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# What if subluxation was not where you thought it was? Seeking an explanation from ideas of Quantum Mechanics

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Context: This paper further examines the idea of subluxation as it is used commonly within conventional Chiropractic practice and builds on previous papers in which I identify the majority of Chiropractors as realists who describe clinical subluxation using fuzzy dialogue and achieve successful clinical outcomes through patient interdependency. Here I show how consideration of an aspect of Quantum Mechanics can resolve technical issues, namely the absence of physical dimensions, regarding the identification of subluxation.

Discussion: Our minds will accept as reality something for which our senses receive inputs which can be matched to a mental model. I propose that Chiropractors should forget the idea of Newtonian science which demands agreement to confirm something exists and instead accept that as a clinical lesion subluxation is ethereal and will exist when and where a trained Chiropractor finds clinical evidence to say it exists. The idea of superposition from Quantum Mechanics allows two Chiropractors to identify a subluxation in one patient's spine in different locations yet still render effective clinical intervention.

Conclusion: The discipline of Chiropractic deserves better than an unethical flat-earth argument against '*life force, innate intelligence, vitalism and subluxation*' in a world where our rhetoric should be moving into the realm of Quantum entanglement and the commentariat should be working harder to make sense of Chiropractic's clinical realities in a way that will advance and not retard the discipline. I find Quantum Mechanics to allow such forward thinking.

I propose Chiropractors should start thinking of subluxation as a quantum thing with all the questionable dimensions that a quantum thing carries.

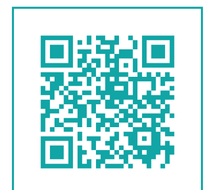
Indexing Terms: Chiropractic; subluxation; Quantum Mechanics.

## Introduction

This paper is a pragmatic conversation about what I consider to be a persistent problem in the practice of the discipline of Chiropractic, which is '*to what do Chiropractors address their therapeutic intervention?*' I must state that I have no interest in the attitudes and opinions of those untrained in Chiropractic yet who associate with the discipline to form the global profession, I am solely interested in better understanding events at the interface of a trained, conventional Chiropractor and a patient, any patient.

> *… we deserve better than an unethical flat-earth argument from the GCC against 'life force, innate intelligence, vitalism and subluxation'; our rhetoric should be working harder to make sense of Chiropractic's clinical realities '*

The problem I see is 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. There are some exceptions of course and I will address these when I present the problem in full with my evidence. I will also offer a suggestion that I may be wrong, and that any resultant variance in practice may not be a problem at all, but rather a strength which may unknowingly contribute to the



continuing growth of Chiropractic (1) and to its reported high patient satisfaction. (2, 3)

On the assumption however that there is a real clinical problem my exposition explores the novel possibility that subluxation is not an objective thing which would explain why no evidence for it was found in my systematic review seeking evidence in the sense of descriptive Newtonian physics. (4) I now argue subluxation is an ethereal yet real entity better framed through the lens of Quantum Mechanics. Here my focus is on the practitioner-patient entanglement (5) and I agree with Lionel Milgrom (6) that '*an explanation of any therapeutic procedure should include an attempt to describe the nature of the patient-practitioner interaction*'.

As a pragmatist I am also after the manner of Thomas Henry Huxley who took 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.*' (7) My task in this paper should be to disprove my idea of Quantum Superposition to explain the complexities inherent in its identification but I do not think we are yet at any point beyond advancing an idea and a possible construct for subsequent exploration; it may well become disproved and rejected by others.

To assemble such a theoretical construct I will identify and describe my reasons for believing that the practitioner-patient entanglement in Chiropractic is about the thing called subluxation. I do not confuse agnosticism with subluxation-atheism which simply states '*subluxation does not exist*', the position of the post-realists. (8) My pragmatic agnosticism only requires evidence in the form which may allow me to show subluxation exists.

While this challenge of identifying evidence to show subluxation may exist as Quantum Entanglement is the interest of this paper I can not ignore my previous correspondence (9) which has clearly positioned me as holding the view that this clinical entity can exist as a perspectival truth (4) and is best termed '*subluxation*'. As noted, in this current paper I do not take a position that subluxation exists, rather I take a position on whether or not we can know at all whether subluxation exists, therefore I put aside my earlier writings at this time. To not do so would bring distracting argument.

## My contention

Subluxation in Chiropractic is a clinical concept based on a timeless idea (10, 11) that small dysfunctions in the spine have an association with an individual's health and well-being. On this basis

1. 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/article/78026
2. 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/
3. 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/article/78040
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/article/77997
5. 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.
6. Milgrom LR. Is homeopathy possible? J R Soc Promot Health. 2006;126(5):211-8. DOI 10.1177/1466424006068237. PMID: 17004404.
7. Roos D. What's the Difference Between Agnosticism and Atheism? Howstuffworks. https://flip.it/4cVNNu
8. Ebrall P. Changing Chiropractic's subluxation rhetoric: Moving on from deniers and vitalists to realists, post-realists, and absurdists. URL Asia-Pac Chiropr J. 2023;3.3. URL apcj.net/Papers-Issue-3-3/#EbrallRhetoric
9. Ebrall P. Determining a universal meaning of subluxation in Chiropractic. J Contemp Chiropr. 2022;5:222-39. https://journal.parker.edu/article/78048
10. 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. https://journal.parker.edu/article/78048
11. Ebrall PS. DD Palmer and the Egyptian Connection: A short report. Asia-Pac Chiropr J. 2020;1:011 https://www.apcj.net/ebrall-egyptian-palmer-and-subluxation/.

I shall identify my problem and its associated knowledge gap, and then present my working interpretation of concepts that go toward understanding the chiropractor-patient entanglement, and propose ways by which we may be able to come to know whether subluxation exits, and what it might mean should this be so.

### *The problem*

In spite of being a timeless idea, paradoxically it is not a universally accepted idea within the discipline of Chiropractic which was founded on the centrality of identifying and correcting subluxed vertebrae. (12) This is not the place to repeat my arguments about this matter and I will take the simple position that a trained Chiropractor will address subluxation. Logic tells me to not consider those who deny this in their practice as Chiropractors, but rather as manipulators of some sort, noting that manipulation per se and Bohemian bone-setting (13, 14) are also timeless healing traditions.

I hold that a person who graduates from an accredited program of Chiropractic training and then registers to legally practice as a Chiropractor is morally and ethically bound to abide by the century-old conventions of the discipline. I also hold that it is not for Chiropractic educators nor registration bodies to ignore or attempt to remake those conventions. (15, 16) In contrast, individual Chiropractors can do as they please given they are free from the academic's obligation to conserve the discipline. (17) Also those granted the authority of a registration body are limited to upholding enacted legislation, not creating new interpretations of it.

I accept that it is the nature of conventions for their contours and content to have an element of indeterminacy. And it is also in the nature of conventions that they come under intense pressure during crises, when the power of Chiropractic practice shines through the fog of recent challenges to the norm. I respect and value challenges to the norms of Chiropractic while at the same time advocating that those who reject the discipline's norms should associate together and re-brand themselves in alignment with their post-realist ideology. It is a form of intellectual theft to take the benefits of being a registered Chiropractor while denying its conventional nature and long-established norms.

### *In a nutshell*

I have described (18) the problem of Chiropractic as the matter of indeterminacy as it relates to the treatable clinical entity. It progressively arises as the elements of realism in Chiropractic are removed to leave the empty frame which I call post-realism. (8) Indeterminacy means 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 but through fuzzy dialogue these differences are absolved. (18)

Exceptions may be found among those trained to a higher level in the post-graduate field of a particular technique system. There is reasonably expected to be less indeterminacy among Gonstead Diplomates and Fellows for example, or among instructors of Activator Methods™, or among skilled practitioners of CBP Technique®, just to name three paradigms of care for which advanced skills are required. Yet across these three examples the interpretations of the therapeutic target and objectives to correct it vastly differ.

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12. Ebrall PS. The therapeutic target. In: A philosophy of Chiropractic. XLibris. 2024. *In press.*
13. Zarbuck MV. A profession for `bohemian Chiropractic': Oakley Smith and the evolution of naprapathy. Chiropr Hist. 1986;6():76-82. URL http://www.ncbi.nlm.nih.gov/pubmed/?term=11621192.
14. Bovine G. The Bohemian thrust: Frank Dvorsky, the Bohemian "napravit" bonesetter. Chiropr Hist. 2011 Summer;31(1):39-46.
15. Outcomes for Chiropractic Graduates: Consultation on draft document – now closed. 25 March 2022. https://rcc-uk.org/news/outcomes-for-Chiropractic-graduates/.
16. Outcomes for Chiropractic Graduates.© The Royal College of Chiropractors. 2022. https://rcc-uk.org/wp-content/uploads/2022/03/Graduate-Outcomes_Consultation-Document.pdf.
17. Postman N. Teaching as a Conserving Activity. Unknown. Delacorte Press. 1979.
18. Ebrall P. Absolving Chiropractic's indeterminacy through interdependence. Asia-Pac Chiropr J. 2023;4.2. apcj.net/Papers-Issue-4-2/#EbrallAbsolvingindeterminacy.

This indeterminacy I speak of is found at the beginning of the entanglement which is intended to be a healing encounter or a 'consultation' when for the first time the person with the problem, whom for the sake of convenience I will call the 'patient', meets the practitioner whom I will call the 'Chiropractor', seek a remedy to their 'problem'.

On an initial 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 the Chiropractor acts as a Chiropractor should and seeks to identify and resolve 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?*' All sequelae from this point forward are strongly favourable for this intervention no matter what it is called; it is remarkably safe, (19) consistently found to be effective (20) economically viable, (21, 22) and well-received by those to whom it is applied. (23, 24)

The indeterminacy reduces to the 'thing' the practitioner will address and is more expansive than the simple constructed noun '*subluxation*'. Rejection of this noun implies rejection of the many elements traditionally associated with it, ranging from kinematic changes within a spinal mobility unit, to associated neurological change in multiple dimensions from quantitative pain to qualitative cognition, to a range of findings across muscle, connective, and soft tissues, including vascular change such as basic inflammation to complex pain mimicking cardiac events. I draw these collectively from Gatterman's work (25, 26) and my own (27) along with that of many others.

The reported practice of post-realists (8) has a tendency to apply '*manipulation*' to a '*spinal region*', (28) an act of non-specificity; Haas et al's argument shows no concern for specificity. In contrast a realist chiropractor will typically seek a spinal segment that is thought '*subluxed*' with an intent to '*correct*' the perceived clinical problem. (29) Whilst this approach can be and is criticised (30) the observation holds true that more clinical evidence seems to support the notion of specificity, in particular for Gonstead Methods and Activator Methods, than that amassed for generic manipulation. However this is a hard claim for me to substantiate given the ease with which authors intermingle '*manipulation*' and '*adjustment*'; there is not a strong clarity in the literature beyond some 5,800 peer-reviewed, indexed case reports addressing subluxation and adjustment. (31)

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19. 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.
20. 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.
21. 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/
22. 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
23. 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.
24. Sawyer CE, Kassak K. Patient satisfaction with Chiropractic care. J Manipulative Physiol Ther. 1993;16(1):25-32. PMID: 8423419.
25. Gatterman MI. Ed. Principles of Chiropractic: Subluxation. St Louis: Mosby. 1995.
26. Gatterman MI. Foundations of Chiropractic: Subluxation. 2e. St Louis: Elsevier Mosby. 2005.
27. Ebrall PS. Assessment of the Spine. Churchill Livingstone, Edinburgh. 2004.
28. 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/.
29. Leach D. Differentiating L5 and Base Posterior Subluxations - Case Study. Int J Practicing Chiropr. 2015. https://www.ijpconline.org/_files/ugd/a639ac_3d56d03a3956418ebaeb6a76bbf97bb0.pdf.
30. 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.
31. Search results September 2024, Index to Chiropractic Literature. ['subluxation' AND 'case' AND 'report' OR 'study' OR 'series'. 5,846 articles.

There about as many indexed case reports that do not discuss subluxation. (32) And herein lies the most darnedest observation; both approaches, segment-specific and generic regional, produce largely positive outcomes.

The meaning of this is that I can not argue for one approach over another, 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 a broad-based, non-specific generic multi-segment manipulation. But I digress and come back to the gap in our Chiropractic knowledge which is located before the point of effecting therapeutic intervention.

If you will, this is the point of '*diagnosis*' as post-realists are fond to term it, (33) or '*spinal analysis*' as is preferred by the realists. (34) We can suspect the discipline has an issue when even the basic acts within the practitioner-patient encounter are muddled.

### *The knowledge gap*

In some respects it is a relief that the knowledge gap comes after the encounter has commenced and relates to the identification of the putative clinical lesion to which a therapeutic intervention is addressed. I hold that it is unethical to randomly apply any therapy without a concept of what it is that the therapy is intended to address. Therefore I write from the perspective of one whose clinical preference is to identify the target of my therapeutic intervention which I tend to provide as a segment-specific manual thrust with intent, and not as a generic multi-segment manipulation.

My problem is I do not really know in the scientific sense what I am doing. And any Chiropractor who does claim to know is expressing a belief, not describing a scientific act. And apart from resolving with a traditional Newtonian description using the Cartesian system which translates to a vague (35) clinical act, what can I do?

> My attempt to answer this dilemma will rely on concepts first seen in 1990 in the rhetoric of Chiropractic as I draw from the field of Quantum Mechanics. (35)

## Concepts

The recent discovery of the Arctic shark underscores that just because we haven't seen a phenomenon, doesn't mean it isn't occurring. (37) In other words, just because some don't accept that a subluxation can exist, or worse (for a Chiropractor) have never 'seen' one, does not in any way suggest that subluxation does not or can not exist. It can exist when one turns their attention to it, and from here I make my second point that '*attention is a function of the mind to give something to structure and function*'. (38)

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32. Search results September 2024, Index to Chiropractic Literature. ['case' AND 'report' OR 'study' OR 'series' NOT 'subluxation'. 6,253 articles.
33. Wickes D. Heterozygous beta-thalassemia: Clinical review and case reports. J Manipulative Physiol Ther. 1979;2(2):109-13.
34. Senzon S, Epstein D, Lemberger D. A historical perspective on network spinal analysis care: A unique insight into the spine's role in health and wellbeing. Chiropr J Aust. 2017 ;45(4). http://www.cjaonline.com.au/index.php/cja/article/view/176.
35. Swinburne RG. Vagueness, Inexactness, and Imprecision. Br J Philos Sci. 1969;19(4):281-99. https://doi.org/10.1093/bjps/19.4.281.
36. Keil C. Quantum Thinking - A New Mental Superpower, As Explained by Huge Nerds. Medium. 23 June 2017. https://medium.com/pronouncedkyle/quantum-thinking-a-new-mental-superpower-as-explained-by-huge-nerds-1641cfd8e7f9.
37. The deep sea discoveries. Mark Kaufman, citing Alan Leonardi. Mashable. 23 December 2020. https://mashable.com/article/deep-sea-ocean-discovery.
38. Jose Ortega y Gasset. On love, aspects of a single theme. Paperback, 2012. https://www.amazon.com/Love-Aspects-Single-Theme/dp/1614273383

My contention is that for the mind of a Chiropractor to be open to see a subluxation they must be paying attention, without which they will be unable to give it structure and function. For me, a subluxation is something with structure and function that appears treatable to good effect in most people. Haavik (39) has provided chiropractors with realistic descriptions of neurological functions associated with subluxation and adjustment, and Len Faye has provided Chiropractors with detailed Newtonian descriptions of what a subluxation may feel like on motion palpation. (40)

I am acutely aware that Faye in particular has been critically reviewed with claims his position has little truth. (41) The regrettable outcome is that the 'idea' he has been conveying is discarded by some.

My next contention is that a reason for the difficulty with Faye's Newtonian approach, which is perfectly effective in the greater majority of cases in that it has long been an element in successful therapeutic intervention and is not known to have caused any harm, could be that the thing that he and his followers are seeking to put some structure to, does not exist as a thing that can be quantified in such a manner.

From this point I must propose an alternative which is this: that this thing we call subluxation is rarely a quantifiable thing, and when it is it may take the overt form of a sprain in some phase of injury or healing as is its historical origin from the time of Imhotep, (11) but rather it is a quantum thing with all the questionable dimensions that a quantum thing carries.

### *The role of the mind*

Before I begin my exposition I must introduce some current concepts of how the human mind is thought to function. I am interested to report how we perceive reality.

We generally have a reliance on the electrical impulses generated by our various sense organs from eyes to Pacinian corpuscles. The blunt truth is that we do not 'see' or 'feel' anything, our mind interprets inputs which it processes to fit a pre-built model which the mind then accepts as reality. There is no such thing as a red apple, rather there is a generally firm rounded fruit (but only on the basis we may know what a fruit is) which reflects light which most of us call 'red'. Our mind has learned this is most likely an apple and is most likely edible.

If we want to pick up the apple then without us doing anything but form an intention to do so, our mind generates an output to our hand so that when we move with intention to pick it up our mind has issued neuromuscular instructions for our fingers to not grip too loosely so as to drop it, nor so tight as to bruise it. To do this our mind must have learned concepts of 'bruise' and 'gravity'. We expect a 3y old toddler to be in the process of learning these things as much as we expect a 30y old Chiropractor to know them.

The second strike against reality is that we can only 'see' a static thing as it was and never as it is. For all intents and purposes the picoseconds it takes for light to travel from a patient in front of us into our mind where the electric signals can be interpreted is insignificant and my argument is that it is not so much the duration of the delay that matters, but the fact that there is a delay and all that we can observe is 'what was'. There is also a school of thought that positions our mind as being a few

39. Heidi Haavik. Enlightening the world about the science of Chiropractic https://heidihaavik.com/ \.

40. Schafer RC, Faye LJ. Motion palpation and Chiropractic technic. Motion Palpation Institute. Huntington Beach. 1981

41. LeBoeuf-Yde C, Hansen BE, Simonsen T. Motion palpation of the lumbar spine - A problem with the test or the tester? J Manipulative Physiol Ther. 2006 Mar-Apr;29(3):208-12. https://pubmed.ncbi.nlm.nih.gov/16584945/

seconds behind what is occurring in real-time (42) and that it functions more as a 'predication machine' which allows us, for example, to reach for and touch a moving object after our mind has predicted where it will most likely be.

The third strike comes into play when things are moving in front of us. Our mind does not try to interpret a continuous stream of electrical impulses but rather it seems to take snapshots and then constructs the missing pieces between the snapshots to make them appear as movement in real time. The strongest argument for this is found in a cinema where what we experience as a lush moving scene with immersive dialogue and music is actually a sequence of still images rapidly presented to our senses with a soundtrack that is sampled at a high enough frequency to appear continuous when interpreted through our ears, and in what we perceived as the right order for what our mind is receiving from our eyes, ie we 'see' a door slam and we 'hear' a door-banging sound at the same time. Thus we believe we heard the door slam, even though neither happened in real time, if indeed they happened at all given the magic of movie making.

> All that I am arguing here is that our reality is our interpretation of our sampling of electromagnetic frequencies emitted by objective things. Here I described an image projected from film as an objective thing. Our sampling only provides meaning to us as the observer when it fits a model in our mind that is built from experience. And that is the only way the thing may become objective.

From this comes my major contention which is that we will not be able to 'see', in the full sense of perception, any subluxation unless we have a model and an intentional map in our minds that will give an understandable shape to our inputs. And here I would argue that Faye's model is probably the best we have. Notwithstanding the published disagreement about the claim of Sandoz (43) for a paraphysiological space. (44, 45, 46)

If there is a sense I am casting subluxation as an illusion then I have done my job to this point as this allows me to claim that I can see no sense in trying to prove that two chiropractors will create the exact same 'illusion'. I give for 2 reasons for my position. The first is their senses will differ in their inputs, and the second is their model will apply those interpretations differently. Naturally this may be expressed as a minimal difference such as a 'C1 LP' or a 'C2 RP', or with a maximal difference as an '*upper cervical subluxation*' versus a '*sacral misalignment*' for example. It is this latter variation which worries me.

We see evidence of the different models among the three groups of highly-trained Chiropractors mentioned earlier. Yet again the darnedest thing is, all are probably right and all will probably achieve the same positive outcomes from their therapeutic intervention. The variation of intervention adds an unwanted layer of complexity to this paper and will not be considered.

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42. Michael Dodge. What you're seeing right now is the past, so your brain is predicting the present. 17 March 2020. The Conversation. https://theconversation.com/what-youre-seeing-right-now-is-the-past-so-your-brain-is-predicting-the-present-131913.
43. Vernon H, Mrozek J. A Revised Definition of Manipulation. J Manipulative Physiol Therap. 2005;28(1):68-72. https://www.jmptonline.org/article/S0161-4754(04)00263-5/fulltext
44. Rome P, Waterhouse JD. The specific Chiropractic adjustment is conducted within an articulation's physiological range of motion: Part 4 of a series. Asia-Pac Chiropr J. 2021 ;1(4):1-11. URL https://www.apcj.net/rome-and-waterhouse-adjustment-is-within-rom/
45. Ebrall P. The Paraphysiological Space of Manipulation: A Pragmatist's Appraisal. J. Philosophy, Principles & Practice of Chiropractic. 2020;May 4:8-17.
46. Evans DW. Why is the prevailing model of joint manipulation (still) incorrect? Chiropr Man Therap. 2022 Dec 9;30(1):51. DOI 10.1186/s12998-022-00460-2. Erratum in: Chiropr Man Therap. 2023 Jan 19;31(1):2. DOI 10.1186/s12998-023-00476-2.

Assuming what I am arguing is so, how can it be? How could a post-realist Chiropractor functioning in a vacuum of generality and manipulation seem to achieve similar patient outcomes to those of a devout practitioner of segment-specific Gonstead Methods (for example) when each comes to the patient with a completely different world view?

It is this matter which I now attempt to address in my exposition.

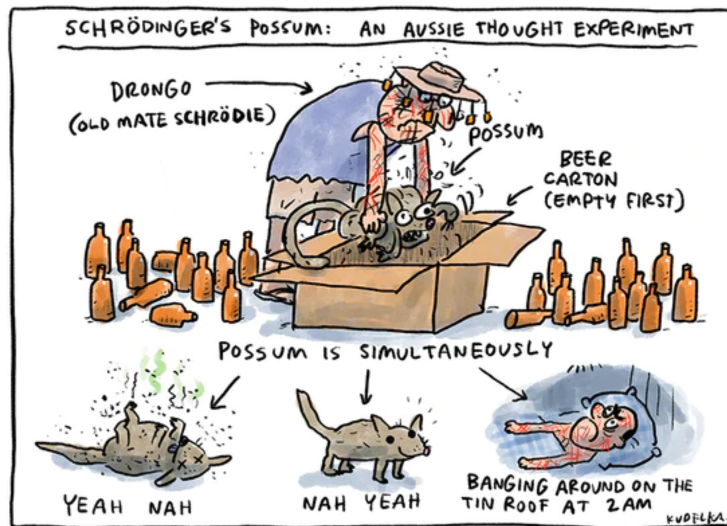
## Exposition

My idea is about how Quantum Mechanics can help Chiropractors discuss evidence in a form which may show subluxation exists. Our starting point can not be what most Chiropractors would like to think is true, that a subluxation is there waiting to be 'found' (identified, diagnosed, analysed, whatever).

Quantum 101 tells us that the observer, in this case a Chiropractor, contributes to the presence or not of what is observed, in this case a subluxation. Here I shall treat the entity of subluxation as a singular something involving two contiguous vertebrae and not worry about what some call primary and secondary subluxation and I shall certainly not go near the idea of 'compensations'.

If you allow me some leeway at this point I shall introduce you to an scratch by one I consider a genius as an artist, Tasmanian Jon Kudelka. For the non-Australian readers a 'possum' in our idiom is a nocturnal mammal which is a pest in suburban areas well known for loudly running along the roof of one's home just after sleep has descended. For legal reasons I can not propose the common solution to this problem but believe my locative phrase will aid the understanding of my Figure 1.

Fig 1: Kudelka's view of Schrödinger's possum




I present this image with Kudelka's tacit approval given I purchased this copy from him, and every reader with a passing sniff of philosophy will be familiar with Shrödinger's thought experiment involving a cat. To cut a complex philosophical argument painfully short, one does not know if the cat in a box with a toxic element is dead or alive until one opens the box to see.

> To paraphrase, the act of the observer determines the situation and I propose that the actions of a Chiropractor determine whether a subluxation is present or not.

Now let me tell you why Jon's scratch (Fig. 1) is actually a deep expression of Quantum Mechanics. Again any reader with a passing idea of Quantum Entanglement will known that we can place two cats, yours and mine, each in a box, yours and mine. You wander off with your 'cat in the box' and appreciate that if I open my box and find my cat is alive, you will find the same when you open your box. This is because the objects, usually a very tiny particle with a characteristic spin in either an up or down direction than can be measured, but in this graphically exaggerated experiment, cats, will be entangled to the point they are the same, no matter how far apart they may be. Thus if mine is dead, so is yours.

What Kudelka has proposed is that in addition to being entangled (meaning that in addition to the subluxation being or not being at the places observer A and B look in a common patient), it also has the ability to be somewhere else entirely, in Jon's case, banging about on the roof, but in our case possibly elsewhere in the spine. Hence my concern noted earlier: what should we accept as reality when Practitioner A identifies subluxation in the cranio-cervical junction while another, Practitioner B with the same patient, identifies it about the sacrum?

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We are starting to see a glimmer of usefulness in applying Quantum Mechanics to the idea of subluxation, but let us now advance this matter in stages.

### *When does something exist?*

In Newtonian terms something exists when it can be measured. I suggest this is the stumbling block for post-realists in that their modelling of the world relies on quantifiable measurement (Newtonian, Cartesian). But if something has no dimensions, how can we measure it? As I have previously shown, (4) there is no published evidence of a measurable entity.

Faye's modelling suggests there are movements about Cartesian axes which can be perceived by skilled palpator. Is he right? I do not know, but I can not state with surety that Faye is wrong. I would venture that the testing of his concepts has been flawed meaning the published findings and associated judgements hold little value, no matter whether they are negative or positive.

Pragmatically there is an overwhelming number of Chiropractors globally who, every day, talk about a spinal lesion that they perceive by diligent palpation as a reality; I could not dare suggest they are wrong.

### *So what is happening?*

Faye has provided a model which I adopted with then students (47) to show '*what we think we feel*' and to give a semblance of a framework that resonated with them to guide them imagining a meaning for what they thought they could feel while palpating a patient's spine.

Thus I can conclude that something exists when we have enough indications to suggest a collection of clinical findings that fill-in the mental model we have of whatever it is we are seeking to find. This requires an intimate relationship between sensory inputs and mental mapping in our mind which is known to seek intentional templates. (48) When seeking something the intention is quite simple as in, '*do I have the evidence to fill my mental map of this thing or not*?'

47. Ebrall PS, Nest A, Walker L, Wright D. Palpatory literacy and the subluxation complex: developing a model to represent what we think we feel. Chiropr J Aust. 2006; 36:127-36.

48. Epstein R, Patai E, Julian J, et al. The cognitive map in humans: spatial navigation and beyond. Nat Neurosci 20, 1504-13 (2017). https://doi.org/10.1038/nn.4656

From this came my paper on *Perspectival Truth* (4) with the somewhat surprising realisation that if a trained chiropractor has enough evidence to meet their personal criteria of what constitutes a subluxation, then that subluxation exists with the caveat that it exists where it matters, at the interface of that Chiropractor with their patient. I then applied this position to a second paper about *absolving indeterminacy* in Chiropractic (18) in which introduced some of what I discuss here.

This is the point of entanglement between that patient and that Chiropractor and I propose it is not appropriate for another to be critical of such a finding. In fact, I would say it is not possible for the reasons I now present.

### *Am I right in what I think I feel?*

Our challenge here is the matter of self-validation and I argue for the supremacy of the palpator over any critical third-party observations. The crude phrase '*if it looks like a duck, and …*' applies here. By this I mean that if the chiropractor thinks she feels a spinous restriction in its movement to the left, then there is sufficient data within this finding to plug into her model. For me such a finding would suggest that the vertebrae is not moving as it should in a certain direction and I extend this to plan my therapeutic thrust which should be such as to correct this perceived defect.

### *Is what I think I feel really there?*

After Fernandez (49) we can say that if '*it were not for human consciousness, we would not be trying to observe and understand such systems at all, let alone making up thought experiments. The question is not whether human consciousness makes a difference but where and how. Does it affect physical outcomes, for example?*' Herein lies both the strength and the weakness of Quantum Thinking, which is that reality is observer dependent. Hossenfelder is concerned (50) and through argument she dislikes that reality seems subjective and is seeking a better theory which is not observer-dependent.

However at this point we can accept the general Quantum view that something is real when it is observed, and by extension, what a Chiropractor sees in their practice as a treatable entity is a real thing to which intervention can be directed. I propose this to be true, regardless of whether the Chiropractor is a realist or a post-realist.

### *How our mind may deal with a real clinical lesion*

This is the point where my exposition becomes interesting. If both a realist and a post-realist each see something worthy of clinical intervention, then what is the problem, if any?

For me it is the conflict between the way Chiropractic as an academic discipline talks about this clinical thing and the way the profession and practicing realists would prefer to talk about it. I also find it to be an untenable construct that the vocal parts of the profession, who may or may not be practicing Chiropractors, inflict their post-real linguistic preferences onto the realist rhetoric of active Chiropractic clinicians. It becomes a grievous act when these post-real expressions are embedded into curricular to modulate the minds of future generations of Chiropractors. (15, 16)

My contention is that an effective curriculum will guide the learner with a model that takes Quantum inputs, which are observer dependent, and conceptualises them into a clinical entity that is treatable. I am not concerned with the wide variety of approaches among which any one clinician can choose any one approach, but argue it should be one in which they hold competency built on training and then familiarity through rehearsal and practice.

The critical connection is the direct interface of the Chiropractor and the patient, and I now attempt to provide a better understanding how this works.

49. Fernandez E. Does consciousness change the rules of Quantum Mechanics. Mind Matters. 4 November 2022. URL https://mindmatters.ai.
50. Hossenfelder S. Theoretical physicist: Quantum Theory must be explained. [News]. Mind Matters 21 February 2022. URL https://mindmatters.ai.

## A possible Quantum model of the chiropractor-patient entanglement

My starting point is that one can not see the subtle clinical thing often called a subluxation which I will show exists as a small dysfunction among a couple of spinal segments. I appreciate an attempt was made with an atlas of supposed subluxations (51) but given it relied on images of derangements in the spines of cadavers we have no evidence that what was shown was a subluxation with clinical effects. We also have the work of Holt et al (52) which used a '*battery of tests*' to reach agreement among observers that they found something in common, however there was no evidence it was subluxation, however it could be agreed that they called it subluxation.

I also fully appreciate there are likely many who will insist they can see subluxation but this is an illusion as what they are 'seeing' is a pattern in the parts which may be affected by the neurological or structural effects of a subluxation, such as a low pelvis or a head-tilt. And for the sake of flow in my rhetoric I will continue to call this causative entity a subluxation.

It should come as no surprise to accept we can not see subluxation; I liken it to the realisation we can not see a headache. What we do see are overt clinical expressions, and the same principle applies when we are looking for a subluxation.

> As observers we are looking for signs, which introduces semiology and the science of semiotics. However it is not quite this simple given what I have presented earlier in this paper which argues that we don't actually see anything in real-time, and when we think we do we must accept that whether or not it is real is the decision of the observer.

## The complexity of clinical variables

As with snowflakes no two humans are alike, not even monozygotic twins (53) (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 not equal Subluxation "B"*'. Thus our model for interpreting the multitude of things we think we feel must be expansive with flexible inter-connectivity among all parts. It must also be applicable to an inestimable number of variable presentations.

While we do not yet know how Quantum Entanglement could work, if at all, with subluxation, it is both ignorant and dangerous for the GCC to take the position that '*programmes promoting and teaching unorthodox explanatory frameworks, such as life force, innate intelligence, vitalism and a belief that manipulating the spine to remove restrictions or "Chiropractic subluxations" can restore health more broadly, will not meet these Education Standards*'. (54)

51. Rich WJ. Atlas of Common Subluxations of the Human Spine & Pelvis. 1997. https://www.amazon.com/gp/product/084933117X?ie=UTF8&tag=alternativ07a-20&linkCode=as2&camp=1789&creative=9325&creativeASIN=084933117X
52. Holt K, Russell D, Cooperstein R, Young M, Sherson M, et al. Inter-examiner reliability of a multidimensional battery of tests used to assess for vertebral subluxations. Chiropr J Aust. 2018;46(1):Online access only p 100-117. http://www.cjaonline.com.au/index.php/cja/article/view/196.
53. Silva S, Martins Y, Matias A, et al. Why are monozygotic twins different? J Perinat Med. 2011;39(2):195-202. DOI 10.1515/jpm.2010.140. Epub 2010 Dec 13. PMID: 21142845.
54. GCC Education Standards Consultation draft. Accessed October 2022. p. 6. URL https://www.gcc-uk.org/assets/downloads/GCC_Education_Standards_(Consultation_draft_-_July_2022).pdf.

## So what am I saying?

I am saying that I am trying to understand why it is difficult for two Chiropractors to agree on the presence of a vertebral subluxation at any one specific location within the human spine. I am saying one will argue it is a subluxation at the cranio-cervical junction while another will argue it is a subluxation about the low back and pelvis, while a minority will say it can not be either because subluxation does not exist. Yet each may proceed to provide a putative therapeutic intervention in the name of Chiropractic.

I am saying that subluxation only exists when it is said to exist by a Chiropractor trained in its identification and through skilled observation is able to match electromagnetic inputs against a pre-constructed mental map to create a belief of reality in the mind of the Chiropractor. This is the Quantum principle that something may not exist, or be happening, until it is observed.

I am comfortable with the idea of disagreement between Chiropractors seeking to identify a subluxation in one particular patient due to Quantum concepts of superposition meaning the subluxation may be in a different form about the same place. This is more or less the Quantum principle of superposition. Crudely expressed this means that at the same time a particle has an up-spin and a down-spin which I suggests flows to one Chiropractor thinking a subluxation needs adjustment from the left while another believes it is better to adjust from the right.

I am saying there may well be a new aspect of superposition that we are coming to identify, which is dependent on which Chiropractor examines a spine and at what time. The subluxation may be entirely capable of superposition, ie existence, in different places of the spine at the same time. For me this the idea expressed in Fig 1, that the 'one' subluxation can be anywhere in the spine, like a possum running along the roof.

And I am saying that a mind trained with a model of what to look for can find and identify subluxation which in turn allows a proposition for therapeutic intervention. I hold it is neither possible nor ethical to propose a manual therapeutic intervention without an identified target lesion

## Conclusion

This discipline of Chiropractic deserves better than an unethical flat-earth argument from the GCC against '*life force, innate intelligence, vitalism and subluxation*' (5e) in a world where our rhetoric should be moving into the realm of Quantum entanglement. The commentariat should be working harder to make sense of Chiropractic's clinical realities in a way that will advance, and not retard, the discipline.

If the elite commentators lack the skill to step up and discuss these matters in the literature then Chiropractic as a profession will be better off to discard them.

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