osteopathy and Chinese medicine, to assess whether, and how, different academic CAM types are responding differently to the challenge of producing evidence-based CAM. Karin Knorr-Cetina's (1999) work on 'epistemic cultures', which shows that science is comprised of multiple epistemic approaches and communities, is drawn on to interpret findings. The central question the paper addresses is: Do the academic communities of osteopathy and Chinese medicine comprise different epistemic cultures, and how does this reflect the forms of knowledge and knowledge-making they legitimise?

The data presented here come from interviews with academics and observation of teaching within Australian university departments of osteopathy and Chinese medicine. They represent the first stage of data collection in an ongoing study of the forms that CAM takes in university settings, the larger study also including chiropractic and data collection in the UK. Osteopathy, Chinese medicine and chiropractic were selected for the study because they represent the main CAM types taught within universities internationally. The focus in this paper on Australian osteopathy and Chinese medicine departments allows a close comparison of two quite different CAM types within the same higher education system.

Osteopathy is a manual therapy, founded in the American Midwest in the late nineteenth century. Originally a vitalistic, drugless approach to healing, it is based on the idea that the body is a unit that has the ability to heal itself as long as it is structurally aligned, allowing optimal function (O'Neill, 1994). It involves a range of hands-on techniques from joint manipulation to soft-tissue massage, and the more gentle (and more esoteric) cranial osteopathy. Although in the United States osteopaths have become part of the medical profession with similar scopes of practice, in Australia and elsewhere they remain manual therapists, largely excluded from the public health care system.

Chinese medicine dates back several thousand years and is predominantly concerned with correcting imbalances in *qi*, the vital force which is believed to flow through body meridians. There are many varieties of Chinese medicine, but the 'standardised' form known as Traditional Chinese Medicine (TCM), promoted by the Chinese government

as a cultural export from the 1950s, has become the official form in China (Barnes, 2003; Zhan, 2014) and is a dominant style in Australia. TCM practitioners in China train and work in universities and hospitals, with a heavy emphasis on biomedicine in their education, and have the same regulatory status as Western medical practitioners in China, practising a wide range of interventions (Scheid, 2002). In Australia they tend to practise more limited versions of acupuncture and herbal medicine.

Although they sit mostly outside the public health care system, Chinese medicine and osteopathy are statutorily regulated professions in Australia. They require a degree qualification for registration and have been taught in universities since the early 1990s (five universities currently offer such degrees). However, sceptic groups have recently begun to lobby-including in quite high profile forums – for CAM to be excluded from Australian universities, arguing that it lacks a scientific evidence base (Brosnan, 2015); a development mirrored in a number of other countries (Givati & Hatton, 2015; Vuolanto, 2015). In the remainder of this paper, before presenting findings on the way academics in osteopathy and Chinese medicine go about legitimating various kinds of knowledge and evidence, some of the epistemological tensions confronting the broader CAM field are reviewed, and the concept of ‘epistemic culture’ proposed as a framework for exploring how different CAM professions are responding to these tensions today.

Evidence and epistemology in CAM

The question, ‘does it work?’, increasingly haunts professional practice in the CAM fields (Gale, 2014) as the pressure to produce evidence of therapeutic efficacy has mounted with the growing dominance of the evidence-based medicine (EBM) movement in medicine and other practice-related fields. EBM was originally defined in 1992 as an approach that aimed to ‘de-emphasize intuition, unsystematic clinical experience, and pathophysiological rationale’ in clinical decision-making, instead stressing ‘evidence from clinical research’ (Evidence Based Medicine Working Group, 1992, in Howick, 2011, p. 15). By the mid-1990s, the definition had been revised by Sackett and colleagues (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996, p. 71) to incorporate ‘individual clinical expertise’, which should be integrated with ‘the best available external clinical evidence from systematic research’. In terms of what counts as ‘best’ research evidence, at the top of the hierarchy are systematic reviews of randomised controlled trials (RCTs), such as those included in the Cochrane Library. Although Sackett, Straus, Richardson, Rosenberg, and Haynes (2000, in Howick, 2011, p.22) went on to revise the definition again, to explicitly include ‘patient values’ as a third component, many argue that, in practice, EBM has ultimately led to an overvaluing of research over and above either clinicians’ or patients’ expertise, and to the privileging of a reductionist, scientific ethos (Lambert, 2006; Miles, 2009). In particular, the reliance on RCTs to produce meaningful clinical evidence has been widely critiqued (see Will & Moreira, 2010).

When it comes to CAM, the incompatibility of RCT methodology with the underlying ontology and epistemology of CAM therapies has been repeatedly emphasised by CAM researchers and social scientists. Key arguments put forward are that CAM treatment often involves multiple therapies – tailored to the patient – rather than the single, standardised intervention necessary in an RCT, and that since the therapist’s interaction with the patient cannot be separated from the therapy itself, controlling therapeutic variables is not

possible (Barnes, 2003; Barry, 2006; Kim, 2007; Willis & White, 2004). In essence, the apparent holism and experiential nature of CAM is explicitly contrasted with the reductionist, abstract approach of EBM. Flatt (2012, p. 513), for example, argues that, 'Engagement with [an evidence-based medicine] research model [is] inherently fraught for complementary medicine, which is a professional field commonly defined by commitment to holistic values.' Describing CAM as 'a professional field' with inherent values, however, belies the multiplicity of CAM and the possibility that there may be more than one set of values at play. Chatwin and Tovey (2006) remark that some CAM modalities may be more holistic than others, while Willis and White (2004) suggest they are so varied as to have nothing in common beyond their marginalisation from conventional medicine.

A small number of studies have sought to identify how the debates surrounding CAM's evidence base are resolved in CAM practice. In interviews with acupuncturists in the UK, Jackson and Scambler (2007) found they expressed deep resistance to EBM notions of evidence, instead viewing evidence as lying in acupuncture's long history, their own experiences and patient feedback, and the internal logic and systematic basis of Chinese medicine's philosophy. Similarly, Steel and Adams' (2011a, 2011b) study of naturopathic clinical reasoning showed that naturopaths strongly valued intuition and clinical experience when making treatment decisions, combining these with insights from research where available, but generally having greater faith in the role of so-called 'traditional knowledge' than scientific research.

Practitioners are likely to have different orientations towards evidence than university-based educators and researchers, however. It is in universities that CAM scholars are best placed to develop the evidence being demanded of them, and to use such evidence in their teaching, and this is one reason that the sceptics' spotlight has become focused on CAM university departments. Little is known about such settings from a sociological perspective, with existing studies of CAM education almost exclusively focussing on private CAM colleges (where, internationally, most CAM education is conducted). A key trend identified across these prior studies has been the gradual encroachment of biomedical science into CAM curricula (Barnes, 2003; Cant & Sharma, 1995; Flesch, 2013; Givati & Hatton, 2015; O'Neill, 1994; Welsh et al., 2004). While this shifting curricular balance has been a source of tension in the past, one recent study suggests that educators, at least in British acupuncture colleges, may have become more comfortable with the incorporation of science into their courses (Givati & Hatton, 2015). Attitudes to the inclusion of scientific content – such as courses in the basic medical sciences of anatomy, physiology, biochemistry and so on, which have long been standard requirements in CAM degree and diploma programs – still tell us little about the more contemporary question of how *evidence* is constructed by CAM educators, either in teaching or in their own research.

Kim's (2007) study of a Korean university laboratory conducting experiments to ascertain the effects of Korean herbal medicines offers a rare glimpse into the world of academic CAM and the ways that evidence is produced within that professional culture. Kim's main observation was that researchers in this lab were focussed on trying to publish their results in mainstream science journals, in order to gain international recognition for Korean medicine and the research group, and to build their own academic careers. They therefore needed to adapt the terminology of Korean medicine, and the experimental process itself, to produce papers that would be accepted in these outlets. Conventions of bioscience took

precedence over principles of Korean medicine, which were modified or truncated to fit the scientific model. This meant, however, that the findings were not translatable into Korean medical practice, as the logics became misaligned. This study illustrates one of the ways academics in a particular field of CAM are responding to the challenge of producing 'evidence' that is acceptable to the biomedical community, and some of the pitfalls of attempting to translate those forms of knowledge across different ontological domains. In the next section, I discuss how we might usefully approach the theorising of evidence and knowledge production in CAM academic communities and in Chinese medicine and osteopathy specifically.

Osteopathy and Chinese medicine as epistemic cultures?

Just as 'CAM' is repeatedly represented across academic and media discourses as having a particular ontological and epistemological perspective, 'science' is also typically framed as though it comprises a unified approach to knowledge production. Knorr-Cetina (1999) problematises this understanding and proposes an alternative view based on her empirical research across different fields of science. Science, she argues, is more accurately characterised as comprising multiple 'epistemic cultures' – different knowledge communities committed to doing science according to their own specific norms. Based on ethnographic research in high energy physics (HEP) and molecular biology research laboratories, Knorr-Cetina shows how, rather than adhering to a common 'scientific method', these two fields rely on very different ways of knowing (semiological versus experiential) and organise their work in contrasting ways (communitarian versus individualistic), reflecting the distinct ontological objects of interest in each field. Indeed, the very ontology of the experimental method differs between the two fields: biologists manipulate material objects and observe the effects of their interference; HEP relies on large detectors and other technologies to detect and represent events, focussing on signs rather than objects (Knorr-Cetina, 1999, p. 36–43). 'Epistemic cultures' describe the various 'machineries of knowing' (p. 2) that are rooted in different branches of science, along with the shared values and belief-systems, practices and strategies that accompany them. Such a perspective permits a more nuanced and robust understanding of precisely how different kinds of knowledge are produced, in turn contributing towards a sociology of knowledge societies (Knorr-Cetina, 1999).

If 'science' is actually comprised of separate knowledge-making cultures, this seems to potentially apply to CAM also, the modalities of which have (arguably) more disparate origins than the different branches of Western science. There is certainly evidence of quite specific ontologies underpinning different CAM types, which makes the existence of multiple epistemic cultures likely. A number of anthropological studies have attempted to unpack the particular ontology of Chinese medicine. Lin and Law (2014), for instance, describe the Chinese medicine world view as 'correlative', referring to its emphasis on situated knowing, cosmological view of the body, and weaving of patterns between elements as set out in Chinese philosophy, such as between the kidney (meridian), winter and water. Through a case study of one Chinese medicine clinical encounter, they show how the practitioner draws on both biomedical and Chinese medicine knowledge in her diagnosis and, rather than trying to translate one into the other, places them 'alongside one another... relating them contextually and correlatively'

(p. 810). Elsewhere, Zhan (2014) argues against the common view of Chinese medicine as an ‘experiential’ therapy, arguing that its central concepts – such as ‘blood’ – are metaphorical and analogical as well as material (p. 256). Framing Chinese medicine as merely ‘experiential’, however, served political purposes in the 1950s when the Chinese government deliberately paired it with a supposedly more conceptually sophisticated biomedicine, in order to produce the ‘TCM with two fists’ which was then exported to the world (Zhan, 2014).

Attempting to understand how Chinese and other Asian medicines are able to reconcile both aspects of practice – the ‘two fists’ of traditional philosophy and biomedicine – Scheid (2002; Scheid & Lei, 2014) has characterised them as ‘living traditions’, arguing that:

[L]iving traditions consistently manage to maintain a sense of identity that emphasizes continuity over time. ... It is this perception and the sense of security it bestows that have permitted physicians, scholars, researchers, and other stakeholders in the various Asian medical traditions to modernize, scientize, regularize, and otherwise transform what they do through consistent engagement with science and the West for several centuries and yet claim that they are still embodying the essence of their tradition. (Scheid & Lei, 2014, p. 2)

Precisely how and whether such an ontological position is manifested within university research settings has barely been studied, however, with the exception of Kim’s (2007) aforementioned research, which shows that the Korean-medicine scientists in fact struggled to preserve the essence of their tradition. Furthermore, whether the notion of ‘living traditions’ can be applied beyond the Asian medicines is unclear, again pointing to the need for comparative research among different CAM types.

Compared to Asian medicines, osteopathy has received only scant attention within social science, but Gale’s (2011) ethnography of osteopathy training in a British college offers important insights into its ontology. Gale (2011) reveals the centrality of ‘embodied interaction’ – between the bodies of the practitioner and client, and based on observation, talk and touch – to the osteopathic diagnostic process, and demonstrates that this must be learned experientially and bodily. Palpatory skills are the cornerstone of practice, involving tacit knowledge that cannot easily be described through language. At the same time, narrative, co-constructed by patient and practitioner, forms part of osteopathic diagnosis and treatment; therefore Cartesian dualisms are challenged in osteopathic philosophy and practice (Gale, 2011).

These differing cultural histories and ontologies of Chinese medicine and osteopathy already destabilise the notion of CAM having a distinct and shared set of values. I now extend this discussion through my study of the machineries of knowing legitimated by academic staff in these two fields. By asking whether different epistemic cultures exist within CAM, I seek to make sense of the differences between CAM types and their orientations to knowledge and evidence, without necessarily disposing of the CAM category entirely.

Methods

Similar to Knorr-Cetina’s study (1999, p. 22), the comparative approach taken in this research is not designed to produce generalisations about CAM, but rather to use one modality to understand another; to render features visible in one domain by searching

for them in the other, enabling a variety of epistemic elements to be documented. Through using ethnographic methods to examine what kinds of knowledge are produced and legitimated in CAM university departments, the study also seeks to ‘make visible the complex texture of knowledge as practiced in the deep social spaces of modern institutions’ (Knorr-Cetina, 1999, p. 2).

The data presented here come from semi-structured interviews with academic staff teaching osteopathy ($n = 11$) and Chinese medicine ($n = 9$) across five Australian universities, and from observational research conducted within one degree program in each modality. Interviews were designed to gather data on CAM academics’ motivations for and experiences of working within both the modality and a university, their views on teaching and research priorities, and the key issues they perceived to affect the status of the CAM profession to which they belonged, and also allowed other topics to be introduced and explored. All interviews were conducted face-to-face and lasted between 45 minutes and 2 hours, with an average length of just over an hour. Interviews were recorded and transcribed and the transcripts coded thematically in NVivo. A constant comparative approach was followed in order to identify new themes and consolidate existing ones, as analysis progressed (Glaser, 1965), a process also aligning with the comparative lens suggested by Knorr-Cetina (1999). Themes therefore emerged inductively from the data but my sensitisation to certain elements (e.g. notions of what counts as evidence) came from engagement with the existing literature, which also shaped data collection in a dialectic process (Mason, 1996).

Recruitment proceeded via email invitation, with potential participants contacted either directly, using their university email addresses, or with the assistance of heads of departments or snowball sampling. Academic staff in each of the osteopathy and Chinese medicine departments in Australia were invited to participate and all those who agreed to take part were interviewed, with interviewees representing a sizeable section of these small academic fields. Most interviewees worked predominantly within the university, although the majority also worked externally in clinical practice for a few hours or days each week. Interviewees also had a range of academic titles and roles. However, they were all involved in teaching, and all are referred to here simply as Chinese medicine Lecturer (CML) or Osteopathy Lecturer (OL), in order to help preserve anonymity.

A small amount of observational research was conducted in one osteopathy and one Chinese medicine degree program, totalling around 25 hours. I attended lectures, tutorials and practical classes, collected teaching materials and recorded fieldnotes. The observations provided greater context for the interviews and enabled me to gain a deeper understanding of the form that CAM takes in university settings, including the theories and techniques underpinning the modalities themselves.

The project was approved by the Human Research Ethics Committee at the University of Newcastle (H-2014-0023) and all participants in interviews and observation gave written informed consent.

Findings

To provide an overview of the epistemic-cultural features of the two fields, I discuss each in turn, beginning with Chinese medicine.

Chinese medicine

Confidence in the evidence base

In contrast to many depictions of CAM as struggling to gather evidence, what emerged across the interviews with CMLs was their relative degree of confidence in the evidence base and research methods of their field. For example, CML7 asserted that a substantial body of rigorous research evidence had developed over time:

I think with Chinese Medicine and acupuncture, we realised decades ago that you need evidence. ... For example, we were starting to produce Chinese medicine graduates who went into science degrees very early in the piece, unlike some of the other complementary and alternative medicine professions. ... so quite readily we know how to design appropriate research so we're getting the outcomes which we can hold up to rigour and say 'look, you know, 'here's evidence', or not.

Notably, access to reliable evidence is tied here to having strong links to 'science', and this in turn is used to argue for the superiority of Chinese medicine in comparison to other types of CAM, fitting what Almeida (2012) has described as 'a biomedical stratification within CAM based on scientific evidence criteria' (p. 13). This lecturer later added, 'We've got Cochrane reviews, we've had a lot of reviews done on the research', revealing a desire to legitimate Chinese medicine by aligning with the 'highest' forms of scientific evidence today.

CML2 believed that Chinese medicine would be shielded from the influence of the sceptic groups' recent campaigns, because of this established evidence base:

If they want to talk about evidence, there's a huge lot of evidence and both produced in Australia, other Western countries and in China. Our Chinese government has always invested millions of dollars into research because modernised Chinese medicine is actually a really important part.

This comment highlights the instrumental role of the Chinese government in shaping the research culture and evidence base of Chinese medicine. Not only does it fund research in China, it supports Chinese medicine research centres around the world, including in Australian universities, where other Chinese organisations have also directed funds. Potential access to Chinese support is likely one factor underpinning a convergence towards TCM-style courses in Australian universities in recent years and a phasing out of other (more European-influenced) styles of Chinese medicine. This shift may also be driven by the fact that a significant proportion of academic staff have come to Australia from China after completing their TCM education there (including two of the three heads of departments). These wider cultural dynamics shape the epistemic culture of the field.

Producing knowledge: the power of the biomedical fist

In terms of their own research, almost all the CML participants were involved in undertaking bench-based or clinical research to determine the mechanisms and effects of various Chinese medicinal herbs or acupuncture. This included laboratory studies using the techniques and technologies of molecular biology through to RCTs. Seven of the nine participants had completed PhDs (another was in progress) and often these were supervised and/or located within bioscientific disciplines outside of Chinese medicine

itself. CML7, for example, described the input of a supervisor who was not a Chinese medicine researcher:

I suppose her qualifications for supervising a project like this was the fact that – being a PhD in science, you need to know science as a tool to apply it, so that’s her background – was her ability to think critically, to recognise those extremes, variables, to interpret data.

These arrangements meant that, at the level of individual academics, the knowledge machineries employed in other scientific fields were continually integrated into Chinese medicine, consolidating its bioscientific fist.

It was clear that of the ‘two fists’ of TCM, the bioscientific side was prioritised in research.

Although alternative ways of building an evidence base – such as via the classic case-based knowledge of Chinese medicine – were not entirely dismissed, conducting bioscientific research and RCTs was considered to be a higher priority today:

We do have a lot of empirical evidence, you can see all these books that’s in these rooms -- that’s a 400-volume book of herbal medicines and that is a collation of material medica from couple of thousand years ... but I suppose because we live in this structure of randomised controlled trials and that sort of stuff, I think it’s useful to be able to gain evidence and gain more knowledge about it. So, I mean, a lot of the herbs have already been chemically structured and, you know, the chemical structure of the mechanisms and things like that, to be able to use that knowledge to develop more drugs and have some more trials and it just adds to the wealth of knowledge. (CML3)

The kind of resigned acceptance of the value invested in the RCT, as expressed by CML3, was common across participants, and, as the quote suggests (‘I suppose because we live in this structure’), stemmed in part from a pragmatic desire to secure mainstream acceptance for Chinese medicine. CML1 felt similarly that RCTs were necessary, if not ideal:

[Within the degree program] we do stress the research because we know that research will be the only way to push Chinese medicine forward ... it needs to be done to convince the public, and research in every way, I think. For example, I don’t like really randomised clinical trials, but that’s the only way, the gold standard to do. So we do it, even if it’s not the same as Chinese medicine practice.

In terms of producing knowledge, the epistemic culture of these Chinese medicine departments was therefore characterised by a general orientation towards the dominant kinds of research conducted within biomedicine. This was partly due to a desire to prove the legitimacy of Chinese medicine within the dominant paradigm, but also because many academics preferred these approaches and were fully committed to the ‘scientific’ Chinese medicine in which they had trained. However, as CML1’s last comment reveals – and echoing Kim’s (2007) findings in relation to Korean-medicine laboratory research – such a strategy meant reinforcing a divide between Chinese medicine research and practice.

Teaching Chinese medicine as a living tradition

When it came to teaching, there was more room to employ modality-specific knowledge and theories. In this domain, evidence of the correlative approach Lin and Law (2014) describe was apparent, whereby traditional knowledge is placed alongside bioscientific

approaches. CML6 described precisely this kind of juxtaposition as integral to effective practice, and tried to help students also achieve this insight:

What I think in practice it's important to do is to have two minds, to bring two minds to practice, so that you need your Chinese medicine mind in order to be able to practice effectively, you need that; whereas in order to be able to understand your patient and talk to your patient, you need your Western medicine mind, so, you know, you need both.

This partitioning of perspectives was reinforced in the Chinese medicine course I observed, in which the theory of Chinese medicine was taught separately from the bio-science subjects. The theory course focussed in detail on TCM-specific notions of health, illness, treatment and prevention (for instance, differentiating between different types of *qi*, different forms of 'blood' and other substances), with little reference to Western medicine. Students were specifically cautioned not to equate Chinese and Western medical diagnoses. The lecturer referred often to cases seen in clinical practice ('I saw a woman yesterday with dry skin and eyes and her hair falling out – classic signs of blood deficiency') and only very occasionally to research.

At one point, in a discussion about the lack of integration of Chinese medicine into Australian health care, the lecturer lamented the narrow criteria used to judge Chinese medicine's value, telling the students that there was too much weight put on trials: 'I do systematic reviews and trials – I know their strengths and weaknesses.' Reference to both the strengths *and* weaknesses of trials encapsulates the double orientation of Chinese medicine to science and to tradition; this was also embodied by the lecturer herself, who taught and practiced traditional approaches while simultaneously forging a successful research career using RCTs.

These findings show that the epistemic culture of Chinese medicine, as enacted within Australian universities, comes in multiple guises, aligning with biomedical approaches when it comes to research, whilst enabling 'an underlying commitment to other ways of healing' (Barnes, 2003, p. 296) to emerge through teaching. The data highlight the importance of both arenas in constituting Chinese medicine as a 'living tradition' (Scheid & Lei, 2014): biomedical-style research sustains Chinese medicine as an academic discipline and boosts legitimacy by producing mainstream forms of evidence, while teaching takes a broader definition of 'evidence' and legitimises traditional knowledge as well as bioscience. Although there is something of a disconnect between research and practice, and between research and teaching, participants were able to move forward with each of these separate endeavours, perhaps again reflecting a correlative epistemic orientation and the 'sense of security' enjoyed by living traditions (Scheid & Lei, 2014, p. 2). This sense of security was notably lacking within osteopathy.

Osteopathy

An uncertain identity and evidence base

Compared to the Chinese medicine academics, the OLs were much less at ease with the possibilities of maintaining the 'essence of their tradition' (Scheid & Lei, 2014, p. 2) while engaging with biomedical research paradigms. The notion of tradition was itself less accessible to them. The CMLs quite often spoke of 'traditional' approaches, while the OLs were more likely to refer to 'historical' aspects of their field. The subtle difference

between the two concepts – the former implying ongoing relevance, the latter, obsolescence – was illustrated in the ambivalence with which the osteopaths invoked their field's history. This could be used to argue for why a particular theory or technique should be retained in teaching: 'it is an integral part of the profession both historically and currently' (OL10). Or, for why some things were irrelevant: 'from our originators 120 years ago, we find some funny ideas there, but we just say [to sceptics] "that's historical, why do you challenge us now?"' (OL11).

If living traditions are able to maintain a sense of identity, this also seemed more problematic for the osteopath academics. Several spoke of the lack of a defined scope of practice in osteopathy and the difficulties this posed for the profession. This was compounded by a perception that osteopathy did not have a strong evidence base, in contrast to the CMLs' views of their field. OL6 spoke for most of the OL participants when he stated:

[O]ur practice needs to be informed by the evidence that's out there. Having said that, the profession doesn't have a lot of evidence at the moment, but that creates the opportunity to go and create that evidence as well, and one of the challenges, I think, that we have at the moment is we've got aspects of other professions that we can draw on ... but there's other areas of our practice that we don't, that we do need to go and create that evidence. ... It doesn't happen overnight and that's sort of where we're at, at the moment, I think, as a profession.

While a certain amount of research-based evidence could be borrowed from studies in chiropractic or physiotherapy, too much reliance on this in teaching or practice potentially blurred the boundaries of the profession, and hence most interviewees felt that the need to develop more osteopathy-specific evidence was urgent.

As mentioned, Chinese medicine in Australia has been strongly influenced by connections with China, where there has been a long history of government support for Chinese medicine research. In contrast, osteopathy's academic facet is more nascent. For instance, more than half of the OL participants had trained in a college rather than a university; this applied to only two of the CMLs. Significantly, only two OL participants had completed PhDs; most were currently undertaking one. Osteopathy has therefore had less opportunity to develop a 'robust' evidence base: in late 2015, a search for 'osteopath*' in the Cochrane Library yielded only ten reviews, compared to more than 240 for Chinese herbal medicine and acupuncture. This aligns with the strong sense among the osteopath academics that their epistemic culture was still emergent, and questions about how to shape it not yet resolved.

Defining the ontological object of interest

As outlined above, among the Chinese medicine academics there was a resigned (albeit not uncritical) acquiescence to the RCT as producing 'gold standard' evidence. The osteopaths, on the contrary, were much less convinced that this methodology, along with its emphasis on physical outcome measures, held the capacity to effectively capture the therapeutic effects of their practice. OL7 explained that the nature of the osteopathic patient encounter – characterised by Gale (2011) as embodied interaction – presented a complex challenge when attempting to isolate particular components that could be subjected to trials:

There are a lot of things within the patient encounter that we do – and, by the way, spinal manipulation is only a small part of what we do, it's a lot of different manual interventions, be it stretching and isometric contraction and rehab, you know, exercise therapy and all sort, mobilisation and so on – but also reassurance is really important and the recognition of that biopsychosocial model in recent years has grown. (OL7)

Typically, in osteopathic practice, the combination of interventions selected will be tailored to the patient and their particular problem, hence testing the effectiveness of just one technique is believed to hold limited relevance in this context.

Beyond the problem of lack of standardisation, precisely what the research object is, or should be, in osteopathic studies, was a source of contention. OL5 argued for more focus on the patient experience:

Even though we can read a paper and it says, 'Osteopathy is no more effective than ultrasound treatment', we can then say, 'But the thing that's missing from this paper is the patient experience'. There's no real literature that actually says 'this is what it's like to be an osteopathic patient'.

Another lecturer went further by suggesting that osteopathy does not in itself produce the kinds of outcomes that might be detectable through research:

It's got a, it's sort of, an own, powerful, innate process. I mean, the whole point of osteopathy is you don't actually fix anything: all we do is improve the environment for the body to fix itself. And it's simple. Doesn't really go well with big balloons, doesn't do much for big research, but it's very powerful. (OL3)

Through claims for the importance of the patient experience and osteopathy's innate power, these participants call attention to the profoundly experiential and narrative dimensions of osteopathy (Gale, 2011) and their explicit, deeply felt reluctance to exclude such central aspects of practice from research.

Reflecting these values, the kinds of research being conducted by the osteopathy academics were quite different from those in Chinese medicine. Only a minority were involved in laboratory or trial research. Instead, it was common for their research to be focussed on health services or education; often, in fact, with an implicit focus on defining what osteopathy is and what it does, and how its knowledge base can be produced and transmitted. Through such research activities, a reflexive redefinition of legitimate knowledge seemed to be occurring.

Reclaiming the 'evidence base'

One strategy that was used to deal with the lack of 'hard' evidence in osteopathy was to reiterate and claim allegiance to what was deemed the 'original' or 'classic' definition of EBM. This in fact referred to the revised version from 2000:

If you look at the original definition by Sackett, it's probably warm and fuzzy in that it's using the best clinical evidence and integrating that with clinical experience in line with the values of the patient, and that's quite different to saying all we should be doing is something that's evidenced by high-quality evidence. (OL7)

According to OL7, this philosophy meant that, in practice, treatments could be offered as long as patients were informed that there was no scientific evidence to support them and as long as better treatments were not being withheld. As described by another lecturer, in

teaching also, the definition of EBM was reclaimed so that practicing in the absence of evidence became a form of evidence-based practice:

The way we approach it [in teaching] is that if there isn't the evidence base there, then that's what we say [to students], is that, 'Okay, what we're showing you, there isn't really an evidence base for, and so therefore you've got to make a decision with your patient about whether that's appropriate for that patient or not'. And so, like, we're really trying to institute that classic definition of what evidence-based medicine is about. (OL6)

Another strategy involved developing new methods of gathering evidence. OL8 argued that, 'we probably haven't got the tools yet to measure the effectiveness of many of the things we do', implying that methodological development was the key to revealing osteopathy's properties. Significantly, some were going about this by advocating for greater use of qualitative research and other approaches derived from social science:

The profession needs me to be ... that qualitative, you know, experience, grounded theory – you know, that sort of scholar, because that's really the paradigm that our profession sits in, and I think that where we've come undone is by other osteopathic academics trying to fit our profession into a hierarchy of evidence which is based on a pharmaceutical company. I mean, why isn't it working? That's why it's not working. (OL5)

Those in the profession who boo-hoo or belittle or see as completely irrelevant qual' research, I think are very myopic. And for us to substantiate our existence and our uniqueness, we need to be investigated. And because – the best way to do that I think is, of course, not quant' but qual' research. (OL10)

At this point, such research strands are emerging in osteopathy but are not yet present as strong programs (Thomson, Petty, Ramage, & Moore, 2011). Both OL10 and OL5's comments suggest they remain contested within the profession. Nevertheless, these developments represent a clear resistance to the dominant epistemologies of biomedical research. They are also suggestive of a divergence between the epistemic cultures of osteopathy and Chinese medicine.

Conclusion

This paper set out to examine how CAM academics are responding to ongoing tensions in their field regarding the need to produce more systematic evidence without losing sight of CAM's holistic worldview. The comparative analysis of academic osteopathy and Chinese medicine has demonstrated that, rather than being united by a common epistemic orientation, diverse beliefs and practices around knowledge-making prevail between (and within) different CAM modalities. The Chinese medicine academics had embraced RCTs and laboratory based research, seeking to isolate physical effects and chemical compounds. This was partly a strategy to further Chinese medicine's acceptance within mainstream health care, although it also reflects the scientisation of Chinese medicine that has been occurring in China since the mid-twentieth century, and the influence of other branches of science on Chinese medicine within Australian universities. The osteopaths, on the other hand, generally preferred to understand meaning and experience, viewing these as integral components to osteopathic ontology. They emphasised the experiential and value-centred elements of EBM and were beginning to look to social science disciplines to inform their epistemic culture.

By exploring its constitution within academic settings, this study has shed light on how Chinese medicine is able to reproduce itself as a 'living tradition', showing that, although research practices were strongly biomedical, *teaching* included traditional philosophy in its own right. However, the osteopath academics experienced greater difficulty in reconciling their past with their future. Some participants expressed considerable angst over the recent removal from degree programs long-established techniques that lacked scientific evidence (such as cranial osteopathy). The modality's relatively short history in comparison to Chinese medicine made recourse to 'tradition' much more difficult. By looking beyond dominant research approaches, however, osteopathy may be better placed to avoid the divergence of research from practice that has emerged as the Asian medicines have been 'scientised' (Kim, 2007; Scheid & Lei, 2014).

The differences identified between the academic cultures of osteopathy and Chinese medicine unsettle the depictions of a homogenous CAM ontology and epistemology so often mobilised in debates over CAM's evidence base. However, awareness of CAM's 'epistemic disunity' (Knorr-Cetina, 1999, p. 4) does not render the category itself meaningless. The study has highlighted commonalities between the two disciplines which reflect their CAM status: an ongoing struggle to 'prove' their legitimacy to biomedical sceptics; their adoption of research methods from other, more established academic disciplines; and a still unresolved tension between tradition and science. In both osteopathy and Chinese medicine, in fact, their epistemic cultures operate as spaces of contention, contrasting with the seemingly settled scientific fields described by Knorr-Cetina (1999). Continuing to unpack differences within and between CAM modalities as they respond to the current politics of knowledge in health care will enable development of a more nuanced sociology of CAM.

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