

A philosophy for chiropractic education in the 21st Century

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Introduction

The future of chiropractic education is, as yet, unscripted

If the way chiropractic institutions teach today is the way they taught yesterday, then the way they teach tomorrow will be yesterday again. Clearly, this will not work. Tomorrow's students are now in school and are skilled with video games and creating 3D worlds in Minecraft and other Apps on mobile devices. Whilst this author and not doubt this journal's readers are 'digital immigrants' our students are 'digital natives' and tomorrow's chiropractors will be the 'hit enter' generation. Our students will not see a distinction between the online world and the offline line world. They will not care about whether they engage face to face in a world of reality, such as a physical classroom, or on their device in an anywhere world of augmented and virtual reality.

This paper presents an opportunity to rethink every aspect of what is collectively called chiropractic education within an over-arching philosophy of chiropractic. The objective is to present a series of informed predications for global chiropractic learning that each have a dependence on the philosophical position of the institution. These predications are drawn from a theoretical framework built with critical review of analyses of complex formal structures and processes in health care (1) and industry. (2)

I am not inferring that chiropractic education is broken or necessitates a 'whole of industry' or 'systems' repair. Rather the Shinto lens is used to examine the good things and allows the observation it is wiser to focus on the 95% that is working well, not the 5% which may be weak. Nevertheless, such a view can only be of today and we need to see tomorrow. It is our responsibility to make the tomorrow that will better serve society, today. Our outcome must be

... the future of chiropractic education is explored with an emphasis on the need for an institutional philosophical framework. Evidence-informed predications are offered with a brief summary and desired outcomes'



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1. Avan Houdt S, Heyrman J, Vanhaecht K, Sermeus W, De Lepeleire J. An in-depth analysis of theoretical frameworks for the study of care coordination. *Int J Integr Care*. 2013 URN:NBN:NL:UI:10-1-114598. URL <https://www.ncbi.nlm.nih.gov/ezproxy.scu.edu.au/pmc/articles/PMC3718267/pdf/ijic2013-2013024.pdf>
 2. Pruitt J. Follow Coca-Cola's Path To Digital Transformation. *Inc.Plus*. URL <https://www.inc.com/jeff-pruitt/4-digital-transformation-lessons-to-learn-from-coca-cola.html>

multifaceted, multilingual, and multicultural and of higher professional standards than are currently evident at entry level to the profession of chiropractic.

Each prediction is an educated guess based on an understanding of the history of chiropractic education and attuned to contemporary society. They are offered with a brief summary and desired outcomes. The determination of any implementation is a leadership responsibility within individual institutions, and in turn this will be dictated by the philosophy of the leadership, and example being the stated position of the *Los Angeles College of Chiropractic*, (3) among others. (4) At least one institution overtly expresses its philosophical stance. (5) Biggs et al (6) report that '*Despite a growing body of literature examining chiropractic philosophy, the chiropractic profession continues to be divided over this issue*' however there have been calls for institutions to better understand '*their roles among the next generation of health care providers for the 21st century*' (7) emphasising the role of the institution. (8)

I am not suggesting which philosophy could or should be appropriate for any chiropractic educational institution but I am insistent that an institution without such a guide is rudder-less. My central premise of this paper is that the most exciting developments for chiropractic education will occur because of an expanding understanding of what it means to be a chiropractor. The technology of which I shall write is only a servant of human ideas but first, there must be ideas to serve.

Methods

On-line resources were searched for primary and secondary documents to trace chiropractic education from its genesis in 1896 to its present, global delivery. First-person documents were classed as primary, and second-person reports as secondary. Oral reports, as a tertiary source, were excluded.

Primary sources were evaluated (9) tested (10, 11) and accepted as recording what happened. Documents reporting how it happened were considered secondary. (12) Interpretation was not a

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3. Kimura MN, Russell R, Scaringe J. Professional identity at Los Angeles College of Chiropractic. *J Chiropr Humanit.* 2016;23(1):Online access only p. 61-7. URL [http://www.journalchirohumanities.com/article/S1556-3499\(16\)30008-0/fulltext](http://www.journalchirohumanities.com/article/S1556-3499(16)30008-0/fulltext)
 4. Kearing JC, Jr., Montgomery DP. Beatrice B. Hagen: the lady in charge. *Chiropr Hist.* 2008 Summer;28(1):73-82.
 5. The Palmer educational principles. Palmer College of Chiropractic. URL <https://www.palmer.edu/about-us/identity/palmer-educational-principles/>
 6. Biggs L, Miereau D, Hay D. Measuring philosophy: A philosophy index. *J Can Chiropr Assoc.* 2002;46(3):173-84. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2504988/>
 7. Fredericks M, Kondellas B, Ross MWV, et al. Future chiropractic physicians: Toward a synthesis of select concepts in the behavioral sciences in health care and the society-culture-personality model for the 21st century. *J Chiropr Humanit.* 2009 Dec;16(1):Online access only p. 5-12. URL <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3342810/pdf/main.pdf>
 8. Flanagan J, Giordano J. The role of the institution in developing the next generation chiropractor: clinician and researcher [commentary]. *J Manipulative Physiol Ther.* 2002;25(3):193-6. URL http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11986582
 9. Gilbert J. Garraghan. *A Guide to Historical Method* New York: Fordham University Press 1946.
 10. Bucheli M, Wadhvani RD. *Organizations in Time: History, Theory, Methods*, published to Oxford Scholarship Online (Jan 2014). URL <http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780199646890.001.0001/acprof-9780199646890> and <http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780199646890.001.0001/acprof-9780199646890-chapter-13>
 11. Hockett HC. *The Critical Method in Historical Research and Writing*. New York: The Macmillan Company 1955.
 12. Tosh J. *The Pursuit of History. Aims, methods and new directions in the study of history* 6e. London: Routledge 2015.

semantic (13) quarrel but one about context and purpose. (14) This necessitated application of the philosophical construct of 'aboutness' (15) while being 'sensitive to the objects about which we're establishing those truths.' (16)

This approach to history requires flexibility and agility of processing to allow creation of the research framework (Figure 1).

Second, reference was made to the author's library of curated seminal management texts. On the premise that chiropractic education is an unstructured amalgam of random acts in an unpredictable setting, multifarious readings were consulted. Triangulation of quantitative and qualitative methods and of data sources was performed to achieve contextualisation with reference to specific texts. All resources utilised to inform this paper are given in the Reading List.

The collective wisdom gained may be summarised by Naisbitt and Aburdene 'The most exciting breakthroughs of the 21st Century will occur not because of technology but because of an expanding concept of what it means to be human.' (15, p. 6) This sentiment is of value in anthropocentric chiropractic education as it places technology as a servant of the optimal outcome, a stronger understanding and application of what it means to be a chiropractor in the 21st Century.

As noted above the concept of a philosophy for a program is not addressed in this paper. The author holds that a chiropractic philosophy is best drawn from the literature and thus implemented as an evidence-based framework. Whilst it is essential for an institution to have its individual programmatic philosophy, and for all team members to own it, it is not for this paper to suggest what it could be.

The literature is vocal on matters such as chiropractic identity (17, 18, 19, 20, 21, 22) and these papers, taken in an informed historical context, are useful to inform philosophical views. Chiropractic educators must show a 'conceptual understanding of content, a strong indication of a deep knowledge of a subject is evident in a person's conceptual understanding, and that goes well beyond simply "knowing the facts."' (23) The parroting of a political position is not acceptable in a

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13. Kent C. Vertebral Subluxation: Semantic Pathology, Epistemic Trespassing, and Ethics. *J Philos Prin Prac Chiropr.* 2018:1-7.
 14. Zammito J. Ankersmit and Historical Representation. *Hist Theory* 2005;44(2):155-81.
 15. Sober E. Constructive Empiricism and the Problem of Aboutness. *Br J Phil Sci.* 1985;36(1): 11-8. URL <http://www.jstor.org/stable/687153>
 16. Azzouni J. Theory, observation and scientific realism. *Br J Phil Sci.* 2004;55:371-92. URL <http://www.jstor.org/stable/3541667>
 17. World Federation of Chiropractic. Home wfc.org
 18. World Federation of Chiropractic. Identity consultation. URL https://www.wfc.org/website/index.php?option=com_content&view=category&layout=blog&id=64&Itemid=93&lang=en
 19. World Health Organisation. Guidelines of basic training and safety in chiropractic. Geneva: World Health Organisation. 2005. URL <http://www.who.int/medicines/areas/traditional/Chiro-Guidelines.pdf>
 20. Walker BF. The new chiropractic. *Chiropr Man Therap.* 2016;24:26. URL <http://chiromt.biomedcentral.com/articles/10.1186/s12998-016-0108-9>
 21. McGregor M, Puhl AA, Reinhart CH, Injeyan S, Soave D. Differentiating intraprofessional attitudes toward paradigms in health care delivery among chiropractic factions: results from a randomly sampled survey. *BMC Compl Alt Med.* 2014;14:51. URL <http://www.biomedcentral.com/1472-6882/14/51>
 22. Puhl AA, Reinhart CI, Doan JB, McGregor M, H. Injeyan S. Relationship Between Chiropractic Teaching Institutions and Practice Characteristics Among Canadian Doctors of Chiropractic: A Random Sample Survey. *J Manipulative Physiol Ther.* 2014;37(9):709-1.8
 23. Loughran J. Telling evidence on complexities of teaching. *The Weekend Australian.* Sep 12 2018. At <https://www.theaustralian.com.au/higher-education/opinion/telling-evidence-on-complexities-of-teaching/news-story/9e9404dfd12f34b988876c55063e113f>

scholarly environment, (24) neither EBM nor sectarian dogma should be given preference to a considered, balanced anthropocentric view of the profession where all its nuances are canvassed.

For example, the relegation of subluxation by academics at AECC, (25) WOIC, (26) and McTimoney (27) as merely of historical interest in chiropractic, represents an avoidance of evidence-informed education.

Industry exemplar: *Coca Cola*

There are four themes found in the way *Coca Cola Corporation* (2) is engaging today's digital market and preparing for tomorrow's. In a broad view they are:

- ▶ Go digital to increase efficiencies;
- ▶ Always be listening and learning;
- ▶ Create a personalised experience online and off; and
- ▶ Become a great story teller.

These are given by McEleny (28) and interpreted for chiropractic by me as:

1. Going digital means to transform the way the institution operates. An institution must become a '*whole-of-campus*' institution on a common digital platform. This author's platform of choice is Apple™ for key reasons of seamless interconnectivity, intuitive ease of use, content security, and IP protection. It has proven challenging to have multiple android products 'talk' with each other. In a learning environment where the emphasis is on worry-free interactivity, Apple provides a seamless experience. This author derives no personal gain from endorsing Apple and is an active public learner within the '*Today at Apple*' training programs which are provided free to all Apple users to ensure the products deliver more than expected. This meeting of learner expectation is critical in any transition to become a '*whole of institution*' digital campus, which this paper will now refer to as an Apple Campus.™

Learners demand the same interface for learning as they experience with their devices outside the institution, and the same ease of connectivity, a matter which underpins new modes of formative assessment to be explored elsewhere;

2. To always be listening and learning means to transform the learner experience. For a start, students are no longer called '*students*', they are '*learners*'. This focuses our attention on ensuing every move we make in the digital learning arena must directly transform the experience of the learner to be more engaging and allow deeper learning. This means we ask '*how do we enhance our learner experiences when they touch our institution and our*

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24. McAulay BJ. Rigor in the philosophy of chiropractic: Beyond the Dismissivism/Authoritarian polemic. *J Chiropr Humit.* 2005;12:16-32.
 25. Breen A. Verbatim statement as given in GCC minutes. General Chiropractic Council. Minutes of meeting of General Chiropractic Council held on 17 February 2010 at 44 Wicklow Street, London WC1X 9HL. (reference number C-170210-13). Obtained from the public record, General Chiropractic Council, March2018.
 26. Byfield D. Verbatim statement as given in GCC minutes. General Chiropractic Council. Minutes of meeting of General Chiropractic Council held on 17 February 2010 at 44 Wicklow Street, London WC1X 9HL. (reference number C-170210-13). Obtained from the public record, General Chiropractic Council, March2018.
 27. Cunliffe C. Verbatim statement as given in GCC minutes. General Chiropractic Council. Minutes of meeting of General Chiropractic Council held on 17 February 2010 at 44 Wicklow Street, London WC1X 9HL. (reference number C-170210-13). Obtained from the public record, General Chiropractic Council, March2018.
 28. McEleny C. Beating the real thing: Coca-Cola on its four point digital transformation plan. The Drum Plus. URL <https://www.thedrum.com/news/2018/08/23/beating-the-real-thing-coca-cola-its-four-point-digital-transformation-plan>

learning objects? and *'How do we enhance our learning experiences with us to allow graduates to develop more fully under our care?'*;

3. To create a personalised experience online and off means to transform the business of education. This theme embraces disruption. Organisational team members who have become comfortable with one set of software are required to learn the institution's preference. The benefits to the institution are beyond estimation and there is a synergy when team members can meet on-line by *Facetime*, Airdrop files among each other, locate each other easily on-campus with 'walkie talkie', use a common citation library or reference manager such as Endnote™ or preferably Mendeley™ (29) and work together with shared access to common documents. My preference for Mendeley™ is based on its ease of use on devices and the flow of informative notes with further papers through Elsevier based on your search histories.

Security becomes paramount when an institution shifts to Cloud-based work-ware and learning objects, as does team-training. Compassionate assistance to all members of the team is base-line for effective, complete transformation, and gentle discussion must be commenced more than a year prior to implementation. Training takes precedence within a context that leads the team member to 'own' their new desktop and its connected devices. Play sessions must be encouraged where mistakes are celebrated and team interaction with setting and exceeding goals becomes the shared driver;

4. To become a great story teller means to transform the institutional culture. A chiropractic institution does not magically become an Apple Campus by handing out free iPads, (30) flicking a new coat of paint, issuing press releases, and simply adding an 'i' in front of a name. Likewise there is no intellectual depth with advising students to have a *'fully-charged iPad'* with them on-campus. (31) It is poor educational practice to offer tests on iPads (32) without 作成 from first delivering learning on iPad to create the expectation for, and familiarity with, seamless engagement.

A story needs to be told. The Apple Campus comes into existence by growing from a seed to live in the hearts and minds of all team members, those responsible for organisation and operation, those with academic responsibilities as learning leaders, and those responsible to learn and come to represent the institution and chiropractic with dignity and confidence when they return to serve their communities. Let your graduates be proud to carry your institution's story with them.

Chiropractic education: brief history

Chiropractic education commenced with Palmer about 120 years ago, during Japan's Meiji restoration. This was about the time (1897) the 帝國大學 (*Imperial University*) was renamed 東京帝國大學 (*Tōkyō Imperial University*) and 京都帝國大學 (*Kyōto Imperial University*) was founded. In Australia the depression of the 1890s and the need for skilled workers impelled merchants to

29. Mendeley Reference Manager. Elsevier. URL https://www.mendeley.com/?interaction_required=true Device apps in the App Store.

30. Sherman College. Transforming chiropractic education at Sherman: iPad rollout begins. URL <https://www.sherman.edu/news/transforming-chiropractic-education-sherman-ipad-rollout-begins/>

31. Logan University. New student orientation. URL <https://www.logan.edu/admissions/new-student-orientation>

32. Sosnoski D. Where are the chiropractic colleges now, and where are they going? Chiropractic Economics. URL <https://www.chiroeco.com/future-dc-chiropractic-colleges/>

demand that technical education in schools be improved (33) while in America only a few colleges offered actual college level education and agricultural and industrial training was preferred.

Palmer established his first college in Davenport about 1897, (34, 35) however started teaching his methods in 1896 (36) as the *School of Magnetic Cure*. His son Bartlett chartered the *Palmer School of Chiropractic* in 1907. (37) On moving to the West Coast of the USA Palmer Snr delivered education in Santa Barbara (from the Aiken Building, 1903) and Oregon (1908). (38)

Keating (34) reports '*Chiropractic education in the northwestern United States has its origins in the Marsh School & Cure in 1904. Most of the early schools were located in Portland, Oregon, including the D.D. Palmer College of Chiropractic (1908-1910), and several of these had merged by 1912 or 1913 to form the Pacific Chiropractic College, forerunner of today's Western States College.*'

The *American School of Chiropractic* was founded in Cedar Rapids, nearby Davenport, in 1904 by Oakley Smith, (39) joined by Minora Paxson and Solon Langworthy. In 1906 Howard established a college in Davenport which relocated to Chicago 2 years later. (40)

It was not until the 1940s that education standards became an issue of significance based on the differing views of the two prominent professional associations. Nugent (41) represented the *National Chiropractic Association* (NCA) (42) which held opinions about education that differed to those of BJ Palmer who established the *International Chiropractors Association* (ICA). (43)

Nugent's '*ideal*' curriculum was discussed in his 1943 text *Chiropractic Education: Outline of a Standard Course*. (44) He developed an extensive curriculum which, since its use to establish The *Canadian Memorial College of Chiropractic* in Toronto, has become the template for what is now referred to as the '*4,200*' hour curriculum and the assumed standard curriculum for all colleges. It is nearly 80 years old and while some may say it has evolved, (45) others say it is rusted in the

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33. McCreadle M. The Evolution of Education in Australia. IFHAA Australian Schools. URL <http://www.historyaustralia.org.au/ifhaa/schools/evelutio.htm>
 34. Palmer College of Chiropractic. The Palmer Family Heritage/History of Palmer College of Chiropractic. URL <http://www.palmer.edu/about-us/history/palmer-family/>
 35. Faulkner TJ. The chiropractor's protégé. Rock Island, The Association for the History of Chiropractic 2017: p 298.
 36. Keating Jr JC. D.D. Palmer's Lifeline. From the personal files of Joe Keating Jr. held in the author's library. p 8.
 37. Palmer College of Chiropractic. The Palmer Family Heritage/History of Palmer College of Chiropractic. URL <http://www.palmer.edu/about-us/history/palmer-family/>
 38. Keating Jr. JC. Early chiropractic education in Oregon. *J Can Chiropr Assoc.* 2002 Mar;46(1):39-60. URL <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2505094/>
 39. Faulkner TJ. The chiropractor's protégé. Rock Island, The Association for the History of Chiropractic 2017: pp. 322, 327.
 40. Dougherty KJ. Thriving for 100 years: National's philosophy of collaboration and integration. *J Chiropr Humanit.* 2017;24:41-3.
 41. Nugent JJ. Canadian Memorial College. *Chiropr J.* 1945;Oct:15.
 42. Keating J, Jr., Rehm WS. The origins and early history of the National Chiropractic Association. *J Can Chiropr Assoc.* 1993;37(1):27-51.
 43. International Chiropractors Association. About ICA, History. URL <http://www.chiropractic.org/about/history/>
 44. Gibbons RW. Chiropractic's Abraham Flexner: The Lonely Journey of John J. Nugent, 1935-1963. *Chiropr Hist.* 1985;6:45-51.
 45. Adams AH, Miller G, Miller JA. The development and implementation of an innovative curriculum in chiropractic education: The L.A.C.C. experience. *J Chiropr Educ.* 1991;4(4):122-7.

educational methods of 1945 (46, 47) and must change. (48, 49, 50) Few in chiropractic have discussed 'whole of curriculum change' however numerous authors have reported renewal in various courses and modes of teaching and assessment.

Weiant, a contemporary of Nugent, was a key player in the chiropractic politics on America's East Coast. He saw that chiropractic needed data in the form of scientific, legal, economic, sociological, and political content to advance chiropractic education, research, and legislation. (51)

The accreditation paradox

Nugent and Weiant fused the standard curriculum with the first accreditation standards and through the efforts of the NCA inseparably associated those standards with legislation. Accreditation by external bodies has become a constrictive element preventing change. While initially unifying the profession and advancing educational standards, as evident in the Australian situation of the 1970s, (52) accreditation is now a divisive process in America (53) and independent chiropractic academics report accreditation is in need of improvement globally. (54)

The paradox is that in these times of evidence-based education practice there is no evidence supportive of the current accreditation model. The regional accrediting bodies now disagree on its merits as reflected in the withdrawal in 2016 of the American CCE from the international body notionally representative of all accrediting agencies, the *Councils on Chiropractic Education International (CCEI)*. (55) Accrediting bodies have been challenged by those government organisations which enable them. (56, 57) The CCEI recognises a crises in chiropractic education in the United States caused by the CCE. (58) The general flaw in accreditation standards is given

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46. Peterson D, Wiese G. An overview of chiropractic educational institutions, 1896 to the present. *J Chiropr Educ.* 1991;4(4):104-14.
 47. Ebrall PS, Draper B, Repka A, Haworth N. Towards a 21st Century paradigm of chiropractic education: Stage 2, connecting assessment to attainment in practice-integrated learning. *Chiropr J Aust.* 2009; 39:92-102.
 48. Senzon SA. Chiropractic professionalisation and accreditation: An exploration of the history of conflict between worldviews through the lens of developmental structuralism. *J Chiropr Humanit.* 2014;21:25-48.
 49. Swenson RL. The process of curriculum change at the National College of Chiropractic. *J Chiropr Educ.* 1997;10(4):71-5.
 50. Swenson RL. Leadership strategies to enable curriculum change. *J Chiropr Humanit.* 1998;8(1):38-42/
 51. Keating Jr JC. Chronology of Clarence Wolsey Weiant, D.C., Ph.D. Weiant CHRONO 98/09/23. From the personal files of Joe Keating Jr. held in the author's library/.
 52. Ebrall P. In memoriam, Douglas Winter: The father of university-based chiropractic education in Australia [Obit]. *Chiropr J Aust.* 2018;46(1):118-9.
 53. Wickes DJ. An open letter to the profession from the Council on Chiropractic Education (CCE). Council on Chiropractic Education 2011:Nov 22. URL http://chiropracticcartel.com/docs/cce_open_letter.pdf
 54. Innes SI, Leboeuf-Yde C, Walker BF. Similarities and differences of a selection of key accreditation standards between chiropractic councils on education: a systematic review. *Chiropr Man Ther* 2016;24:46 URL <https://doi.org/10.1186/s12998-016-0127-6>
 55. Councils on Chiropractic Education International. Accrediting Bodies. URL <https://www.cceintl.org>
 56. CCE Given Three Years by Federal Committee on Accreditation. *The Chronicle of Chiropractic.* 2013;22:53. URL <http://chiropractic.prosepoint.net/78593>
 57. European CCE Denied Renewal by Accreditor. *The Chronicle of Chiropractic.* 2016;15:44. URL <http://chiropractic.prosepoint.net/136238>
 58. The Councils on Chiropractic Education International Holds Meeting. *The Chronicle of Chiropractic.* 2012;20:37. URL <http://chiropractic.prosepoint.net/42141>

by the *Foundation for Vertebral Subluxation Research* (59) as *'The CCE does not define or support any specific philosophy regarding the principles and practice of chiropractic, nor do the CCE Standards support or accommodate any specific philosophical or political position. The Standards do not establish the scope of chiropractic practice.'* This is exemplified in the standards (60) under which colleges are accredited by the Australian equivalent of the CCE that do not once mention *'subluxation'*.

On the other hand there is a minority of chiropractors who dislike the idea of subluxation (61) to the extent three of them are actively campaigning (62) for the accreditation standards to be further rewritten (63) with the intent being a greater distancing of accreditation standards from the realities of chiropractic practice. By way of contrast studies consistently show about 70% (64) of the profession is accepting of subluxation as a clinical concept.

The question for all chiropractic educators is simply *'can chiropractic education be chiropractic education in the absence of a major premise of chiropractic?'* Relevant matters include the nature of the qualification the student is buying, and whether or not a senior medical or physical therapy student could pass the pre-registration exams, whether the tests of America's *National Board of Chiropractic Examiners* (NBCE) (65) in the USA or the final assessment of the institution in other jurisdictions. If *'yes'* to either then an institution has a problem; if *'yes'* to both the problem is detrimental to chiropractic as a distinct paradigm of health and wellbeing.

Chiropractic education today

Advancing chiropractic education goes beyond simple curriculum redesign which may sound impressive with talk of mapping and integration, both vertically and horizontally but is only the outcome of asking the wrong question at the beginning. The same old questions will only give the same old answers. (66) It must be remembered that if what we did today in the classroom is what we did yesterday, then tomorrow will be yesterday again.

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59. Foundation for Vertebral Subluxation Responds to CCE Standards Revision. *The Chronicle of Chiropractic*. 28 Sept 2016. URL <http://chiropractic.prosepoint.net/142338>
 60. Accreditation Standards for Chiropractic Programs and Competency Standards for Graduating Chiropractors (date of effect 1 January 2018). Council on Chiropractic Education Australasia. URL <http://www.ccea.com.au/index.php/accreditation/accreditation-documentation/>
 61. Mirtz TA, Perle SM. The prevalence of the term subluxation in North American English-Language Doctor of chiropractic programs. *Chiropr Man Ther*. 2011;19:14. DOI <https://doi.org/10.1186/2045-709X-19-14>
 62. Innes S, Leboeuf-Yde C, Walker BF. Comparing the old to the new: A comparison of similarities and differences of the accreditation standards of the chiropractic council on education-international from 2010 to 2016. *Chiropr Man Ther*. 2018 26:25. DOI <https://doi.org/10.1186/s12998-018-0196-9>
 63. Innes S, Leboeuf-Yde C, Walker BF. Similarities and differences of a selection of key accreditation standards between chiropractic councils on education: a systematic review. *Chiropr Man Ther*. 2016 24:46. DOI [10.1186/s12998-016-0127-6](https://doi.org/10.1186/s12998-016-0127-6)
 64. Glucina T, Krägeloh CU, Farvid P, et al. Moving towards a contemporary chiropractic professional identity. *Comp Ther Clin Prac*. 2020;39 101105. URL <https://doi.org/10.1016/j.ctcp.2020.101105>
 65. National Board of Chiropractic Examiners 2018. URL <https://www.nbce.org>
 66. Whillier S, Spence N, Giuriato R. A collaborative process for a program redesign for education in evidence-based health care. *J Chiropr Educ*. 2019(33:1):40-8. URL <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6417865/>

This paper also draws a careful distinction between internationalisation and globalisation (67) of the chiropractic curriculum after Rezaei et al. (68) who report *'The spectrum of the globalisation of higher education moves from dissonance and multi-polarisation to unification and single polarisation of the world. One end of the spectrum, which is unification and single polarisation of the world, is interpreted as globalisation. The other side of the spectrum, which is dissonance and multi-polarisation, is interpreted as globalising. The definition of internalisation is the same as that of globalising. In other words, it is possible to say that [internationalisation] is similar to globalising but different from globalisation.'*

The reporting of chiropractic education necessitates an American-centric anchor yet it must be appreciated the majority (some 29 of some 46) of programs now operate outside that capitalistic environment. Notwithstanding the Nugent curriculum arising from the desire to eradicate *'for-profit'* private institutions it tracked a commercial imperative over a range of colleges through to the opening of new programs in England in 1965, Australia in 1975, and Japan in 1995.

Regional accreditation developed in Canada, Europe and Australasia in addition to America and these bodies collectively created the CCEI, a body of vague purpose with no authority and little influence. Notwithstanding Nugent's implicit intent, a requirement of institutional accreditation today is that all chiropractic institutions operate in a profitable manner.

With accreditation comes assessment, and while accreditation standards are prescriptive around an institution's conduct of assessment, America introduced external standardised assessment of graduates (49) then required this certification to allow licensure. The NBCE operationalised its exam processes in the USA at a financial cost to students whilst retaining non-profit status. In an example of an American idea being projected onto the rest of the world, a spinoff international assessment body (69) was formed.

Another resultant of regional accreditation is the dissonance (不協和音) of programs taught in Japanese and Korean, or a European, South American, or African language being accredited by a body from a region where English is the only language and educational methods from Britain and America the only models.

Globally a new college emerges almost annually to now total about 46. As a bloc the North American institutions are the minority as are their views on chiropractic education and accreditation. Chiropractic clinical practice is delivered by about 110,000 chiropractors in some 100 countries and in many more languages than English. (70) Some 40 countries have relevant legislation and while the WFC maintains a strong relationship with the WHO and developed minimum standards of chiropractic education it does little today for global education apart from a biannual conference for educators with institutional funding to attend.

Existing expectations of higher education

Blended learning is now the standard delivery mode and Eryilmaz (71) reports the flipped classroom shows students *'learn more effectively'* in this environment. Mobile learning presents

67. Ebrall PS. Philosophy in chiropractic education: the importance of globalisation as opposed to Americanisation [Guest editorial]. *Chiropr J Aust.* 2001;31:1-7.

68. Rezaei H, Yousefi A, Larijani B, Dehnavieh R, Rezaei N, Adibi P. Internationalization or globalization of higher education. *J Educ Health Promot.* 2018;7:8 DOI 10.4103/jehp.jehp_25_17

69. International Board of Chiropractic Examiners. URL <http://www.ibce.org>

70. Data sourced from the WFC home page at wfc.org and verified by personal email 24 June 2018: Richard Brown, Secretary-General, World Federation of Chiropractic.

71. Eryilmaz M. The effectiveness of blended learning environments. *Contemp Iss Educ Res.* 2015;8(4):251.

matters needing resolution around the benefits of face-to-face learning, and methods to enhance engagement in a flipped, virtual classroom have been reported. (72)

Formative assessment (73) should be an entrenched practice, as should small group learning which is known to produce '*significantly more positive effects than individual learning on student individual achievement.*' (74)

Trends in higher education

The following trends are observed from various reports about higher education in a global context. The adoption of any requires a philosophical shift in how one perceives the very nature of chiropractic education. Is it, and can it only ever be provided in its current format?

Micro credentials

Micro credentials have been described as offering academics '*an on-ramp for identifying and meeting classroom-specific professional learning needs.*' (75) This form of academic Continuing Professional Learning (CPL) is '*competency-based, personalised, on-demand, and shareable.*' Micro credentials are seen as '*a transformative approach to professional development.*' (76)

Their value lies in them forming badges of attainment and being stackable (77) to allow a formal award such as a Graduate Certificate or Diploma. They represent the pathway to raise the academic skills-sets of all chiropractic educators, particularly those supervising clinical learning, either on-campus or at a remote site.

Educational Quality

Academics are expected to gain credible qualifications in learning and teaching. It is reported that '*quality in teaching and learning can be seen in the way the knowledge, skills and ability of the teacher are employed to develop meaningful pedagogic experiences for students ... if quality in teaching is about creating powerful learning, then clearly a teacher has to know and apply learning theories in ways that purposefully shape their work.*' (78)

The development of micro credentials by an institution for its own academics creates a marketable product from the commodities of the institution to deliver as CPL in user-friendly chunks in a mobile learning environment. The key factor is to make them stackable and lead to defined endpoints. This notion contrasts to that of Australia's chiropractic regulator which only require sets number of learning hours per year with a self-reflection of its value to the learner. The lack of a defined endpoint with a CCE is addressed with this solution.

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72. Monica L, Ergan M, Vold T, Strand M, Kiönig L. The Flipped Virtual Classroom: A Room for Involvement and Engagement? European Conference on e-Learning; Kidmore End 416-423. URL <https://search-proquest-com.ezproxy.scu.edu.au/docview/1866983561/fulltext/A5C69E2C263A46BEPQ/2?accountid=16926>
 73. Ninomiya S. The Possibilities and Limitations of Assessment for Learning: Exploring the theory of formative assessment and the notion of closing the learning gap. Educ Stud Jap International Yearbook. 2016;10:79-91. URL <https://files.eric.ed.gov/fulltext/EJ1130292.pdf>
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 77. Hall-Ellis S. Stackable micro-credentials – a framework for the future. Bottom Line: Managing Library Finances. 2016;29(4):p233-236. 4p ISSN 0888-045X
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Fig. 1: An ordering of predications and outcomes

The <i>Big Ideas</i> of chiropractic education	Key Outcomes
External factors:	changing work environment, transport, congestion, sustainability, legislative requirements, accreditation requirements
Internal factors:	micro-credentials
Structure:	temporal linearity, temporal dimensionality, temporal spatiality
Tasks characteristics:	driven by Facial Recognition
Cultural factors:	language, circadian learning rhythms
Knowledge and technology:	knowledge custodianship, knowledge generation, knowledge dissemination cost-benefit
Administrative processes:	task singularity, task automation
Information exchange:	airdrop, bluetooth, wifi, assessment feedback
Goals:	financial stability, societal contribution (employment, taxation, mercantile), societal enhancement
Learner outcomes:	the learner (student) will be respected
Scholar outcomes:	The end of tenure and increased multi-tasking
Institutional outcomes:	flexible work environment
Societal outcomes:	the end of ' <i>time and place</i> ' anchors

Humanisation of education

Capabilities generically known as 'soft' are emerging in the university curriculum. (79) The *Australian Curriculum Assessment and Reporting Authority* has commenced a review of the curriculum that is understood to draw heavily on a recent Government review, an OECD future of education project and the work of a US-based '*futurist*' to replace student achievement, including A-E grades, with '*gain*' as a measure of a student's success.

Humanistic ideals such as '*mindfulness*', '*gratitude*', and '*resilience*' are shaping curricula content however the concept of freedom of speech on-campus outweighs personal feelings. (80) Australian university campuses are terrorised by leftists protesting freedom of speech by any campus visitor whose views may not concur with theirs.

My empirical inquiry shows that some chiropractic institutions, particularly the Australian universities, err in this regard by banning visits to campus by certain technique groups and even

79. Urban R. Students set for shift to 'radical' 21st century curriculum. The Weekend Australian Sept 15 2018. URL <https://www.theaustralian.com.au/national-affairs/education/students-set-for-shift-to-radical-21st-century-curriculum/news-story/154ab425050615a4ed240687ed53fad5>

80. Merrit C. Unis urged: freedom of speech more important than people's feelings. The Weekend Australian Sep 18 2018. URL <https://www.theaustralian.com.au/higher-education/unis-urged-freedom-of-speech-more-important-than-peoples-feelings/news-story/01489fdfa72de3ac16a6e5a2a78868a0>

going as far to academically penalise enrolled students who attend 'non-approved' seminars off-campus and in their own time when such attendance becomes known. This ignores the societal benefits from participation with members of the profession at CPD seminars approved by the regulators.

Predictions for chiropractic education

To be successful, a prediction must deliver superior solutions with lower risks and costs of change. They must also be founded in a philosophy of chiropractic education, and employee buy-in is mandatory. Over the years business people have developed useful tactics for achieving those outcomes. When trying to apply them, educational institutions frequently encounter new obstacles forcing trade-offs. The truism is cooperation through willing participation produces stronger outcomes than coercion.

The following predictions are summarised in Figure 1. They are offered from outside the reality distortion field of institutions and they foreshadow a future which is not yet quite here but is arriving faster than most appreciate. Much of this paper is currently contributing to the institutional and programmatic development and implementation by several institutions.

External factors

- ▶ The changing work environment for chiropractic educators and clinicians will increase the relevance of CPL delivered as micro-credentials in a mobile environment. The environmental cost will be significantly reduced and the individual cost:benefit ratio enhanced by sustainable transport needs and travel costs.
- ▶ Legislation will prescribe the spectrum of professional capabilities for entry and continuance in the profession, removing the need for external professional accreditation rife with misunderstanding of chiropractic as a discipline. This will release institutions from the standardised mediocrity associated with external accreditation indicative of the lowest common denominator. In turn this will allow jurisdiction-specific alignment between specific legislation requirements and those entry level capabilities actually reflective of jurisdiction-specific scope of practice.
- ▶ Student mobility will cease being a factor suggestive of uniform accreditation. A higher standard of graduate will be achieved with exit capabilities to strongly match those required for specific jurisdictional entry. Graduates seeking mobility will meet the specific capabilities set for their proposed jurisdiction of practice by completing micro-credentials.
- ▶ Institutions will be insulated from fluctuations in the economy by being fiscally lean with fewer staff in total with greater individual productivity.
- ▶ Providers of supposed educational programmes as for-profit continuing professional development (CPD) will be held accountable for publication of evidence-based positions in the peer-reviewed literature.
- ▶ Chiropractic researchers and academics will publish the greater majority of their work in the profession's literature instead of seeking status in medical journals.
- ▶ Student and graduate testing by any international organisation will be an optional pathway to jurisdictional assessment that allows licensure.

Internal factors

- ▶ The notion of academic freedom will remain with a renewed expectation of responsibility for integrity. Academics will be held accountable for their views and non-refereed academic discourse on social media will cease.

- ▶ All team members will be required to advance their qualifications through micro-credentialing in their field of expertise, or in another to allow advancement within the institution.

Structure

- ▶ The figurative 4,200 hour linear curriculum will become a relic and new shapes will emerge.
- ▶ Professional capabilities will replace competencies to embed soft knowledge including axiologic values and humanistic aspirations for societal benefit.
- ▶ New knowledge of the capabilities required for the optimal practice of chiropractic will inform empowerment of curricular constructs.
- ▶ The *'time and place'* 50-minute lecture hour will disappear.
- ▶ Small-group interactive learning will become the dominant mode of engagement.
- ▶ Engagement between learners and learning-leaders will be more personalised to the learner's needs and the notion of intra-group performance analytics will end.
- ▶ Engagement will blend face-to-face with mobile *'anywhere, anytime'* or *'ubiquitous'* learning driven by the learner.

Tasks characteristics

- ▶ Organisational tasks will be driven by Cloud based AI.
- ▶ Casualisation will reconfigure the organisational team and remote engagement will become standard practice.
- ▶ Facial Recognition will signal real-time availability of each team member.
- ▶ Facial Recognition will provide for a higher degree of environmental security by monitoring campus entry-points in real time with AI to detect unauthorised persons.
- ▶ Records of campus-based learner engagement will be automated by Facial Recognition allowing contemporaneous and continuous documentation of learning-session engagement.
- ▶ Ethereal *'self directed'* hours off campus will be quantified by Facial Recognition on individual devices to document *'anywhere anytime'* engagement, coming to be known as *'ubiquitous learning'*.

Cultural factors

- ▶ Greater diversity among learning groups will be balanced with attention to principled behaviours of learning leaders.
- ▶ Bullying, harassment and discrimination will disappear.
- ▶ Sociocultural values will infuse all learning and assessment.

Knowledge and technology

- ▶ Chiropractic institutions will become *'whole-of-institution'* electronic campuses with an entire implementation of either the Apple or the Microsoft educational platforms. Note: The principle of *Non-Overlapping Magisteria* (NOMA) as used by Chaberek (81) allows the view it is futile to compare environments functioning in the Apple ecosystem and those in the Microsoft/Android ecosystem in the same manner as it is not possible to compare views of theology with those of science. In each case the two are different paradigms and world-views and do not overlap. The principle of NOMA was first discussed by Gould. (82)

81. Chaberek M. Aquinas and Evolution. Trinity, BC: Chartwell Press. 2017:13.

82. Gould SJ. Non-overlapping Magisteria. Natural History. 1997;106: 16-22. URL http://stephenjaygould.org/library/gould_noma.html

- ▶ Institutional libraries will complete their transformation to distributed learning centres and develop more methods for engagement by remote learners.
- ▶ Bookshops will disappear from campus and the purveyance of institutional trinkets will be on-line.
- ▶ All optimised learning objects will take the form of Apple Books, regardless of the institutional platform.
- ▶ The optimal support package for a learner will be MacBook, iPad Pro with Apple Pencil, iPhone, Apple Watch, with WiFi and high speed connection, and a data projector. Note: I use a Miroir™ (83) device as it is preferable to view a projected image than one directly on a mobile screen to reduce the yet to be fully known effects (84) of incident or direct blue light. (85)
- ▶ All learning and assessment will occur in a closed, secure electronic ecosystem.

Administrative processes

- ▶ Interaction spaces will replace meeting rooms and these will be designed for comfort and use of personal devices for shared, documented communication.
- ▶ Agendas will be single-topic and pre-decision input and comment will occur prior to any meeting of individuals.
- ▶ An institution will have only two teams, one for production (organisation) and the other for delivery (learning, teaching, assessment, scholarship).

Goals

- ▶ Institutions will carry more learners per unit cost of labour and will generate more output per unit cost of organisation and administration.
- ▶ An environment of accountability will frame academic activity and the expectation of 1/3 learning and assessment, 1/3 research with publication, and 1/3 societal service will be effected.

Learner outcomes

These predications are offered in the understanding chiropractic is not pedagogy but andragogy. (86, 87, 88)

- ▶ Students will be regarded and respected as learners and this principle will follow from Pre Professional Learning (PPL) to CPL.

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83. All new Miroir HD Pro Projector. Miroir. 2018 At <http://miroirusa.com>
84. Alpert M. How to Protect Your Eyes From the Negative Effects of Digital Devices and Blue Light. Huffpost Dec 2017. URL https://www.huffingtonpost.com/dr-matthew-alpert-od/blue-light_b_5570433.html
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86. Carpenter-Aeby T, Aeby VC. Application of andragogy to instruction in a MSW practice class. J Instructional Psych. 2013;40(1-4):3-13. ISSN 0094-1956
87. Blondy LC. Evaluation and Application of Andragogical Assumptions to the Adult Online Learning Environment. J Interactive Online Learn. 2007;6(2):116-30. URL <http://www.ncolr.org/jiol/issues/pdf/6.2.3.pdf>
88. Daloisio T, Firestone M. A case study in applying adult learning theory in developing Managers. Train Dev. J 1983:73-8.

- ▶ Learning objects will develop as Apps for mobile devices. Engagement and attainment will be enhanced through the principles of gaming. (89)
- ▶ Redesigned on-campus learning environments will foster team engagement and small group learning.
- ▶ Practical learning spaces will become a coffee-shop learner environment.
- ▶ Virtual campfires will foster physically and emotionally positive small group interaction spaces.
- ▶ Learner selected topic-specific engagement will replace teacher-driven linear learning of technique.
- ▶ Boundaries between 'year-levels' and learners will be blurred.
- ▶ Continuous '*anywhere, anytime*' or '*ubiquitous learning*' will reinforce all on-campus engagement .
- ▶ Facial Recognition will document learner engagement and attainment.

Scholar outcomes

- ▶ The academic workforce will be marked by increasing casualisation and tenure will no longer be offered.
- ▶ Group learning and capability attainment will be enhanced within groups of three learners where one performs, one models and the third conducts critical observation which will be documented and embed shared instructor input to create an ongoing performance library for each learner.
- ▶ Learning leaders will become adept in concurrent multi-tasking learning engagements across several small groups.
- ▶ Formative expression of capability development and attainment through creative, constructive activities will replace 'time and place' assessment.

Institutional outcomes

- ▶ Human efficiency will be optimised by task automation, virtual support, simplistic methods of team engagement.
- ▶ Meetings will occur on demand and be time-limited and attended by no more than 6 people. They will occur in a variety of locations with participants standing.
- ▶ Disseminated teams will meet on demand and work cooperatively by *Facetime*.

Societal outcomes

- ▶ Seamless CPL is an outcome of a uniform platform between the institution and the major professional association. In most countries this is a national relationship which allows continuous learning from PPL to CPL where the learning environment is familiar, the expectations and means of engagement are familiar, and the quality of the content is underwritten by the institution.
- ▶ Micro credentials will improve care-delivery in many areas of clinical interest, from sports to paediatrics, clinical supervision to nutrition, and so on. The need for time out to travel to central locations for 20 hours of a '*time and place*' professional seminar will disappear.

89. Papastergiou M. Exploring the Potential of Computer and Video Games for Health and Physical Education: A Literature Review. *Computers Educ.* 2009;53(3):603-22. URL <https://doi.org/10.1016/j.compedu.2009.04.001>

- ▶ Learners, as registered chiropractors, will engage by mobile platforms. This style of professional learning allows participants to better understand their developing roles and group relationships. (90)
- ▶ The assumptions of Knowles (91) about adult learning will become established in CPL. (92)
- ▶ The chiropractic curriculum will be recognised as a dynamic process (after Dennick 93) and the absence of barriers between PPL and CPL will enhance the dissemination of information, especially from clinical research, for societal enhancement.

Conclusion

Asking a more interesting question can help teams discover more original ideas. The risk is that some teams may get indefinitely hung up exploring a problem, while action-oriented managers may be too impatient to take the time to figure out what question they should be asking.

Each prediction offered encapsulates an idea informed by experience and attunement to act as a seed allowing individual and institutional thinking.

Actions will eventuate and be positive and progressive for the benefit of tomorrow's community of chiropractic professionals and the micro-societies they serve.

It is widely accepted that solutions are much better when they incorporate user-driven criteria and this is the responsibility of the individual reader and their institution.

However change and development in a vacuum of a philosophy of chiropractic education is less likely to lead to acceptable outcomes. It is beyond time for institutional leaders to actually lead, by setting a firm philosophical direction and then directing the evolution of the curriculum and its delivery for the prime purpose of enhancing the student experience and producing safer, more ethical graduates to carry chiropractic deep into this 21st Century, if not beyond.

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Cite: Ebrall P. A philosophy for chiropractic education in the 21st Century. *Asia-Pac Chiropr J.* 2020;1:036 URL apcj.net/papers-issue-1-1/#EbrallEducationPhilosophy

Indexing terms: chiropractic, education, curriculum, philosophy, trends

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Each text listed has made an actual contribution by way of thought or principle to this paper.