

that therapists are often encouraged to mould perceptions of their clinical experiences so that they make sense of them in terms of homeopathic theory. Fordham uses the example of the *dynamis*, or vital force, to illustrate this point further.

Diversity and acupuncture: acupuncture is not a coherent or historically stable tradition

Stephen Birch

INTRODUCTION

Since acupuncture is widely practised today and has been practised in many different social and political climates, there are naturally many ways that it has been described and practised. Many of those writing about acupuncture appear to be unaware of that diversity. In contrast to how it is described in most of the popular and professional Western literature, acupuncture is a multimodal system of healing with multiple competing explanatory models. Depending upon context, it is found as an integrated part of, a self-sufficient system of, or a discrete set of techniques within multiple systems of medical practice, both East Asian and Western origin. This essay will examine and contrast popular and more scholarly representations of acupuncture, briefly exploring reasons for some differences between them. Examples of how these differences impact on the scientific investigation of acupuncture will be presented. Finally, key issues of importance to scientists investigating acupuncture will be discussed.

BACKGROUND

Acupuncture has been practised in China for at least 2000 years, in Korea and Japan for around 1500 years, Europe for over 300 years and in North America for over 150 years (Lu and Needham, 1980). It is now practised in over 100 countries around the world (World Health Organization, 1985). It has continuously evolved since its practice began, responding to political and

socio-cultural pressures, the medical exigencies of the time and the inventive creativity of individuals. This constant adaptation is partially responsible for its reception in so many periods and countries (Birch and Felt, 1997). However, it has also fostered a wide range of explanatory models, diagnostic methods, and therapeutic interventions.

Usually those involved in the study and practice of acupuncture, describe a particular explanatory model with its methods of practice. They then go on to claim (explicitly or implicitly) that what they have described is representative of the whole field. Furthermore, by suggesting that what they have described is 'correct', they imply that there is something inadequate or wrong in what others describe. We must be wary of such representations. There is therefore no historical or scientific evidence to support any claim that any particular model of acupuncture is superior to any other. Moreover, many representations about acupuncture are not entirely accurate.

In describing the history, nature and practice of acupuncture we must proceed neutrally and cautiously. I will argue that many interested in the scientific investigation of acupuncture have not been aware of these issues. They have investigated concepts or methods of questionable value and have assumed that these were representative of acupuncture as a whole. In this paper I will briefly examine the scope and nature of acupuncture, and then examine how proponents, and consequently scientists, have portrayed it. Any assessment of acupuncture should depend not only on clinical research, of which much has already been done, but also on a scholarly assessment of its nature and history. Many of the claims that have been made do not match the broader body of literature on acupuncture.

EVIDENCE FOR DIVERSITY IN ACUPUNCTURE

A comprehensive description of acupuncture is beyond the scope of this paper, but based on a review of published literature from a number of key countries we can illustrate the extent of the diversity of explanatory models and methods of practice. Table 3.1 gives examples of the varied explanatory models from China, Japan, France, the USA and the UK. While not exhaustive, it illustrates the range of models.

Proponents of particular models might take issue with the classification scheme in Table 3.1. For example, supporters of the system of 'traditional acupuncture' that is taught at the Traditional Acupuncture Institute in Columbia, Maryland, might argue that this is a traditional system and not a 'unique system'. However, no other approach attempts to meld principles and ideas from the Chinese classics with EST principles, or the American 'Human Potential Movement' of the late 1960s and early 1970s, (Cassidy, 1994); thus it is classified as unique.

Table 3.1 Examples of various explanatory models of acupuncture

	China	Japan	France	USA	UK
Traditional explanations only	Liu (1988) Wiseman (1985)	Fukushima (1991) Shudo (1990)	Larre <i>et al.</i> (1986)	Anon (1980) Cheng (1987)	Maciocia (1989) Worsley (1973)
Mixture of traditional and modern explanations	O'Connor and Bensky (1981)	Manaka, Itaya and Birch (1995) Nakatani and Yamashita (1977)	Mussat (1972) Requena (1986)	Helms (1995) Liao, Lee and Ng (1994)	Mann (1974)
Modern scientific explanations only		Debata (1990)		Ulett (1992)	Baldry (1989)
Unique ideas	Zhang (1979)	Suehara (1985)	Nogier (1983)	Connelly (1979) Voll (1975)	Kenyon (1983) Voll (1975)

Traditional explanatory models invoke concepts found in the earlier historical literature, many of which persist into modern practice. Examples of such concepts are the theories of: *yin-yang*, five phase, *jing-luo* (channel), *zang-fu* (organ), and *qi* (finest matter influences). Diagnostic assessments are usually stated in combinations of these terms, with treatments targeting, at least in part, those perceived problems. Modern explanations invoke concepts whose origins are typically found in modern scientific and medical literature. Examples of such concepts include: trigger points, motor points, the autonomic nervous system, and neuropeptides such as endorphins. Disease categories are typically those of modern pathophysiology. The different models of practice within and between countries are usually not congruent with each other; while they are superficially similar in that they use, for example, traditional or modern scientific explanations, these explanatory models are often contradictory and often quite distinct.

The historical literature also describes treatment approaches in a variety of different ways. There are treatments based on an assessment of the patient in terms of traditionally conceived ideas of physiology (*jing-luo*, *zang-fu*, *yin-yang*, *qi*, etc.), with treatment aimed at correcting those perceived problems. These are sometimes called *zhi ben*, (root treatment) approaches, in contradistinction to the *zhi biao* (branch treatment) approaches, which target relief of symptoms. Sometimes the *zhi ben* and *zhi biao* treatment approaches were combined, and at other times were applied separately. In each approach there have been many models, depending upon the author and the historical period. Table 3.2 gives examples of historical and modern sources for *zhi ben* and *zhi biao* approaches.

Table 3.2 Examples of root/symptom treatment approaches

	Historical examples	Modern examples
<i>Zhi ben</i> root treatment	<i>Huang Di Nei Jing Su Wen</i> (c. 200 BC) (see Liao, 1992) Mi (282) (see Yang and Chace, 1994)	Fukushima (1991) Shudo (1990) Wiseman (1985)
<i>Zhi biao</i> symptom control treatment	<i>Huang Di Nei Jing Su Wen</i> (c. 200 BC) (see Liao, 1992) Mi (282) (see Yang and Chace, 1994)	Serizawa and Kusumi (1988) So (1987) Ulett (1992)
<i>Zhi ben</i> and <i>zhi biao</i> treatment	Mi (282) (see Yang and Chace, 1994) Yang Ji-zhou (1601) (see Yang and Liu, 1994)	Manaka, Itaya and Birch (1995) Soulie de Morant (1994)

Table 3.3 gives examples from the five countries listed in Table 3.1 of the varied techniques that are applied by acupuncturists as part of the practice of acupuncture. While not exhaustive, it illustrates the range of methods.

One can clearly see in Tables 3.1–3.3 a broad range of models, methods and treatment approaches. Acupuncture is also practised in many different contexts. In China today it is practised in a number of different ways: i) as part of the first tier of medical care (what began as the practice of the 'barefoot doctors'), including basic Western medicine, paramedical treatments, herbal medicine, acupuncture and massage (Rosenthal, 1987); (ii) as part of the practice of 'traditional medicine' in Western-style hospitals, often combined with herbal medicine or massage (Liu, 1988; Wiseman and Ellis, 1985); (iii) as a specialised method employed independently of other medical techniques (Cheng, 1987); (iv) as an adjunct to Western medical care, for example in surgery (Anon. 1975); and (v) as a recently re-emerged independent method of health care practised outside of mainstream health care (Western or traditional), part of the new market system of China (Zhu, 1993). In Japan, on the other hand, acupuncture is mostly practised in private practice outside of the practice of Western medicine and herbal medicine, but often with massage (Birch, 1989–1991; Nakagawa, 1987; Sonoda, 1988). Acupuncture, moxibustion and massage are each licensed separately (Birch, 1989–1991; Nakagawa, 1987; Sonoda, 1988), with many practising each, and some specialising in only one (e.g. Irie, 1980). While some practise acupuncture with herbal medicine, for legal reasons it is mostly practised independently of herbal medicine (Birch, 1989–1991). It is also practised in a large number of hospitals, and is thus practised as a technique partially integrated into standard care. Other countries manifest further diversity, where it is integrated with other traditional medicines such as herbal medicine (Maciocia, 1994), or homoeopathy (Kenyon, 1983, 1985; Voll, 1975), or utilised as a speciality technique within Western medical clinics such as pain clinics (Chapman and Gunn, 1990;

Table 3.3 Examples of the diverse methods employed in acupuncture

	China	Japan	France	USA	UK
Needling with <i>de qi</i> type stimulation (sensations of 'soreness' numbness, heaviness, distension' (Cheng, 1987, p. 326) or 'sharp, pulling, electric, tingling, heavy, pulsing, spreading, pricking, aching or hot' (Vincent <i>et al.</i> , 1989)	Anon. (1980) Cheng (1987) O'Connor and Benschky (1981) So (1987)	Zheng (1991)	Auteroche <i>et al.</i> (1992) Requena (1986) Soulie de Morant (1994)	Anon. (1980) Cheng (1987) O'Connor and Benschky (1981)	Maciocia (1994)
Needling with no <i>de qi</i> type stimulation	Zhang (1979)	Akabane (1986a, b) Fukushima (1991) Manaka, Itaya and Birch (1995) Shudo (1990)	Fukushima (1991) Manaka, Itaya and Birch (1995) Shudo (1990)	Fukushima (1991) Manaka, Itaya and Birch (1995) Shudo (1990)	
Shallow needling	Bischko (1986, p. 29)	Akabane (1986a) Fukushima (1991) Shudo (1990)	Soulie de Morant (1994) Fukushima (1991) Shudo (1990)	Birch and Ida (in press) Shudo (1990)	
Non-inserted needling		Birch and Ida (in press) Fukushima (1991) Mori and Yoneyama (1983)	Soulie de Morant (1994) Fukushima (1991) Mori and Yoneyama (1983)	Birch and Ida (in press) Fukushima (1991)	
Needling to stimulate nerve structures	O'Connor and Benschky (1981, p. 467–9)	Serizawa and Kusumi (1988)	Serizawa and Kusumi (1988)	Ulett (1992)	Baldry (1989)
Electroacupuncture	Cheng (1987) O'Connor and Benschky (1981)	Shimizu (1986)	Mussat (1972)	Ulett (1992)	Baldry (1989)
Tiny electrical stimulation		Manaka, Itaya and Birch (1995)		Manaka, Itaya and Birch (1995) Matsumoto and Birch (1988)	Manaka, Itaya and Birch (1995) Matsumoto and Birch (1988)
Two-metal contact or magnets	Chen (1979)	Nagatomo (1976)		Matsumoto and Birch (1986)	Matsumoto and Birch (1986)

Table 3.3 (continued)

	China	Japan	France	USA	UK
Moxibustion	Anon. (1980) Cheng (1987) O'Connor and Bensky (1981) So (1987)	Akabane (1986b) Birch and Ida (in press) Irie (1980) Manaka, Itaya and Birch (1995)	Auteroche <i>et al.</i> (1992) Soule de Morant (1994)	Birch and Ida (in press) Ellis, Wiseman and Boss (1988)	
Cupping	Cheng (1987) O'Connor and Bensky (1981) Wang and Ren (1985)	Meguro (1991)	Auteroche <i>et al.</i> (1992)	Birch and Ida (in press)	
Bloodletting	Wang and Ren (1985)	Mariyama and Kudo (1982)	Auteroche <i>et al.</i> (1992)	O'Connor and Bensky (1981)	
Surgical applications	Anon. (1975) O'Connor and Bensky (1981)				

Gaupp, Flinn and Weddige, 1989) and drug abuse treatment centres (Brumbaugh, 1993; Culliton and Kiresuk, 1996). There is clearly no one approach to the practice of acupuncture. It is practised as an independent medical system, a method couched within other systems or as a discrete set of techniques integrated into other models of health care. In short, acupuncture is a multimodal system of healing with multiple competing explanatory models delivered within or outside of multiple health care delivery systems.

CONTEMPORARY ACCOUNTS OF ACUPUNCTURE FAIL TO TAKE ACCOUNT OF ITS DIVERSITY

Despite the ready availability of evidence of diversity in acupuncture, most commentators make more limited descriptions which they then use as if they applied to the whole field. This problem is further compounded when these more limited descriptions are stated in a way that implies that other descriptions or methods are wrong or ineffective. For example, many modern Chinese influenced texts state that for acupuncture to be effective, 'de qi' must be obtained at every site needled (Anon. 1980; Cheng, 1987); 'in the process of

acupuncture, no matter what manipulation it is, the arrival of *qi* must be achieved. . . . When the patient feels soreness, numbness, heaviness and distension around the point, or their transmission upward and downward along the meridians, it is a sign of the arrival of *qi* (Cheng 1987, p. 326). Authors from other traditions insist that this is not necessary (Fukushima, 1991; Manaka, Itaya and Birch, 1995; Shudo, 1990), or interpret the sensations of 'de qi' quite differently (Manaka, Itaya and Birch, 1995; Shudo, 1990). Authors writing about the modern Chinese system, 'traditional Chinese medicine' (TCM), have usually followed the contra-indication that moxibustion should not be used in febrile conditions or when the patient is hot (Anon. 1980; Cheng, 1987; O'Connor, 1981), yet moxibustion specialists in Japan routinely use moxa for precisely those conditions (Irie, 1980), and recent scientific research in China has suggested that moxa is effective for febrile conditions (Tian and Wang, 1987; Wang, Tian and Li, 1987). Some authors claim that for acupuncture to be practised correctly it must be practised according to the principles of Chinese medicine, and that treatments must be made accordingly (Bensoussan, 1991; Diebschlag 1993; Maciocia, 1993): 'In order to get the most out of acupuncture treatment, symptoms must be interpreted according to the theoretical framework of traditional Chinese medicine and treated accordingly' (Diebschlag, 1993); 'A good understanding of TCM is necessary in order to be able to treat pain successfully with acupuncture' (Bensoussan, 1991, p. 21); This model of Chinese medicine is implied to cover all 'traditionally based models (see Maciocia, 1989, p. ix) yet refers only to the current model from China or a Westernised version of it. Despite the absence of comparative studies and hence any data to support this claim, such authors *de facto* imply that to practise other than the models they describe is wrong. Some who practise acupuncture with herbal medicine following a model that developed in China in the 1960s and 1970s insist that acupuncture has to be practised with herbal medicine to constitute a valid treatment. For example, herbal medicine is a necessary component of the acupuncture licence in California. The fact that this model of practice has already changed to one of specialised practices in China (Ergil, 1993, 1994a, 1994b), and the fact that acupuncture is routinely practised separately from herbal medicine in, for example Japan, appears to be either unknown or simply ignored.

Some authors, in an effort to make their descriptions of acupuncture more palatable to their audience, have added, omitted or distorted key aspects of what they describe. Inaccurate and fanciful descriptions of the history of acupuncture can be found which are intended to help legitimise and popularise a particular 'traditional' model of practice. The preface of a popular text (Maciocia, 1989, p. vii) describes how a peasant woman in 154 BC went for acupuncture (which was not available to peasants at that time (Unschuld, 1985, p. 93), was diagnosed with a condition that would not be described for many centuries (Morohashi, 1976) and was treated by a method that would not be described for that condition for almost two millennia (Cui and Zhang,

1989). The author then attempts to tie this fanciful history to the modern practice of TCM acupuncture as an example of the historical origins of that modern practice, and hence a validation and justification of it. Of these kinds of misrepresentation, Unschuld comments 'Chinese publications, especially those of the last three or four decades, as well as virtually all Western authors promoting traditional Chinese medicine as an alternative to Western medicine, have depicted traditional Chinese medicine, in contrast to historical evidence, as a coherent system of thought, basically unchanged since antiquity' (Unschuld, 1992, p. 54.) On the other hand, distorted traditional descriptions that are intended to ridicule the models from which they supposedly derive can also be found. Melzack, Stillwell and Fox (1977) describe the acupuncture points as being 'associated with an ancient conceptual but anatomically non-existent system of meridians which carry Yin (spirits) and Yang (blood)'. This is a very strange distortion of the language and models of the channels (meridians) and their points, and curiously, is not referenced to any source. Furthermore, it states the authors' untested opinions (that the channels are non-existent), as though those opinions were proven facts. There are examples where modern twentieth-century concepts have been added to 'traditional' models of practice that have no legitimate relationship to that 'tradition'. Pachuta, in a seemingly academic account of acupuncture (Pachuta, 1989, p. 67), makes the following remarkable statement: 'In the Eastern systems, centeredness and wholeness of the practitioner are crucial, and love is essential to the cure.' It is difficult to imagine how to translate these concepts into Chinese, and where in the Chinese literature one might find such concepts. The term 'love', for example, is not only absent in the technical vocabulary of Chinese medicine and acupuncture (Wiseman and Boss, 1990), but its equivalent Chinese term the character 'ai' (Matthews, 1979, p. 2) can be found only once in the classic acupuncture texts of the *Nei Jing*, the *Huang Di Nei Jing Su Wen* and *Ling Shu* (Kitasato, 1979, 1982). The term 'love' is hardly a 'crucial' or 'essential' concept in acupuncture. This overlay of 1960s Western idealism is not uncommon. There are also examples where significant aspects of the practice of acupuncture are sometimes omitted by particular proponents, for example the model of practice called 'traditional acupuncture' teaches that it is incorrect to treat the symptoms, rather one should focus on the 'causative factor' (CF) (Worsley, 1973, p. 3). This view excludes the huge body of literature from hundreds of texts over two millennia which describe various treatment strategies for relieving specific symptoms. Unschuld has discussed how these distortions have crept into the modern Western literature on acupuncture: 'it is quite inappropriate to select one single facet or approach one single level and call this facet or level "Chinese medicine" - as is done so often today - simply because here we find what many are searching for, an alternative to current Western medicine.' (Unschuld, 1987; see also Unschuld, 1992).

Many more examples could be added to illustrate how proponents of a particular school promote a limited or incorrect idea and then attempt to

generalise it to the whole field. It is of course to be expected that a medical system as old and broadly practised as acupuncture should have a widely discrepant corpus of literature. It is also to be expected that a system of medicine from non-Western cultures couched in the language and concepts native to those cultures, would suffer distortion through problems with translation (Unschuld, 1989; Wiseman, 1995; Wiseman and Boss, 1990), and the availability of translated materials (Birch and Tsutani, 1996; Unschuld, 1989, p. ix). While these issues pose problems for the average practitioner, the difficulties they pose for the scientist wishing to research acupuncture are even more significant. Unfortunately, many of these issues have not emerged before in the scientific investigation of acupuncture. This has both undermined the validity of some research efforts and has rendered many studies difficult to interpret. Central to much of this debate is an argument about the nature of the 'paradigm' of acupuncture and whether acupuncture is 'holistic' or not, and thus whether it must be applied and tested according to 'traditional' principles.

ACUPUNCTURE AS HOLISTIC MEDICINE?

Though there are many claims that acupuncture is 'holistic', we saw in Table 3.1 some modern models of practice that are clearly not 'holistic' (Baldry, 1989; Debata, 1990; Ulett, 1992). Though this is discussed briefly elsewhere (Birch, 1995a; Unschuld, 1987, 1992), it is useful to examine the nature of the 'paradigm' of acupuncture and claims that acupuncture is a form of holistic medicine.

It is assumed by many authors that the underlying 'paradigms' of acupuncture and Western (or bio-)medicine are quite different (Cassidy, 1995; Rubik, 1995), and that acupuncture is 'holistic' (Beinfeld and Korngold, 1991; Cassidy, 1995; Hammer, 1990; Kaptchuk, 1983; World Health Organization, 1995). 'The Chinese method is thus holistic' (Kaptchuk, 1983, p. 7); 'Acupuncture was developed as a branch of traditional Chinese medicine on the basis of oriental philosophy which takes a holistic approach to regulating the balance of the human body' (World Health Organization, 1995). The term 'holistic' is rarely defined clearly in the Western acupuncture literature. A holistic model can be one in which the whole person is taken into account (see e.g. Kaptchuk, 1983, p. 7). A holistic model can also be one where the theoretical nature of the body posits a total interaction of all parts with each other so that none exists or functions independently of the rest (this model is articulated in Needham, 1956; Rubik, 1995). A further viewpoint on holism posits a more ideological position (see Birch, 1995a; Capra, 1982; Dossey 1982; Foss and Rothenberg, 1987). It is argued that Western science and medicine are based on a Cartesian philosophy that perceives a dualism of body and mind, which are considered as though they were separate entities. In this model the reductionist approach is important: to understand how something works,

one needs to examine the smaller components that make up that thing; the big picture is simply the sum of its parts. This model further supposes a simple cause and effect relationship whereby the actions of particular things (effects) are the result of prior events or actions (causes). The 'holistic' model supposes a different set of assumptions: the mind and body constitute an inseparable whole, completely interrelated, in denial of Cartesian dualism; the whole is greater than the sum of its parts, in opposition to the reductionist model; and all things interact with each other, so there is no simple cause and effect relationship between one event and another.

There are many philosophical and ideological arguments about these two basic approaches (Birch, 1995a; Capra, 1982; Dossey, 1982; Foss and Rothenberg, 1987). What is important here is that many Western authors see in the traditional explanations of acupuncture the basis for a more holistic model of the body and system of medical practice (e.g. Connelly, 1979; Jarrett, 1995; Kaptchuk, 1983; Rubik, 1995). It is posited that in the traditional model of acupuncture, the mind and body were never discussed separately – seen in the schools of thought that talk about the 'body-mind' or 'body-mind-spirit' (e.g. Connelly, 1979; Jarrett, 1995; Larre, Schatz and Rochat de la Vallee, 1986; Maciocia, 1989; Pachuta, 1989). It is also posited that the traditional models are non-reductionist and acausal, describing how all things interact all the time with all other things and how the whole is greater than the sum of its parts (e.g. Beinfield and Korngold, 1991; Connelly, 1979; Rubik, 1995).

While it is true that there are models, concepts and theories within the traditional explanatory models of acupuncture that are 'holistic', it is also true that there are many important and not insignificant examples of models, concepts and theories that are clearly not 'holistic'. Unschuld (1987, 1992) and Chiu (1986) detail many historical examples that clearly argue against universal statements of 'holism' in the traditional explanatory models. For example, just as in modern Western medicine, many treatment strategies focus on removing or killing pathological agents that have penetrated the body from the outside (bacteria, viruses), so too does Chinese medicine use treatment strategies that focus on removing or doing battle with pathological agents that have penetrated the body from the outside (wind, cold, damp) (Unschuld, 1987, 1992). This stands in stark contrast to the purely holistic models of Chinese medicine put forward by many modern proponents. The traditional model was essentially poly-paradigmatic. Unschuld clearly illustrates the existence of multiple competing explanatory models and concepts in the historical and modern literature on acupuncture. 'Holistic' models and concepts are routinely set out alongside or in opposition to non-holistic (what Unschuld has called 'ontological') models or concepts (Unschuld, 1987, 1992). The picture is far more complex than many Western authors have tried to portray: 'the alleged antagonism between a holistic-individualistic Chinese medicine and an ontological-localistic Western medicine is a drastic and misleading historical simplification of both traditions. The issue is far more complex than

is usually thought.' (Unschuld, 1992, p. 57). Thus, while it is not correct to argue an across-the-board 'holism' for the traditional models of acupuncture and related systems, it is also clear that many aspects of these models are 'holistic'.

RESEARCH IMPLICATIONS OF DIVERSITY IN ACUPUNCTURE

There are a number of ramifications to these complex multi-tiered theoretical perspectives within the traditional explanatory models. How does one decide which system of acupuncture to follow and test? How does one generalise from the findings of a study testing one of these models or methods to other models or methods? What does the researcher need to look for in a particular description of practice in order to judge the accuracy of what is described?

(1) It is evident that the claim that acupuncture is 'holistic' is problematic, especially when attempting to generalise across the whole field. For example, the insistence that all clinical trials of acupuncture must adhere to testing the 'holistic' nature of acupuncture – in other words that treatments must be based upon traditional (holistic) diagnostic assessments (Bensoussan, 1991; Diebschlag, 1993; Jarrett, 1995; Maciocia 1993) – is not valid. A particular model of practice may be traditional (holistic), but not all models are. Thus different research models may be needed depending on the treatment model tested. This still leaves the problem of how one decides which model of practice to test.

(2) Many authors claim a distinct dichotomy between the 'holistic' integrated models of acupuncture (or Eastern medicine) and the fractured scientific models that underlie biomedical practice and research (or Western medicine) (Beinfield and Korngold, 1991; Jarrett, 1995; Rubik, 1995). Not only does this describe the models underlying acupuncture simplistically and inaccurately (Unschuld, 1987, 1992), it also misrepresents the complex nature of Western medicine, which also has emerging 'holistic' aspects (Foss and Rothenberg, 1987).

Some proponents of this dichotomy argue that it is therefore not possible to use scientific methods, tools and technologies to investigate acupuncture without violating and thus diminishing it (Jarrett, 1995). While it is possible that scientific methods, tools and technologies can be misused in the study of acupuncture, it is not a logical necessity that this will inevitably occur. In any scientific study, investigators must proceed cautiously and become as familiar as possible with the subject under study before designing experiments. To date, failure to do this has been one of the primary shortcomings of scientific investigations of acupuncture. Many investigators appear to have been inadequately informed about the complex nature and details of the practice of

acupuncture (for clinical trial examples, see Birch (1995b, 1997)). Birch and Tsutani suggested that problems in the availability of reliable published literature contributed to this inadequacy (Birch and Tsutani, 1996). Many investigators also appear to have taken what proponents have said at face value without questioning it. Unfortunately, as we have seen above, proponents typically describe very limited models. Investigators thus run the risk of investigating things that may be inaccurate, and, in particular, that cannot be generalised. Examples can be found in the clinical trial literature, where inadequate knowledge of the practice of acupuncture has fostered assumptions about what constitutes an adequate treatment, and thus what should be an appropriate control treatment in clinical trials of acupuncture (see Birch, 1995b, 1997). Faulty assumptions about what constitutes the 'real' or 'test' acupuncture treatment usually lead to very poorly conceived notions of what should constitute the 'sham', 'placebo' or 'control' needle treatment. This has undermined many acupuncture trials for the following reasons: (a) what most would consider to be an inadequate treatment is administered as the 'real' or 'test' treatment (e.g. Edelist and Gross, 1976; see Coan *et al.*, 1980); (b) inappropriate treatment is administered as the 'sham', 'placebo' or 'control' treatment where an inactive or placebo treatment is believed to have been applied but instead a very active treatment has been applied (e.g. Wyon *et al.*, 1995; see Birch, 1997); (c) sample size is often inadequate, primarily because of assumptions about the nature of the control treatment.

(3) Establishing 'model fit' and selecting appropriate research methods (Jonas, 1995) is very important in scientific studies of acupuncture. But much greater care needs to be given to this issue than we have seen so far. We must be very careful about any assumptions we make about the nature of the models and we should be willing to utilise a broad range of research methods. For example, if we accept that a particular method of practice we wish to test in a clinical trial is 'holistic', how should we modify the way the study is done, compared with testing a model of practice that we do not consider 'holistic'?

If we test a model that is clearly not 'holistic' in approach, does this let us off the hook? If we assume that 'holistic' models of the body are wrong and focus only on measuring specific outcomes, the fact that we do not attempt to measure more general whole system outcomes could mean that we miss collecting important data. But do we know if general whole system changes occur whether an individualised, more 'holistic' treatment is administered or not?

(4) It should be recognised that there are probably significant limitations in how far the results from a particular study can be generalised, and that therefore care should be taken not to generalise too much. For example, almost all the research validating the opioid peptide models of acupuncture is based on the use of electrical stimulation with needles, especially on animals. The

remainder is based on the use of *de qi* type needling. There appears to be no research that has examined other needle techniques to see if the same or similar mechanisms are activated, yet authors often generalise the opioid model across the field. Interestingly this often transpires by a kind of reverse logic: since only electroacupuncture techniques have been clearly shown to activate the opioid peptide mechanisms, then other techniques do not constitute 'real' acupuncture (Ulett 1992), and can thus be used as needle controls in clinical trials (Wyon *et al.*, 1995).

To increase the generalisability of results, it will be necessary to work out some method that allows broader generalisations. Many models or methods need to be experimentally examined and compared. In the design of a study, a neutral treatment approach could be selected that is based on finding significant agreement among a number of diverse sources, as suggested in the BRITS method (Birch, 1995b).

When writing up results from a study, care must be taken to describe accurately the history and nature of acupuncture. One should avoid describing a particular model of practice as though it were reflective of all models. Being careful to cite more reliable sources is important. When citing sources that do not contain the essential ingredients necessary to any good text, it is important to be aware of their limitations. If a text claims to be a translation, it should clearly reference or describe the glossary or dictionary used for that translation. If the text claims to describe a 'traditional' model of practice, it should have adequate referencing of 'traditional' sources. Also beware of excessive use of referencing of secondary sources rather than primary sources. The more secondary sources that are used, the greater the possibility of error.

Clinical trials of particular therapeutic agents, such as pharmaceutical drugs, or therapeutic interventions, such as physical therapy, are not used to argue that 'Western medicine' is of benefit or is not of benefit based upon the results found; rather they are used to conclude that that particular intervention is or is not of benefit. So too in the evaluation of acupuncture, the conclusions from a study testing auricular needling, surface electrical stimulation, electroacupuncture, standard TCM or other methods of acupuncture should not conclude that 'acupuncture' is or is not of benefit; rather one should conclude that that specific acupuncture intervention is or is not of benefit. It is important to be as specific as possible, but many studies have not done so (see Hackett, Seddan and Kaminski, 1988; Ter Riet, Kleijnen and Knipschild, 1990). This not only gives a fairer representation for acupuncture, but also informs acupuncture practitioners, researchers and policy makers about what parts of the field have been shown to be of benefit or not of benefit.

(5) When a researcher consults an acupuncturist, if that person insists that the treatment must be done according to a particular set of principles (e.g. according to the principles of 'traditional Chinese medicine'), or done a certain

way ('de qi' must be achieved at every point, electrical stimulation must be applied, etc.), it is good to question this and request that the acupuncturist provide evidence to support what they claim. If there are issues that cannot be resolved, even after consulting other acupuncturists, it may be necessary to consult outside experts (linguists, sinologists, medical historians, etc.). Few acupuncturist practitioners can answer technical academic questions or are familiar enough with the issues involved in clinical trial designs. The investigation of acupuncturist is likely to need a multidisciplinary approach. The skills of scholars, linguists, basic science researchers, clinical researchers and acupuncturist practitioners may need to be invoked in varying degrees in many studies. Unfortunately most research teams have not been so well represented.

CONCLUSION

Many claims about the nature, history, scope, scientific basis and practice of acupuncturist appear to be hard to generalise. Acupuncturist is a set of therapeutic interventions consisting of multiple methods and utilising a range of diverse explanatory models. However, few practising or writing about acupuncturist seem aware of this diversity and its implications; they make claims about acupuncturist that are inaccurate or limited or cannot be generalised as intended.

This essay has explored the diversity of acupuncturist and discussed examples from the popular, clinical and scientific literature of claims that are inconsistent with that diversity or inconsistent with established facts. Implications, especially for the scientific researcher, were discussed, with potential solutions suggested for a number of critical issues.

Acupuncturist is a complex multifaceted field that requires more thorough consideration and more extensive exploration than is usually found in the popular and professional literature about it. If it is to be more thoroughly explored by scientists and other researchers, these issues will need much more attention than they have previously received.

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