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Absolving Chiropractic's indeterminacy through interdependence

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Context: The chiropractic clinical encounter is a vague event in terms given by Swinburne[56] and is difficult to define. This vagueness or indeterminacy is drawn from the variability of the Chiropractor and their training, the variability of the clinical entity within and about the spine that they seek to treat, and the unpredictable variability of individual patients. Collectively these create Chiropractic's indeterminacy.

Discussion: The clinical outcomes from a Chiropractor's care are remarkable. There are over 3,089 indexed, published Case Reports of Chiropractors telling their unique story of positive clinical outcomes resulting from their clinical management at the intersection of these indeterminacies. I question how this can be in the face of the interaction presenting as a complex problem with multiple indeterminacies.

Using the philosophical approach of a Pragmatist I absolve these indeterminacies by applying the Japanese philosophy of kokoro with '*affective sensibility and rational thought*' to explain the Conventional, Realist Chiropractor's clinical encounter through interdependency. Here I argue how and why this could be so and that this argument most probably applies also to the interactions of post-realist small-c chiropractors.

Conclusion: I conclude that interdependency is an acceptable explanation for the effectiveness of the Chiropractic healing encounter. This contention places importance on the interdependency of the relationships in the Chiropractic clinical encounter and removes Western ideas of cause and effect. Interdependence allows inclusion of McDowall's concept of tone and Richards' understanding of vitalism.

Indexing Terms: Chiropractic; philosophy; education; indeterminacy; interdependence; Bayesian.

Prelude

This paper presents my view that very little is known in the scientific, reproducible and testable sense about what it is, in replicable terms, that Chiropractors do with their patients to achieve beneficial clinical outcomes.

There are high levels of indeterminacy in how a clinical practitioner is trained, how they decide what they are going to address in the clinical sense, and then how they address it, so that the acts within Chiropractic are beyond standardisation. Add to this the known high degree of variability among humans as patients and we have multiple indeterminacies associated with every act of Chiropractic clinical intervention. The same applies in Nursing and Medicine.

... interdependence allows inclusion of McDowall's concept of tone and Richards' understanding of vitalism, each of which have been given new understandings in the chiropractic milieu through thesis-level inquiry and reporting ...'

After Swanson (1) I agree that '*that there are some causal relata for which it is indeterminate whether one caused the other*'. We most often see indeterminacy as a loop when we seek a definition from a dictionary. (2) The noun 'indeterminacy' describes cases where there is simply no fact of the matter. (3) Some argue that indeterminacy is an epistemological problem and others that it is a problem of semantics.

Here I discuss indeterminacy as a clinical problem and argue that Chiropractic's issues of indeterminacy are absolved when we explain acts of clinical intervention using interdependence to describe the interface between the practitioner and the patient. My interpretation of interdependence is modelled on the Japanese philosophy of kokoro.

This paper is structured in Parts:

- Part I establishes the interaction between a Chiropractor and a patient as a complex problem. I reprise then reject my previous inference that the complex problem was linear and thus open to suggestions of linear causality. I shall remove ideas of linear cause and effect and replace them with the concept of reaching agreement through interdependency.
- I then briefly discuss my method which is to apply Pragmatism and its experienceable difference test. I use two:
  i) in the first-person sense of whether interdependence make a difference to the understanding of the chiropractic patient interaction
  ii) in the third-person sense of whether the patient reports a difference following their interaction with a chiropractor.
- Part II is my Exposition in which I describe my resolution of the multiple indeterminacies within this complex problem through the application of *kokoro* relying on Nakaya's view of this lexeme
- Part III presents my Critical Discussion of this proposition, and
- Part IV is my Denouement in which I conclude that the Japanese philosophy of *kokoro* when understood in Western terms as *interdependency* allows for plausible arguments to replace ideas of causation based around the clinical realities of indeterminacy within Chiropractic.

Part I: Introduction

We know that the Chiropractic encounter is a complex problem in Western thought of which I have previously given (4) my constructed graphic representation reproduced here as Figure 1. The elements in grey are those elements which constitute a complex problem whereas the black is my application of those elements to the Chiropractic encounter.

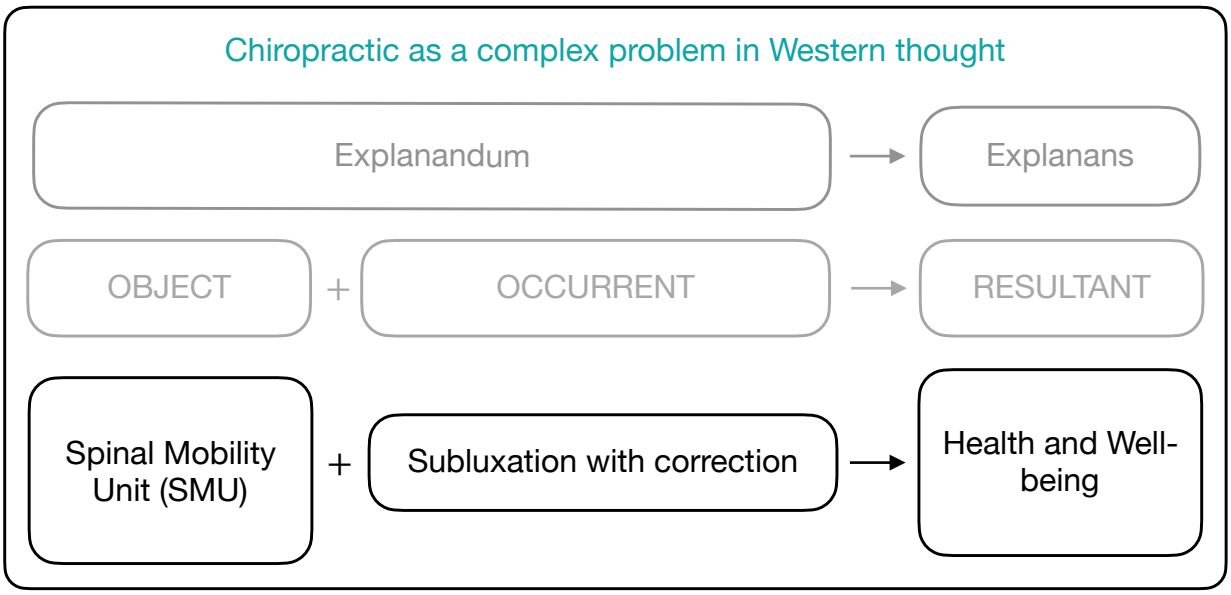
Within this framework my attempt has the '*object*' and the '*occurrent*' represent the '*explanandum*', the condition which allows the '*explanans*' as the '*resultant*'. Dennis Richards (5) has also attempted a reconstruction of Chiropractic but using the tools of Systems Theory to extract and show what he terms the '*Level 1 Palmerian System of Chiropractic*'. (2) Systems Theory deals with causation in a linear system such as may be thought present in my application of the elements of a complex problem to Chiropractic.

1. Swanson E. Indeterminacy in causation. Philosph Quart. 2017;67(268):606-24. https://doi.org/10.1093/pq/pqw068
2. Indeterminacy. Scholarly Community Encyclopedia. n.d. https://encyclopedia.pub/entry/37318
3. Wolfgram J. Indeterminacy: Where Semantics Meet Metaphysics. Philosophy. College of Liberal Arts. University of Minnesota. 21 Dec 2018. https://cla.umn.edu/philosophy/news-events/story/indeterminacy-where-semantics-meet-metaphysics
4. Ebrall P. The perspective-dependent knowledge claim as an explanation of Chiropractic's subluxation conundrum. J Contemp Chiropr. 2021;4:52-65. https://journal.parker.edu/index.php/jcc/article/download/157/70
5. Richards DM, Emmanuel E. Recovering Chiropractic through Systems Thinking. Chiropr Hist. Winter 2022/23;42(2):14-26. By subscription only.

It is important to note that linearity is not necessarily an indication of '*cause*' and '*effect*'; it is a reductionistic proposition of determinism that the explanandum always produces, or must always lead to, the explanans.

I express these elements visually as Figure One.

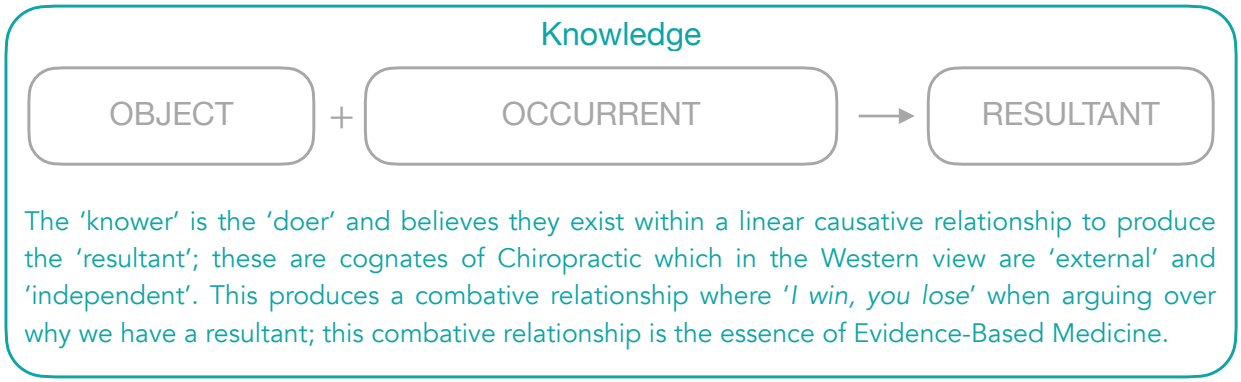
Figure 1: The Chiropractic encounter as a complex problem in Western thought. (4)



It is also important to note I do not separate the clinical act of '*diagnosis*' from the clinical act of '*treatment*' when considering the Chiropractor's role in the patient encounter. I use these medical terms here as they are the basis for the medical literature on diagnostic accuracy from which I cite, while in pragmatic terms a Chiropractor will '*analyse*' then '*correct*' when indicated in one encounter. Unlike Western Medical practice a Chiropractor does not generate a diagnosis for others to address because the skilled act of therapeutic intervention suited to a found spinal lesion is the inherent skill of the Chiropractor. It is true that a Chiropractor will commonly refer to therapists for treatment protocols which are ancillary to the adjustment or correction of dysfunction within a Spinal Mobility Unit (SMU).

I have added notations to my Figure 1 and give this as my Figure 2.

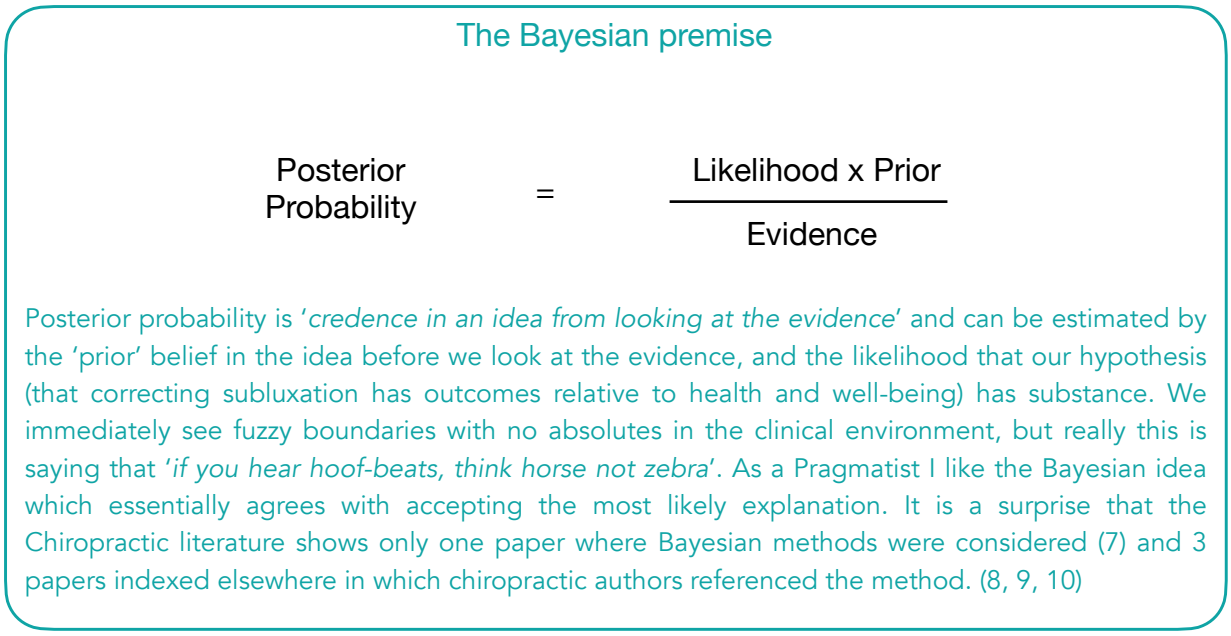
Figure 2: The Chiropractic encounter as a complex problem of causative thinking within Western thought. After (4)



However Figure 2 no longer satisfies me due to its linearity. Any alternative depiction of this encounter must retain my understanding that the occurrent '*subluxation with correction*' is one act. The first step in developing our new graphic representation is to depict Figures 1 and 2 as a Bayesian

model. This model recognises diagnostic uncertainty by viewing clinical events as probabilities; this is my Figure 3 after Pinker. (6)

Figure 3: The Bayesian view of evidence from probabilities within Western thought (6)



The application of the Bayesian premise to Chiropractic tells us that the probability of a positive outcome is higher when our intervention is common within the discipline, as with a trained Chiropractor adjusting a spinal dysfunction which meets the known criteria for a subluxation, a process in itself which is known to be effective.

Bayesian's will have familiarity with my emerging proposition of accepting inference as evidence. Their view is that probabilities are interpreted as subjective degrees of belief. It describes the probability of an event, based on prior knowledge of conditions that might be related to the event. (12)

The goal is to state and analyse one's beliefs, (13) a process not unlike that which we see within the kokoro interdependency (which I shortly address) among a Chiropractor and a patient. For a Bayesian the '*posterior probability*' (ie, what has happened) is the sum of the likelihood of the outcome multiplied by one's prior experience, divided by the strength of the evidence also largely based on what is known about what has gone before.

6. Pinker S. Think more rationally with Bayes' rule. Big Think. https://www.youtube.com/watch?v=8vHKCrNGPhY.
7. Hopkins BB, Vehrs PR, Fellingham GW, et al. Validity and Reliability of Standing Posture Measurements Using a Mobile Application. J Manipulative Physiol Ther. 2019;42(2):132-140. DOI 10.1016/j.jmpt.2019.02.003. Epub 2019 Apr 15.
8. Lopes MA, Coleman RR, Cremata EJ. Radiography and Clinical Decision-Making in Chiropractic. Dose Response. 2021;13;19(4):15593258211044844. DOI 10.1177/15593258211044844.
9. Hincapié CA, Cassidy JD, Côté P, et al. Chiropractic spinal manipulation and the risk for acute lumbar disc herniation: a belief elicitation study. Eur Spine J. 2018;27(7):1517-1525. DOI 10.1007/s00586-017-5295-0.
10. Harsted S, Nyirö L, Downie A, et al. Posterior to anterior spinal stiffness measured in a sample of 127 secondary care low back pain patients. Clin Biomech (Bristol, Avon). 2021;87:105408. DOI 10.1016/j.clinbiomech.2021.105408.
11. Hopkins BB, Vehrs PR, Fellingham GW, et al. Validity and Reliability of Standing Posture Measurements Using a Mobile Application. J Manipulative Physiol Ther. 2019;42(2):132-140. DOI 10.1016/j.jmpt.2019.02.003. Epub 2019 Apr 15.
12. Sarkar T. Bayes' rule with a simple and practical example. Towards Data Science. 9 May 2020. https://towardsdatascience.com/bayes-rule-with-a-simple-and-practical-example-2bce3d0f4ad0.
13. Bayesian inference. Chapter 12. Carnegie Mellon University. https://www.stat.cmu.edu/~larry/=sml/Bayes.pdf.

However it may be this delightful flexibility within Bayes' ideas which prevents post-realists accepting clinical probabilities as evidence. As a Pragmatist with a realist view of Chiropractic I am very comfortable with the probability that my adjustment is going to have a good outcome, however the model I develop must also account for the post-realists.

I replace linear cause and effect with agreement through interdependency

I develop and present my new diagram within the context of the Japanese philosophy of '*kokoro*' which transliterates as '*interdependency*' with '*affective sensibility and rational thought*'. Nakaya's examination shows the lexeme is multi-layered. (14) Within an interdependent Chiropractic encounter the evidence of effectiveness is drawn from the Pragmatist's '*experienceable difference*' as reported by the patient. It is accepted by agreement, not combat as with Western things in a linear progression with ideas of '*cause*' and '*effect*'.

Kokoro allows experienceable differences beyond '*cause and effect*'. A crude example of '*cause and effect*' is that through our experience we learn that '*if I drop a bottle onto concrete it is likely to break*' and sure enough when I drop a bottle onto concrete the bottle breaks to become an experience of an event (bottle breaking) then held in my mind as an expectation associated with certain conditions. (15) A Bayesian would describe this event as having a high probability of occurring the next time I drop a bottle onto concrete.

> In a similar fashion Chiropractors build an '*event experience*' that '*if I adjust this … '* perhaps the upper cervical spine, then '*the patient's headache will abate*'. While it is tempting to see this in a reductionistic deterministic fashion of linear cause and effect I contend this is limiting and creates the trap of needing evidence to link the effect '*improved well-being*' with the putative cause, '*subluxation correction*'. The Chiropractic literature is Bayesian in nature and strongly favours the effectiveness of Chiropractors with certain broad-stroke presentations such as low back pain. I assert this is established and does not need citations in support.

In contrast the literature is sparse in providing evidence of effectiveness for individualised and specific encounters beyond that documented within Case Reports. Collectively we know that evidence of effectiveness at the level of individual presentations that satisfy the Western view of evidence is not commonly reported in Chiropractic, and it is here that Bayesian expectations perhaps waver a little; I am not sure they are adequate to explain all Chiropractic encounters.

About the absence of 'certainty' in Chiropractic

The level of uncertainty within the discipline of Chiropractic, as represented by trained, conventional realist Chiropractors (16) practicing the *Palmerian System* as reclaimed by Richards (5) represents indeterminacy and here I address it as such. I can say with some confidence that the '*relationship'* which I discuss is among the subluxation, its location within the spine, the Chiropractor's approach to correcting it, and the perceptions of the patient within whom it is corrected. It is this relationship as a whole and not any one particular element which is likely to cause the emergence of a particular outcome as patient improvement; indeterminacy means I can not say with certainty that '*adjusting C1 on the left will diminish the pain of this headache in this person*'.

In this regard I can say that the outcome of Chiropractic intervention is an emergent phenomenon from a relationship of interdependence and this forms the basis of my contention which I now

14. Nakaya T. The Japanese concept KOKORO and its axiological aspects in the discourse of moral education. Adeptus. Article 1651. DOI 10.11649/a.1651.

15. Simon Blackburn - What is causation? Closer to Truth. YouTube https://www.youtube.com/watch?v=BuvD1B_kpaA.

16. Ebrall P. Changing Chiropractic's subluxation rhetoric: Moving on from deniers and vitalists to realists, post-realists, and absurdists. URL Asia-Pac Chiropr J. 2022;3.3. URL apcj.net/Papers-Issue-3-3/#EbrallRhetoric.

discuss, namely that '*interdependency is an acceptable explanation for the effectiveness of the Chiropractic healing encounter*.'

We are not alone

The Medical literature shows diagnosis as Medical uncertainty to the point it is examined with theories of '*uncertainty in illness*' such as that of Mishel. (discussed in (17)) She showed an interplay among a stimuli frame (symptom pattern, event familiarity and congruency), the cognitive capacities of the clinician, and structure providers as a third party influence such as education. These can only allow uncertainty in the diagnostic environment which leads to an inference illusion which may lead to danger or opportunity. This is well explained by Zhang. (17)

A narrative and conceptual synthesis by Alam et al (18) from 10 studies found '*little empirical evidence on how uncertainty is managed in general practice.*' Kelly and Panush (19) took the view of Baldhius that '*the essence of medicine is to reduce uncertainty*.' In particular they argue that epistemology '*addresses relationships between beliefs and truths. For example, an individual may have a particular belief but it may not be true*.' (19) I see this among Chiropractors. Kelly and Panush conclude by citing Voltaire '*Uncertainty is an uncomfortable position. But certainty is an absurd one*'. (19)

My method

My philosophical lens

I use Pragmatism to examine issues of epistemology (20) which is appropriate in my attempt to determine how we know what is happening in the practitioner-patient interaction in Chiropractic. My thought is directed to the specific question of '*why do many different clinical approaches achieve similarly good outcomes*'. (21)

My interpretation biases (22) arise from my training as a Chiropractor and my truth is taken from the Experienceable Difference test. In its most simplistic form this states that '*if an experience of a difference is shown, then something has happened*'. That '*something*' is always the most plausible explanation (a little Bayesian) and exists only because it is experienced (a little empiricism as perception). An '*experienceable difference*' occurs in vivo and is uncontrolled, it differs from any '*experimental difference*' which is controlled.

In my secondary Experienceable Difference test the '*experience*' is the subjective report of the patient which I call the '*resultant*' in response to the therapeutic intervention of the practitioner, the '*occurrent*', within a known physical entity, the '*object*', as depicted above in Figures 1 & 2. The weakness of these figures is that they promote the idea of linear causation which I now accept as being of such nature as to prevent the generation of valid evidence due to the multiple variabilities inherent in all elements leading to the '*resultant*'.

Collectively this is Chiropractic's '*indeterminacy*' and my Exposition offers an alternative view that addresses indeterminacy with interdependence which I will then critically discuss.

My experienceable difference test relies on the patient's report of outcomes which in turn places an emphasis on Case Reports as conveying a truth about Chiropractic.

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17. Zhang Y. Uncertainty in Illness: Theory Review, Application, and Extension. Oncol Nurs Forum. 2017 Nov 1;44(6):645-649. DOI 10.1188/17.ONF.645-649.
18. Alam R, Cheraghi-Sohi S, Panagioti M, et al. Managing diagnostic uncertainty in primary care: a systematic critical review. BMC Fam Pract. 2017 Aug 7;18(1):79. DOI 10.1186/s12875-017-0650-0.
19. Kelly A, Panush RS. Diagnostic uncertainty and epistemologic humility. Clin Rheumatol. 2017 Jun;36(6):1211-1214. DOI 10.1007/s10067-017-3631-8. Epub 2017 Apr 22.
20. Pratt SF. Pragmatism as Ontology, Not (Just) Epistemology: Exploring the Full Horizon of Pragmatism as an Approach to IR Theory. Int Studies Rev. 2016;18:508-27.
21. Howard VA. The Pragmatic Maxim. Br J Philos Sci. 1975;24(4):343-51.
22. Kaptchuk TJ. Effect of interpretive bias on research evidence. Education and Debate, BMJ. 2003;326(28 June): 1453-5.

My use of kokoro

The Japanese lexeme kokoro (心, こころ, perhaps 'heart of mind') dates from about 712 where it is found in the *Kojiki Chronicle*. (14) It covers layered meanings and I give my summary here based on conversations with one of my mentors in Japan, the late Kazuyoshi Takeyachi. In axiological terms kokoro leans towards the conservative as a key cultural term. I will start with Nakaya's (14, Fig. 1) visual representation as my Figure 4 and will relate it to my Figure 5, to be presented shortly. I will then construct a unified diagram depicting my understanding of interdependency in Chiropractic as Figure 6 which envelops kokoro.

Figure 4: Nakaya's view of the lexeme kokoro (14)

After Takeyachi I find kokoro to mean that heart, mind and spirit are one, whereas in English we speak more of heart and mind and spirit as separate entities. (23) Kokoro means we acknowledge the interrelationship of our thoughts, feelings, and desires which introduces *affective sensibility and rational thought* especially in the clinical environment where agreement around experienced evidence is preferable to any combative statistical argument.

The Chiropractor's affective sensibility and rational thought in response (24) to the challenges brought by the patient are representative of Palmer's Chiropractic thought which unites science, art, and philosophy. (25) Kokoro is the application of these to ensure that the patient becomes integral within the healing encounter, being embraced within the Chiropractor's heart.

Gatterman presented these concepts as a '*patient-centred care*' model, (26, 27) a marker of the Chiropractic encounter in which the patient's human experience is taken into account and placed in the trust of the Chiropractor to assist the body's healing processes by identifying and correcting causes of neural impediment (28) and altering central processing of pain and unpleasantness. (29)

23. Livni E. This Japanese word connecting mind, body, and spirit is also driving scientific discovery. QUARTZ. 6 April 2017. https://qz.com/946438/kokoro-a-japanese-word-connecting-mind-body-and-spirit-is-also-driving-scientific-discovery.
24. Gunji K. What is Kokoro? Japan House. https://japanhouse.illinois.edu/education/insights/kokoro.
25. Palmer DD. Chiropractic History. The Chiropractor. 1904;1(1):9.
26. Gatterman MI. The patient-centred paradigm: A model for Chiropractic health promotion and wellness. Chiropr J Aust. 2006;36(3):92-6.
27. Gatterman MI. A Patient-Centered Paradigm: A Model for Chiropractic Education and Research. J Alt Comp Med. 2007;1(4). https://doi.org/10.1089/acm.1995.1.371,
28. Lelic, D, Niazi, IK, Holt, K, et al. Manipulation of dysfunctional spinal joints affects sensorimotor integration in the pre-frontal cortex: A brain source localization study. Neural Plasticity. 2016. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4800094/.
29. Navid, M.S., Lelic, D., Niazi, I.K. et al. The effects of chiropractic spinal manipulation on central processing of tonic pain - a pilot study using standardized low-resolution brain electromagnetic tomography (sLORETA). Sci Rep. 2019;9: 6925. https://www.nature.com/articles/s41598-019-42984-3.

These become shared cognitive and affective sensibilities creating interdependence. Jamison (30) extended patient-centred care to include wellness, or as we say today Well-Being.

I contend that this resultant interdependence resolves all issues of indeterminacy as it is unique to each and every Chiropractor-patient interaction, and that no two interactions are the same and we come to rely more on the documented '*n of 1*' reports. When we do review the Case Report literature we look for patients with the philosophical characteristic of '*aboutness*', which means a 32y female office worker with MLBP is about the same as a 45y female office worker with MLBP. In clinical terms there can never be an exact match, and all inferences are drawn from an aboutness.

Interdependence also means the variations of the practitioner are absolved, as are the differences in the technique approaches they use. The primacy of the encounter relies on the specific degree of interdependency forged between a Chiropractor and any one individual patient at a time. My problem of indeterminacy is resolved.

Summary

To summarise my introduction, I am concerned with the '*relationship*' between the '*object*' and the '*occurrent*' which is probably associated with the '*resultant*'; we are dealing with '*relationships*' and not causation. We can not say that one particular adjustment *will cause* the body to react in a particular way as we have no evidence that any one type of adjustment clinically differs to another, nor that correction of any one segment is reliably associated with impacting any one clinical condition.

... interdependence means the variations of the practitioner are absolved, as are the differences in the technique approaches they use. The primacy of the encounter relies on the specific degree of interdependency forged between a Chiropractor and any one individual patient at a time ...'

Part II: Exposition

The problem

Chiropractic's problem has been one of indeterminacy as it relates to both the treatable clinical entity and the way it is managed. The first part of Chiropractic's indeterminacy causing problems in undertaking outcomes research has been that it is unusual for any two Chiropractors to reach complete agreement as to what may be the clinical entity chosen to be their therapeutic target. The second part has been the plethora of clinical techniques that are available to address an indeterminate clinical entity, thus creating a second layering of indeterminacy.

Then we have a situation where a patient, who themselves are a highly variable human, presents with a clinical concern which is difficult to identify with certainty and which may be thought to be expressed in any one of many ways, and Chiropractors who usually have very different ideas of how to address any particular but variably-interpreted clinical entity. This presents multiple indeterminacies which are usually resolved by resorting to simple classic statements of cause and effect as in '*the patient improved under my care when I adjusted their subluxations*'.

My question is, '*how can this hold true across a high variance in practice styles?*' As a Pragmatist I appreciate this '*high variance*' may actually be a strength unknowingly contributing to the continuing growth of Chiropractic (31) and its reported high patient satisfaction. (32, 33) In other words, our beneficence may be highly individualised but perhaps accidentally good for us collectively. The acceptance of interdependency makes this probable.

30. Jamison JR. Wellness from the perspective of Australian chiropractic patients. Chiropr J Aust. 2007 Mar;37(1):11-14.

31. Chu ECP, Mok STK, Chow ISW, et al. The opportunity to unlock the architecture of healthcare model: Chiropractic care-at-home. J Contemp Chiropr. 2022;5(1):44-9. https://journal.parker.edu/index.php/jcc/article/view/191.

32. Gemmell HA, Hayes BM. Patient satisfaction with chiropractic physicians in an independent physicians' association. J Manipulative Physiol Ther. 2001;24(9):556-9. https://pubmed.ncbi.nlm.nih.gov/11753328/.

33. Buscomb L, Shepherd RM, Dyall L. Usage and attitudes toward chiropractic care: Survey of New Zealanders. J Contemp Chiropr. 2022;5(1):177-81. https://journal.parker.edu/index.php/jcc/article/view/223.

Indeterminacies

These indeterminacies of which I speak are found within the entanglement meant to be a healing encounter or a consultation when the person with the problem whom for the sake of convenience I call the '*patient*', meets the practitioner whom I call the '*Chiropractor*', and is triaged then accepted for care.

On the assumption the patient consulted the Chiropractor because they have become unaccepting of changes in their lifestyle which are limiting and perhaps painful, and on a second assumption that the Chiropractor acts as a Chiropractor should and seeks to identify and resolve the cause of the patient's concern, the start of the entanglement can be reduced to the question: '*what is it to which the Chiropractor will direct their intervention?*', the patient's '*cause of concern*'?

All sequelae from this point forward are strongly favourable for this intervention no matter what it is called and no matter how it is done by a trained Chiropractor; it is remarkably safe, (34) consistently found to be effective, (35) economically viable, (36, 37) and well-received by those to whom it is applied. (38, 39)

Reducing indeterminacies

The multiple indeterminacies within the Chiropractic encounter reduce to

(i) the 'thing' the practitioner will address

(ii) the patient in which the 'thing' is identified

(iii) how the practitioner will address this 'thing', and

(iv) how the patient responds to that thing being addressed.

Most Chiropractors will call this 'thing' by the simple constructed noun '*subluxation*'. There are a few post-realists who reject this noun which implies not only rejection of the optimised ways developed to correct it, such as Gonstead Methods and so on, but also rejection of the many elements traditionally associated with it, ranging from kinematic changes within an SMU, to associated neurological change in multiple dimensions from the quantifiable pain experience to the vagaries of qualitative cognition, to a range of findings across muscle, connective, and soft tissues, including vascular change such as basic inflammation to complex Neuro-somatic pain mimicking cardiac events. I draw these collectively from Gatterman's work (40, 41) and my own (42) along with that of many others. Any decision to remove these associations will by default shift the practitioner from being a Chiropractor to a manual therapist who only treats limited symptoms such as muscle and

34. Thiel HW, Bolton JE, Docherty S, et al. Safety of chiropractic manipulation of the cervical spine: a prospective national survey. Spine (Phila Pa 1976). 2007;32(21):2375-8; discussion 2379. DOI 10.1097/BRS.0b013e3181557bb1.

35. Whedon JM, Kizhakkeveettil, A, Toler A, et al. Initial Choice of Spinal Manipulative Therapy for Treatment of Chronic Low Back Pain Leads to Reduced Long-term Risk of Adverse Drug Events Among Older Medicare Beneficiaries. SPINE: December 15, 2021 - Volume 46 - Issue 24 - p 1714-1720. DOI 10.1097/BRS.0000000000004078.

36. Manga P. Economic case for the integration of chiropractic services into the health care system [review]. J Manipulative Physiol Ther. 2000;23(2):118-22. https://pubmed.ncbi.nlm.nih.gov/10714540/

37. Whedon, J.M., Bezdjian, S., Dennis, P. et al. Cost comparison of two approaches to chiropractic care for patients with acute and sub-acute low Back pain care episodes: a cohort study. Chiropr Man Therap 28, 68 (2020). https://doi.org/10.1186/s12998-020-00356-z

38. Hawk C, Long C, Boulanger K. Patient Satisfaction With the ChiropracticClinical Encounter: Report From a Practice-based Research Program. J Neuromusculoskeletal System 2001: 9 (4): 109–17.

39. Sawyer CE, Kassak K. Patient satisfaction with chiropractic care. J Manipulative Physiol Ther. 1993;16(1):25-32.

40. Gatterman MI. Ed. Principles of Chiropractic: Subluxation. St Louis: Mosby. 1995. Also as 2e 2005.

41. Gatterman MI. Foundations of chiropractic: Subluxation. 2e. St Louis: Elsevier Mosby. 2005.

42. Ebrall PS. Assessment of the Spine. Churchill Livingstone, Edinburgh. 2004.

joint pain. Paradoxically this so-called '*evidence-based practice*' eliminates clinical creativity and saps professional passion for the powerful effects known to Conventional Chiropractors. (43)

Embracing indeterminacy

The Chiropractor's personal resolution of indeterminacy in any particular case requires the resolution of the first part in a manner individual to that practitioner. Their ability to address (i) by naming this 'thing' a subluxation either creates a cascade of other clinical findings or not. Herein lies the gulf between Conventional Chiropractors as realists, and those Chiropractors holding post-realist views which do not cascade into associated clinical findings. Does this matter?

There is little I can add to expand (ii), the variability of the patient. The Chiropractor makes an effort to 'know' each particular patient as an individual, as do medical practitioners. (44) The patient's perspective is a vital element in quality patient care. (26, 27, 45)

The third part (iii) is also resolved in a manner individual to the practitioner. I use Gonstead Methods as an example to illustrate my point when any other well-constructed system of patient analysis and care would equally suffice; the additional training standardises the clinical thing a particular group identify as 'subluxation' and allows them to gather clinical evidence in support of their claim. Naming the 'thing' as a subluxation then triggers one of several refined clinical procedures to correct that thing. The probability is that Gonstead Practitioner A is as likely as Gonstead Practitioner B to call what they find 'a subluxation' and to address it in a closely similar clinical manner. However we must accept that this manner will differ to the manner of other technique specialties. Indeterminacy allows for this. The final part (iv) is a given.

However my problem is compounded when I can not hold such subluxation-centric conditions, whether they be described within the Gonstead, AK, Activator or other structured clinical paradigm, to the clinical acts of post-realists who do not assign a meaningful name to what they think they may be treating. Typically the post-realist will name their therapeutic target as '*fixation*', a term of disputed origin (46) yet one explored in animal models. (47) Rome and Waterhouse have expanded '*fixation*' as one element within the Vertebral Subluxation Complex (VSC), (48) begging the question of why post-realists do not recognise other elements, and if they did, why they would not accede to the discipline's accepted terminology of subluxation?

As I have already noted I can not say that this matters as the discipline is yet to undertake the structured inquiry it needs as a controlled examination of outcomes in 'about' standardised patients where care is provided in a structured, conventional manner to one group, and in a post-realist manner of manual therapy to the other group.

For now we can only assume there is no difference at all as the 3,085 or so case reports (studies; series) indexed in the Chiropractic literature largely report resolution of the presenting clinical problem no matter how the Chiropractor has addressed it. This position is consistent with the current literature (49) which shows generic '*Manipulative therapy reduces the degree of chronic neck pain and neck disabilities.*'

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43. Ebrall P. The conventional identity of chiropractic and its negative skew. J Contemp Chiropr. 2020;3(1):111-26. URL https://journal.parker.edu/index.php/jcc/article/view/133.

44. Hanyok LA, Hellmann DB, Rand C, et al. Practicing patient-centered care: the questions clinically excellent physicians use to get to know their patients as individuals. Patient. 2012;5(3):141-5. DOI 10.2165/11599530-000000000-00000.

45. Uhl KG, Davenport MS. The Cost of Uncertainty: A Patient's Perspective. J Am Coll Radiol. 2019 May;16(5):737-739. DOI 10.1016/j.jacr.2019.01.007.

46. Faulkner TJ, Foley J, Hynes RJR. The origins of fixation theory in chiropractic: Does credit go to Dr. Oakley Smith or Dr. Henri Gillet? Chiropr Hist. 2021;41(2):39-44.

47. Henderson CN, Cramer GD, Zhang Q, et al. Introducing the external link model for studying spine fixation and misalignment: part 1 - need, rationale, and applications. J Manipulative Physiol Ther. 2007;30(3):239-45. DOI 10.1016/j.jmpt.2007.01.006.

48. Rome P. Waterhouse JD. The fixation element of the articular subluxation: More than a vertebral dysfunction. Part 1 of a series. Asia-Pacific Chiropr J. 2021;1.3. www.apcj.net/rome-and-waterhouse-fixation-element-of-subluxation/

49. Liu Z, Shi J, Huang Y, et al. A systematic review and meta-analysis of randomized controlled trials of manipulative therapy for patients with chronic neck pain. Comp Therap Clin Prac. 2023 journal pre-proof. https://doi.org/10.1016/j.ctcp.2023.101751.

My academic problem

As an educator care about what I teach. I accept that the reported practice of post-realists such as Haas (50) has a tendency to generalise the language of the discipline, replacing '*segment-specific adjustment*' with '*manipulation*' to a '*spinal region*' which diminishes the idea of specificity; Haas et al's reporting shows no concern for specificity, in which case I ask, '*how do I teach and assess vagueness?*' In contrast a realist Chiropractor will typically seek a spinal segment that is thought '*subluxed*' with an '*intent*' to '*correct*' the perceived clinical problem. (51) I do bother to try and instil a sense of specificity in my students, a clinical capability I can then assess.

> *… by understanding the Chiropractic encounter on the basis of the elements being interdependent allows for Chiropractic to take the form of being efficacy-based. The inclusion of the patient is essential …'*

Whilst the detailed approach of realists can be and is criticised (52) the observation holds true that a little more clinical evidence seems to support the notion of specificity, in particular for Gonstead Methods and Activator™ Methods. However this is a hard claim for me to substantiate given the ease with which authors intermingle the Post-realist's '*manipulation*' with the Realist's '*adjustment*'; there is not a strong clarity in the literature beyond some 736 peer-reviewed, indexed case reports (31% of all, n=3,085) addressing subluxation correction and resultant outcomes. (53)

On the other hand, there are three times as many indexed case reports that do not mention subluxation, (n=2,349 (54)) and herein lies the most darnedest observation; both approaches by trained Chiropractors, segment-specific or generic regional, produce largely positive outcomes. This presents me with a problem, perhaps the laissez-faire approach of post-realists is associated with clinical effectiveness, in which case to what extent?

Do Post-realists generate clinical outcomes that are equivalent to the segment-specific Realist Conventional approach in terms of '*number of treatments to point of maximal benefit*', '*the amount of time between care sessions*', and overall '*cost-effectiveness*'? Do all patients of all trained Chiropractors experience similar levels of benefit?

The meaning of my academic problem

The meaning of this problem is that I can not argue for a specific approach over a generic approach, yet as an educator I instinctively know I would much rather have a structure of clinical signposts to guide my teaching of Chiropractic spinal analysis then intervention as adjustment with an intent of specificity, than present and defend a broad-based non-specific generic multi-segment manipulation to something as duplicitous as a fixation.

Resolution of my academic problem by interdependency

In this paper I demonstrate a new way to view my previously published findings (4) of Chiropractic as a complex problem, and I contend this may resolve the indifference between Realist and Post-realist practitioners, that is between those who practice with a subluxation-focus and those who do not while possibly achieving similar clinical outcomes within diverse patient groupings.

Previously I presented my argument in a form which may be interpreted as indicating linear causation. Here I shall shift any idea of a causative explanation into the Japanese philosophy of kokoro as '*interdependence*' while retaining the elements of the '*object*' as being the SMU, the '*occurrent*' as being a subluxation or vertebral subluxation complex to which we address our chosen therapeutic intervention of manual correction by way of the Chiropractic adjustment, and then

50. Haas M, Schneider M, Vavrek D. Illustrating risk difference and number needed to treat from a randomized controlled trial of spinal manipulation for cervicogenic headache. Chiropr Osteopat. 2010 May 24;18:9. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2893201/.

51. Leach D. Differentiating L5 and Base Posterior Subluxations - Case Study. Int J Practicing Chiropr. 2015. https://www.ijpconline.org/_files/ugd/a639ac_3d56d03a3956418ebaeb6a76bbf97bb0.pdf.

52. Schram SB, Hosek RS, Silverman HL. Spinographic positioning errors in Gonstead pelvic x-ray analysis. J Manipulative Physiol Ther. 1981 Dec;4(4):179-81.

53. Search results 12 August 2023, Index to Chiropractic Literature. ['case report' OR 'case study' OR 'case series' AND 'subluxation'] n=736 articles.

54. Search results 12 August 2023, Index to Chiropractic Literature. ['case report' OR 'case study' OR 'case series' NOT 'subluxation'] n=2,349 articles.

observe the '*resultant*'. It is the *relationship* among these which I am now re-arranging and it very much includes the patient as an interdependent participant.

My contention for understanding the chiropractic encounter

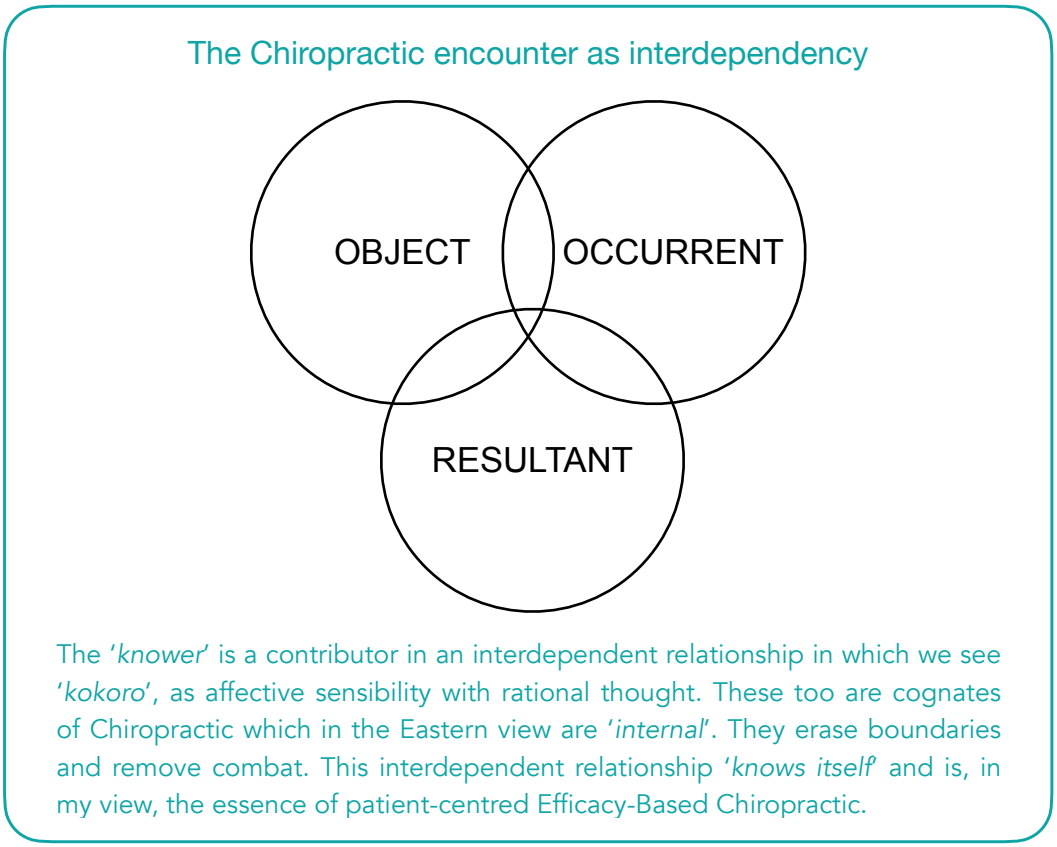
My contention is that by understanding the Chiropractic encounter on the basis of the elements being interdependent allows for Chiropractic to take the form of being efficacy-based. The inclusion of the patient is essential as a patient not attaining the outcomes they want will not return to continue their care, thus removing themselves from the encounter. By remaining they more strongly bring their experience-based preferences to the encounter which melds with the experience-based behaviours of the clinician modulated by their knowledge of the literature and their intent based on beneficence. Interdependence erases the barriers within the clinical encounter and may be a factor which expedites healing.

Specifically my contention is that interdependency with its kokoro elements of '*affective sensibility and rational thought*' explains the conventional, realist Chiropractor's story thus: '*interdependency is an acceptable explanation for the effectiveness of the Chiropractic healing encounter*.'

I depict my graphic expression of interdependency in Figure 5 and overlay the elements of kokoro after Nakaya (14) as Figure 6.

What interdependence looks like

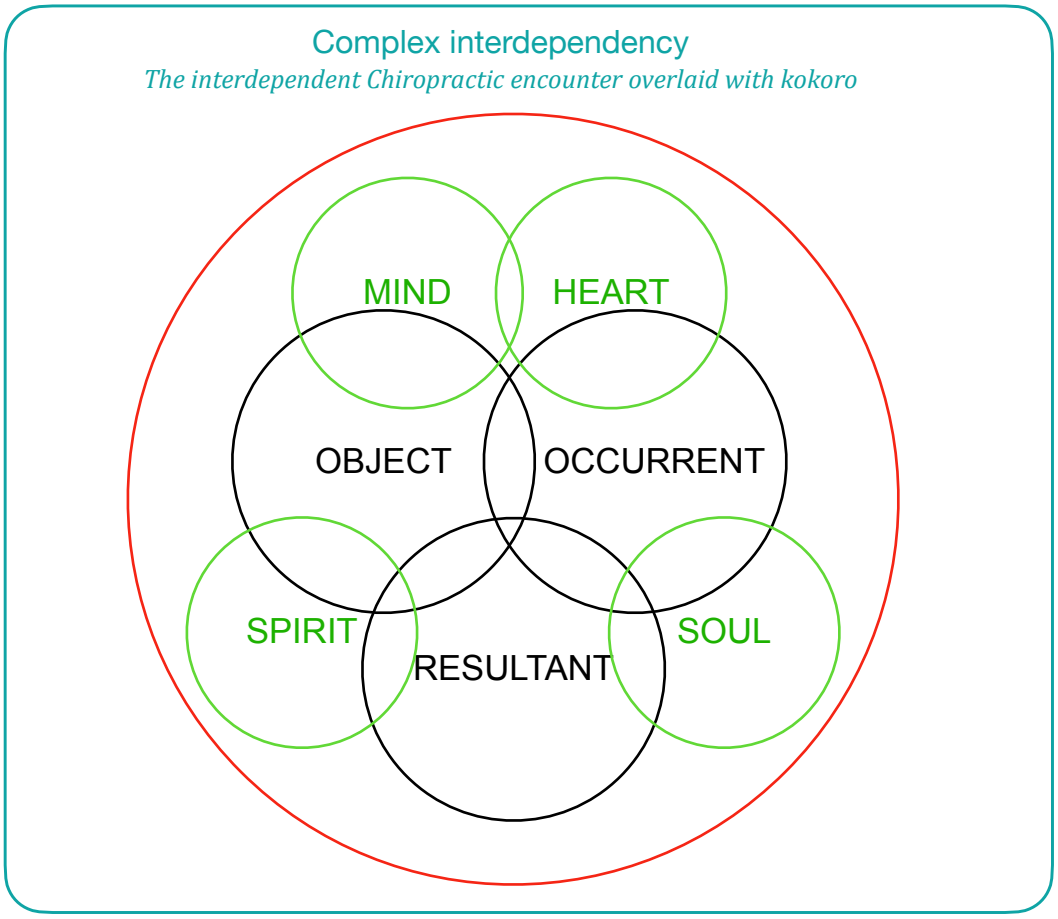
Figure 5: A complex problem depicted using Japanese philosophical thought of interdependency



Part III: Critical discussion

Western philosophy drives linear causation and a combat for evidence in the manner I have given in Figure 1 and again in Figure 2 where I overlay basic ontology, the nature of what we know, and epistemology, the theory of how we know it; pragmatically I gather both as '*knowledge*' expecting to offend the purists. I now reject these depictions but not the offence.

Figure 6: A complex problem simplified through kokoro (after Nakaya (14))



The knowledge gap which allows my problem

The knowledge gaps are many, first among all is the understanding that we do not yet know whether a subluxation-centric Chiropractor dealing with specificity with an individualised patient in an interdependent clinical encounter provides superior clinical outcomes than do other forms of manual therapies including Post-realist Chiropractic and generic manipulation.

The three confounders are:

- Trained Chiropractors do not know with certainty what they are actually addressing. If we did know, then each Chiropractor would consistently find the same spinal dysfunction both within the same patient when assessed by 2 or more Chiropractors, and as individual Chiropractors with closely similar patients
- We cannot treat a common subluxation should there be such a thing, with any degree of consistency among Chiropractors. We are confronted with the variable nature of subluxation in different patients, and further confounded by the techniques we individually choose and use,
- We do not know with certainty whether what we are doing has beneficial outcomes or not. Any Chiropractor who does claim to know is expressing a belief, not describing a scientific or evidence-based act. The many positive outcomes that are reported and known are either generic being largely derived from group data or specific being published as patient-centred case reports. In either situation we cannot replicate the outcome with surety in any one particular patient however we can and must understand what others are achieving in patients 'about' the same as ours through selecting and reading the Case Report literature, (55) and

55. Ebrall PS, Murakami Y. Constructing a credible case report: Assembling your evidence. J Contemp Chiropr 2018;1:40-53 https://journal.parker.edu/index.php/jcc/article/download/29/11.

- These confounders ensure the chiropractic encounter is a collection of vague (56) clinical acts.

Resolving the vague nature of what Chiropractors do

Our clinical entanglements remain a vague (58) clinical act as long as we place any reliance on concepts of causation. For this reason I propose that an application of interdependency will allow acceptable evidence that what the Chiropractor identifies as a cause of a patient's report of altered function and comfort will, when '*treated*' or '*corrected*' more likely than not be effective in producing outcomes seen by the patient as clinical improvement.

We will no longer be reliant on two Chiropractors agreeing, for example, that C1 is subluxed under occiput or on C2 on the left side and that one certain type of thrust is indicated. This does not and can not occur in the real world and all Chiropractors know it, however it remains as the nonsense construct that evidence-based Chiropractors chase but never find. A subluxation is and can only be what an individual Chiropractor identifies to be worthy of their therapeutic intent. (4)

Further, the patient will bring their concerns as a participant in an interdependent encounter where one Chiropractor will make a determination quite likely to be different to the determination of another, yet will achieve closely similar outcomes should each proceed to care as they each determine for this mythical standardised clinical condition.

The experienceable difference is that whatever intervention is chosen by any Chiropractor within the limits of accredited training will produce an outcome, and it is most likely that the outcome will be taken by the patient as an improvement in their health and well-being.

Why I reject causative thinking

Conventional Chiropractors (45) locate and correct subluxations in a Realist's (15) practice environment. The patient with whom which we perform this act later reports their health status has changed, often considering this an improvement. Ierano (57) has reported this at a granular level. In turn this becomes a pattern after doing it again and again but it does not represent causation; we can not prove that correcting this subluxation directly causes any change in health status.

I propose that causation has little meaning to Chiropractors as it can only be expressed in probabilities and is the cause of angst for those wanting to '*prove*' or '*disprove*' as the case may be. This leads to combative Western-style arguments about whose evidence is better. Some degree of causal association may be present but whether or not it means anything is the question. The 'causal association' means that there is no regularity as action A may not always produce outcome B. We can apply Bayesian probability if we insist on a Western view, or we can apply kokoro and interdependency as the Eastern view which I prefer as it removes combative arguments over evidence-levels.

I would like to say that correcting a subluxation within interdependency represents a multi-Dimensional healing encounter where one thing is believed to be associated with others. I accept that I have optimism bias and note there is a minority of Chiropractors who as Post-realists reject this notion, perhaps suggesting they carry no optimism; without optimism there can not be any intent. I also note that the idea of a multi-dimensional encounter and its optimism is not universal across the profession. Most telling are those few academics (58, 59) who eschew all teachings other than historical about subluxation, (60) yet retain institutional and programmatic accreditation endorsing the belief they are training and graduating Chiropractors. I am not so sure they do. At the heart of

56. Swinburne RG. Vagueness, Inexactness, and Imprecision. Br J Philos Sci. 1969;19(4):281-99. https://doi.org/10.1093/bjps/19.4.281.

57. Ierano JJ, Ebrall PS. Atlas Orthogonal Chiropractic care: A thematic analysis of the Patient Voice from 393 self-reports. J Upper Cervical Chiropr Res. 2023; *In submission*.

58. The International Chiropractic Education Collaboration. Clinical and Professional Chiropractic Education: A Position Statement. 13 September 2019. https://mitsdu.dk/-/media/files/om_sdu/fakulteterne/sundhedsvidenskab/studienaevn/klinisk_biomekanik/edu-position-statement-w-su-updated+300120.pdf

59. GCC How the education standards are used. Accessed June 2023;7. URL https://www.gcc-uk.org/assets/downloads/GCC_Education_Standards_with_Expectations.pdf.

60. Ebrall P, Bovine G. A history of the idea of subluxation: A review of the medical literature to the 20th Century. J Contemp Chiropr. 2022;5:150-69. URL https://journal.parker.edu/index.php/jcc/article/download/219/106.

their lack of liberalism is the rejection of vitalistic constructs which implies such small-c chiropractors will not resonate in any way with this paper. Their filtering of vitalism results in emotional thinking which paradoxically they consider to be 'evidence-based'. (22)

The role of interventionism

I use the term *multi-dimensional* in its clinical sense where denotes an act of cooperative assistance. (61) Schiefelbusch argues '*that professionals are competent to enter the life of certain individuals in order to assist them in achieving a more desirable state*'. (61) It implies engagement by the patient to make the encounter work for them. (62) Conventional Chiropractors engage the patient's 'self' (63) within the chiropractic entanglement, a process of minimising harm. (64)

Multi-dimensionality exists as interdependency and is a powerful clinical guide as it shows patterns of change between one thing, the intervention as spinal correction or adjustment, and another such as an improvement in health status regardless of ideology. By using Bayesian reasoning we can educe the most likely hypothesis that one particular therapeutic intervention is highly likely associated with a certain and desired clinical outcome. Please note this is not '*correlation*'. ['correlation' and 'causation' are very different beasts a discussion of which lies well outside the scope of this paper]

> My immediate complication is that the Chiropractor performing the '*adjustment*' as the intervention can't really observe what is happening as they are too close to the process, indeed they are an interdependent part of the process. So how can we know if anything happened? By the act of outcomes measurement and the process of inference by an observer who is not part of the system. Ierano (57) was such a true observer.

A true observer is decoupled from the act and the measurements are reports of change which are of necessity derived from the Chiropractor and the patient as participants in the act. Here I mean in the manner of the Chiropractor perhaps observing and stating '*your posture is now balanced*' and the patient perhaps observing and reporting they '*feel better, move better, or no longer hurt*'. They may even feel '*balanced*'. (57) All are valid pieces of evidence within interdependency. These may be causal associations as distinct from those of causation, but this is not evidence that *Action A caused Outcome B* as it could be with causation.

When Chiropractors adjust subluxed vertebrae we think we are trying to exercise a causal influence and if all things align we may dare think that causation was involved. The lack of there being any '*law of spinal correction*' ensures the outcome and any influence is always variable, and variability allows neither predictability nor causation. In clinical terms we live with irregularities, whereas causation is generally thought to mean a regularity of the occurrent leading to the resultant.

How interdependency works

Our observer would note that the Chiropractor and the patient are in an interdependent relationship of which clinical outcomes are the third part. The observer's focus is on the practitioner-

61. Schiefelbusch RL. A philosophy of intervention. Analysis and Intervention in Developmental Disabilities. 1981;1(3, 4):373-38. ISSN 0270-4684. https://doi.org/10.1016/0270-4684(81)90009-4.
62. Bohart AC. From There and Back Again. J Clin Psychol. 2015;71(11):1060-9. DOI 10.1002/jclp.22216.
63. Real T. The therapeutic use of self in constructionist/systemic therapy. Fam Process. 1990;29(3):255-72. DOI 10.1111j.1545-5300.1990.00255.x.
64. Ortiz Lobo A. El arte de hacer el mínimo daño en Salud Mental [THE ART OF DOING MINIMAL HARM IN MENTAL HEALTH]. Vertex. 2015;26(123):350-7. Spanish.

patient interdependency (65) and I agree with Lionel Milgrom's (66) second position that '*an explanation of any therapeutic procedure should include an attempt to describe the nature of the patient-practitioner interaction*'. My description of the Chiropractic interaction is that it is one of interdependence and I represent this in Figures 5 and 6, above.

As a pragmatist I am also after the manner of Thomas Henry Huxley who coined the term '*agnostic*' and gave it the meaning '*I see no reason for believing it, but, on the other hand, I have no means of disproving it.*' (67) My task in this paper should be to disprove my idea of interdependency yet by dismissing my earlier idea of linear causation I can only propose this new way of looking at the patient with the practitioner and shall leave the matter of refutation to my critics.

Interdependency brings spirituality

Chiropractors are known to provide holistic care (68) which may be a way of accessing the placebo effect, (69) a powerful notion. (70) Nursing similarly places an emphasis on the mind-body-spirit connection within patient centred care, (71) and Harvard researchers report that '*attention to spirituality in serious illness and in health should be a vital part of future whole person-centred care, and the results should stimulate more national discussion and progress on how spirituality can be incorporated into this type of value-sensitive care.*' (72)

I contend that interdependency incorporates spirituality within the Chiropractic model of patient-centred care and I have identified and described my reasons for believing that this practitioner-patient interdependency in Chiropractic is true and that it produces an experienceable difference in understanding Chiropractic. I hold that it does this by providing actionable knowledge and recognition of the interconnectedness between knowledge, action, and experience, (73) the science, art, and philosophy of Chiropractic.

The secondary experienceable difference included the reported outcome arising within an interdependent Chiropractic patient encounter without concern for stochastic or quantitative findings. In other words, this is efficacy-based Chiropractic where practice wisdom sits at the apex of my new, more inclusive hierarchical pyramid of evidence. (74)

While interdependency is the interest of this paper I can not ignore my previous correspondence which has clearly positioned me as holding the view that the clinical entity we address universally exists (75) as a perspectival truth (4) and is best termed '*subluxation*'. In this paper I have no need to defend my evidence-based position that subluxation exists, rather I take the position that what we do with it when entangled with a patient represents an interdependent relationship. This is a new way of depicting Chiropractic as a complex problem (Figures 5 and 6).

65. Milgrom LR. Patient-Practitioner-Remedy (PPR) Entanglement, Part 7: a gyroscopic metaphor for the vital force and its use to illustrate some of the empirical laws of homeopathy. Forsch Komplementarmed Klass Naturheilkd. 2004;11(4):212-23. DOI 10.1159/000080557. PMID: 15347904.

66. Milgrom LR. Is homeopathy possible? J R Soc Promot Health. 2006;126(5):211-8. DOI 10.1177/1466424006068237. PMID: 17004404.

67. Roos D. What's the Difference Between Agnosticism and Atheism? Howstuffworks. https://flip.it/4cVNNu

68. Jamison JR. Chiropractic holism: The characteristics of the chiropractor as an instrument of healing. Eur J Chorpr. 1995;43(1):3-87.

69. Jamison JR. Chiropractic holism: Accessing the placebo effect. J Manipulative Physiol Ther. 1994;17(5):339-46. https://www.ncbi.nlm.nih.gov/pubmed/7930969.

70. Jolliet C. [Mary Anne Chance Memorial Paper] Holism in health care: A powerful notion or an elusive endeavour? Chiropr J Aust. 2012 Jun;42(2):43-50. http://www.chiroindex.org/wp-content/uploads/2013/12/CJA_42_2_43.pdf.

71. Savel RH, Munro CL. The importance of spirituality in patient-centered care. Am J Crit Care. 2014;23 (4): 276–8. DOI https://doi.org/10.4037/ajcc2014328

72. Rura N. Study shows it should be a vital part of future whole person-centered care. Health and Medicine. The Harvard Gazette. 12 July 2022. https://news.harvard.edu/gazette/story/2022/07/spirituality-linked-with-better-health-outcomes-patient-care/.

73. Kelly LM. Three principles of pragmatism for research on organizational processes. Methodological Innovations. 1 July 2020, Sage Journals. https://journals.sagepub.com/doi/full/10.1177/2059799120937242.

74. Ebrall P. A more inclusive evidence hierarchy for chiropractic. Asia-Pac Chiropr J. 2021;2.2. www.apcj.net/papers-issue-2-3/#EbrallEvidencehierarcy

75. Ebrall P. Determining a universal meaning of subluxation in chiropractic. J Contemp Chiropr. 2022;5:222-39. https://journal.parker.edu/index.php/jcc/article/download/236/120.

Consider this

Before ridiculing this broad explanation of resolving indeterminacy by interdependence, consider why a patient with a headache, a common presentation to Chiropractors (76) and one associated with evidence of the effectiveness of generic manipulative care, (77) is more likely than not to have their headache resolved whether they see a Gonstead Methods Chiropractor (78) who will likely perform a seated chair HVLA correction to the upper cervical complex, or an SOT practitioner (79) who may apply gentle forces about the cranium, or an AK practitioner (80) who may address imbalanced musculature about the thoracolumbar spine. I have earlier shown that even generic manipulation will produce favourable outcomes, (49) thus the next question becomes, '*does specificity with intent matter*?'

Here I argue 'yes' through the process of self-validation where the trained Chiropractor documents and reports their own outcomes over any critical third-party observer. The unfortunate phrase '*if it looks like a duck …* ' applies here. By this I mean that if the Chiropractor thinks they feel a spinous is restricted in its movement to the left and that this may be associated with the patient's presenting complaint, then there is sufficient data within this finding to plug into the Chiropractor's mental predictive model. This is perspectival truth (4) and for me such a finding would suggest that the vertebrae is not moving as it should in a certain direction and I would then extend this to plan my therapeutic thrust which should carry the intent to correct this perceived deficit together with its associated clinical findings. This action is evidence that one trained chiropractor is capable of interpreting what another trained chiropractor has done or is doing in any documented entanglement with a patient with consideration for their individual clinical presentation.

Once a therapeutic target is identified then the entire clinical success of the encounter is dependent on what happens next, and only the Chiropractor and the patient can reliably report this. Should you happen to doubt that a patient can be a credible witness then you may be at odds with most courts and panels which inquire into patient complaints. (81)

Our knowledge gaps around the Chiropractor-patient entanglement can be filled with the outcomes given in many more reports of different Chiropractors entering into an interdependent clinical encounter with a well described patient. An imperative is to establish a study with a large cohort of closely similar patients with closely similar complaints and following each through interdependent encounters with practitioners categorised by a schemata. My null hypothesis would be that closely similar patients with closely similar complaints do not report significantly different clinical outcomes that could be associated with the style of Chiropractic care provided to them.

My claim

Interdependency is a plausible explanation of why different Chiropractic approaches achieve remarkably consistent outcomes in broad strokes with meaningful clinical and cost-effectiveness differences lying in the fine detail such as visit frequency, the described therapeutic target, and the style of care. If there are no differences among trained Chiropractors regardless of their ideology then why does the choice of college matter, if indeed it does, and why do many Chiropractors invest

76. Hartvigsen J, Bolding-Jensen O, Hviid H, Grunnet-Nilsson N. Danish chiropractic patients then and now - a comparison between 1962 and 1999. J Manipulative Physiol Ther. 2003 Feb;26(2):65-9. DOI 10.1067/mmt.2003.14.

77. Bronfort G, Haas M, Evans R, Leininger B, Triano J. Effectiveness of manual therapies: the UK evidence report. Chiropr Osteopat. 2010 Feb 25;18:3. DOI 10.1186/1746-1340-18-3.

78. Chaibi A, Tuchin PJ. Chiropractic spinal manipulative treatment of migraine headache of 40-year duration using Gonstead method: a case study. J Chiropr Med. 2011 Sep;10(3):189-93. DOI 10.1016/j.jcm.2011.02.002.

79. Shirazi D, Del Torto AJ, Blum C. Dental chiropractic non-surgical co-treatment of a 48-year-old male patient with a deviated septum, headaches, and TMJ dysfunction: A case report. Chiropr J Aust. 2021;48(1):5-13. http://www.cjaonline.com.au/index.php/cja/article/view/264.

80. Cuthbert S, Rosner A. Applied kinesiology management of long-term head pain following automotive injuries: A case report. Chiropr J Aust. 2010;40(3):109-16.

81. Who will the court believe? Lessons on witness credibility from recent cases. Littleton. https://littletonchambers.com/who-will-the-court-believe-lessons-on-witness-credibility-from-recent-cases/.

in further training in a specialty field when they could just provide basic care at a far lower cost to themselves?

Part IV: Denouement

I am taking the view that evidence is the story we tell and that the story we tell is evidence. Stories as clinical narratives have value for explaining complex matters (82) especially when in the form of Case Reports. (83) However when you ask a post-realist who rejects subluxation to tell the story of '*what do you really do*' the story is about general things like manipulation of a fixated spinal region. Worse they may cite a generic study of manipulation and believe those generic group results apply to their own approach to an individual patient; they mistakenly call this 'evidence-based practice'.

In contrast when we ask a realist '*what do you treat*' we will hear a story. Now the story may not even use the word '*subluxation*' and it is important to know that this does not matter, however the elements will relate to the Chiropractor correcting an identified spinal dysfunction where the evidence that the Chiropractor got it right is the companion story of the patient, usually one of improvement and positive change. This represents an '*experienceable difference*'.

> *... experienceable difference includes the reported outcome arising within an interdependent Chiropractic patient encounter without concern for stochastic or quantitative findings; this is efficacy-based Chiropractic where practice wisdom sits at the apex the evidence pyramid.'*

The realist's story is about something in the spine that is not working right and when corrected, certain good things occur. It is this exchange of a healing idea within the interdependent entanglement of a Chiropractor and their patient that in my view makes Chiropractic such a powerful approach to health and well-being.

Assuming that what I am arguing is so, how can it be? How can a post-realist small-c chiropractor functioning in a vacuum of generality and manipulation and struggling with giving a story about what they do, achieve similar patient outcomes to those of a devout practitioner of segment-specific Gonstead Methods (for example) when each approaches the patient with a completely different world view and intent? I do not yet know this answer which means these are questions we must ask.

My contention in this paper is that interdependency with its kokoro elements of '*affective sensibility and rational thought*' explains the conventional, realist Chiropractor's story so that '*interdependency is an acceptable explanation for the effectiveness of the Chiropractic healing encounter*.' It seems probable that interdependency creates a unified field of consciousness which some may call spirituality (69, 70, 71, 72) and that this is what allows healing to occur, paradoxically regardless of the belief of the practitioner and the story they have or have not told to their patient who may or may not have believed it. This idea merits much deeper investigation by others.

> *... It seems probable that interdependency creates a unified field of consciousness which some may call spirituality and that this is what allows healing to occur, paradoxically regardless of the belief of the practitioner'*

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The complexity of clinical variables

As with snowflakes no two humans are alike, not even monozygotic twins (84) or triplets or more. Thus the probability that there will be any two dysfunctions in any two spines that are the same is remote. I think we have the confidence to say that '*Subluxation "A" will never equal Subluxation "B"*'. Thus our model for interpreting the multitude of things we think we feel (85) must be expansive with flexible inter-connectivity among all parts. It must also be applicable to an inestimable number of variable clinical presentations.

Within this milieu it is the responsibility of post-realists to defend their position that '*traditional explanatory frameworks such as life force, vitalism and a belief that manipulating the spine to remove restrictions or "chiropractic subluxations" cannot be taught except as concepts which historically shaped the profession. This is because these frameworks no longer meet the standards of evidence-based practice and may not be used in clinical practice*'. (59) However they offer no evidence for their position which excludes 'subluxation' by omission from the standards. (59) Once again the GCC relies instead on '*Eminence-Based Opinion*'. (86, 87)

The new and finalised *GCC Accreditation Standards* for programs of chiropractic in the UK, Gibraltar, and the Isle of Man, suffer from omission bias in that they rigidly maintain a flawed anti-subluxation position first published in 2010 and continue to wilfully ignore any and all evidence supportive of subluxation as a clinical concept that has been published both before and after their position was taken.

An understanding of rudimentary philosophical concepts shows the GCC position to be a nonsense statement of no significance, linguistically, philosophically, nor clinically. Sadly however, this statement represents the dictatorial nature of what passes as intellectual thought in Chiropractic and which is currently ascendant in the United Kingdom.

The Experienceable Difference test

In my Prelude I stated I was a Pragmatist and that my primary experienceable difference test in this matter would be to determine whether interdependence makes a difference to the understanding of the chiropractic patient interaction.

I conclude that it does, primarily due to removing the idea of linear cause and effect and thus negating standard Western evidence-based interpretations of the chiropractor-patient clinical encounter.

More important, interdependence allows inclusion of McDowall's concept of tone (88) and Richards' understanding of vitalism, (89) each of which have been given new understandings in the chiropractic milieu through thesis-level inquiry and reporting.

A secondary application of the Experienceable Different test is within the clinical encounter itself. I conclude that if the patient is capable of expressing they have noticed a change in how they perceive their presenting complaint then it is probable that something the chiropractor did with the patient accounts for this experienced difference.

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89. Richards DM. The meaning and value of vitalism in chiropractic [Thesis]. Southern Cross University. URL https://researchportal.scu.edu.au/esploro/outputs/doctoral/The-meaning-and-value-of-vitalism/99101290470040236?institution=61SCU_INST

What I have said

In this paper I have shown that the Japanese philosophy of *kokoro* when understood in Western terms as *interdependency* allows for plausible arguments to replace ideas of causation based around the clinical realities of indeterminacy.

My position is that when we come to appreciate that Chiropractic's indeterminacy can be explained within the frame of interdependence the discipline will have a new sequence of questions to address in both a philosophical manner and with quantitative measurement seeking to examine the outcomes of standardised patients undergoing different paradigms of Chiropractic care.

My final word

The enduring question remains, '*does any application of the idea of subluxation translate to a significant difference in clinical outcomes between conventional realist Chiropractors who are largely subluxation-centric, and post-realist, small-c chiropractors who largely reject subluxation*'?

This question must be answered with data over ideology.

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