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Chung-Ha Suh PhD. The Proof of Subluxation. The final report of chiropractic research at the University of Colorado. 2017

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Introduction

Genius is often self evident; less often, it's elusive, subjective and perhaps as paradoxical as life itself. Within chiropractic we made subluxation the singular issue that an entire profession lives or dies upon. As I ponder Dr Chung-Ha Suh's 'book', which has not been published nor widely read, nor does it actually go beyond a volume and a half of statistical data I do not really understand, I am thinking maybe he made the same assumption, so easily dismantled by the wrong thinking.

Purely because the results of a single adjustment can almost miraculously change countless lives in the N=1 mode, chiropractors rested on the laurels of a central dogma - powerful as the sun as it is in health - we think of the Ben Goldacre book *I Think You'll Find It's a Bit More Complicated Than That*. (1) Or perhaps we are always searching for centralised, rather than contextual hallmarks of healing. In Chasing Pain, Casey (2) works his way through the neurology of pain and its control mechanisms to find no real magic therapeutic switch for any form of pain; even cutting nerves can fail to explain the phenomenon of phantom nerve pain. Cut that sciatic at L5 and still the leg cries out for attention in the former owner's mind/brain. Simply put, nature has decentralised everything, including the nervous system. Its an intricate web of redundancy, backups, shortcuts and basically supreme decentralisation.

1. Goldacre, B. I Think You'll Find It's a Bit More Complicated Than That. London Harper. Collins. 2014
2. Casey, KL. Chasing Pain. Oxford University Press. 2019

Recently in a discussion about whether chiropractic helps immunity I suggested that if we are about '*all things natural*' (3) then merely telling a patient with low back pain to get into the morning sun for natural infra-red and midday sun for vitamin D, does wonders for not only innate immunity to function, but the whole '*dynamo*' as BJ Palmer liked to refer to it. Alas, the subluxation itself remains mysterious in the realm of science; so oft mentioned in the literature as a modifier and attenuator of neural tone yet no way given fair value in daily chiropractic theoretical currency. Groups in chiropractic pushing for research threw nickels and dimes at finding out whether a subluxation can curb a nerve's enthusiasm for life force delivery and some landed at the *University of Colorado*, via the unique enigma of Dr Chung-Ha Suh. Lets try and appreciate his mystery-to-date.

Suh in the 1980s

In the '80s I heard about Dr Suh and his demonstrations of how a five cent coin pressing on a nerve could make it not quite the lightning network we had come to worship as a natural wonder, and thats when the proverbial penny dropped, unnerving me as a young excited student. There was hope we could prove a subluxation was the bad-boy that Mr. Lillard heard it was on the Brady Street grapevine, post DD thrust.

Now I find myself not quite thirty years down the track where I am told I can neither remove or detect a subluxation without the presence of double blind placebo controlled study (that medicine hasn't done for at least 90% percent of its surgical peddling for at least 90% of its modern times), and research seems to have become an elitist money pit (Say no more, it gets ugly).

Then, just when there is little word of Suh and his Colorado crew for the past twenty years, I find out he worked closely with my mentor Dr Roy Sweat causing me to pause to enquire about his work once and for all, thanks to resources accessed via Sweat's chief operational angel, Mrs Tecla Sweat.

Suh's Time line

- 1966: Suh gained a PhD with a Dissertation on Displacement Matrix and Computer-Aided Design of Space Mechanisms, then went to the University of Colorado to join the engineering faculty.
- 1967: Published the book '*Space Mechanisms*' containing 7 MIT lecture notes.
- 1968: Observed clinically with chiropractor Dr Alan Messer, who contacted him for biomechanical information, and saw '*many patients that chiropractic worked for with good results*'.
- 1970: Organised chiropractic research at the *University of Colorado* with faculty both in engineering and neurological science and wrote a letter with a research proposal to Dr. William S Day, President of the *International Chiropractors Association* (ICA) requesting research support. ICA initiated chiropractic research at the *University of Colorado* in 1971, after a visit by Dr. Ronald Frogley, vice president of *Palmer College of Chiropractic*.
- 1974: Published the paper '*The Fundamentals of Computer Aided X-ray Analysis of the Spine*' as initial research toward '*The Proof of Subluxation*'. Before this research he states he had to decide which part of the spine to focus on. '*After an intensive literature search and communications with subluxation orientated chiropractors I decided to do The Proof of Upper Cervical Subluxation*', Suh wrote.
- 1990: Dr. Sid Williams, President of *Life Chiropractic College* calls on Suh to come up with new chiropractic research as a consultant to develop computer models for '*both the*

3. Palmer…. x

existence of subluxations and the subluxations that are eliminated or reduced by chiropractic adjustments.'

- 1997: Submitted '*the final research proposa*l' to Dr. Sid Williams for 3 years, 1997-2000
- 1998: Suh selected Dr. Roy W Sweat, Atlanta, GA to finish the 10 years of research by '*The Clinical Proof of Subluxation*' with the developed distortion-free X-ray.
- 2000: Retires from the university.
- 2012: Terminated research and consultant work for *Automobile Mechanisms* and started writing books for '*Automobile Mechanisms*' and '*Chiropractic Subluxation*'
- 2015: Published the two books: Part A and Part B of '*Computer-Aided Design of Suspension Mechanisms*' which was distributed by Amazon.com.
- 2017: Published the 2 books: Part A and Part B of 'The Proof of Subluxation' as 'the final report of chiropractic research at the University of Colorado'.

Dr Suh wrote:

> '*In 1998 I selected Dr. Roy W. Sweat, Atlanta, GA to finish the 10 years of research by "The Clinical Proof of Subluxation" with the developed distortion free X-ray. I met Dr. Sweat in 1985 when he came to the Biomechanics Conference to present his research. Then he came to the conferences several times and presented his research with 6 papers which include the following 4 papers*
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> 1. Atlas Orthogonal Percussion Adjusting Instruments Percussion Force
> 2. Atlas Orthogonal Aberrancy
> 3. Chiropractic Atlas Orthogonal Computerised X-ray Analysis
> 4. Atlas Orthogonality
>
> '*I was deeply impressed by not only his enthusiastic research but also "Orthgonality" Orthogonality is 2 dimensional 'perpendicularity*' or 90 degree intersection of 2 lines. '*Then I said Dr. Sweat is doing "Kinematics" which is "Geometry of motion" by its definition. During 10 years of visiting Life Chiropractic College, I also visited his clinic as much as possible and when I asked him to supply hundreds of X-rays for the "Final Research" to the University if Colorado, he accepted without any conditions. After I finished the final research with his assistance and before I closed the Biomechanics Lab at the university I had to write the following letter on the last Biomechanics Lab stationary. This was also my last signature as Director of the Biomechanics Lab at the University of Colorado*.'

Is genius rather the razor's edge between sanity and madness? Eventually anyone in chiropractic who touted the likes of this was up against the hard core subluxation deniers, and perhaps, we shall see why, in what ensued. Suh also wrote:

> *'The vertebral subluxation is very real. We have documented it again and again. With this scientific documentation, no one can dispute the existence of vertebral subluxation… Vertebral Subluxation Complex changes the entire health of the body. This has been proven many times. The spine is not an isolated structure...We have proved that Vertebral Subluxation Complex causes not only structural dysfunction of the spine and adjacent tissues, but it also causes nerve dysfunction...The weight of a dime on a spinal nerve will reduce nerve transmission by as much as sixty percent'*

So, theres your dime's worth. And all for what? He collected tons of mathematical data on positional appearance of the upper cervical vertebrae on radiographs. Using anatomical models, where the misalignment properties were predetermined, blinded from the radiographic examiners, the correlation was significant. It appears the correlation between

what he examined on his radiographic positional pre/post setup and patient outcomes bore an enormous gap in the knowledge, rather than fill it.

Was he ahead of his time or doomed to fail? The missing link is the neurobiological connection to the biomechanical component of the subluxation. This does not mean, in my eyes, that the subluxation is at a cul-de-sac but rather the marriage has not yet been engaged. Or is it rather that the financial gain has not been fertile enough in this current state of medical journal corruption.

In detail, during the 20 years of ICA support at the *University of Colorado* he was able to do the following research:

- Fundamental Biomechanics of the Spine.
- Displacement Analysis of the Spine by simultaneous nonlinear equation solver with computer,
- Dynamic Analysis of the Spine by differential equation solver with computer. X-ray Analysis of the Spine by creating '*Reference Frame*' or '*Helmet*' and X-ray analysis by computer and publishing the paper in the *Journal of Biomechanics*. Fundamental Neurological Research on Nerve Compression Research on a pressure vessel model for nerve compression and publishing the paper in the *Journal of the Neurological Science* and Others. Laboratory experiment of living animals nerve compression experiment and video taping the experiment in the lab for their permanent records and public viewing.

The Annual Biomechanics Conference on the Spine

Suh organised the chiropractic conference for both university research and chiropractor's research that had no place of their own to publish or present their research works.The books of the proceedings of the *Biomechanics Conference on the Spine* were published annually for 16 years (1970-1986), it included hundreds of papers in the 16 books.

The total of 16 annual research conferences were held 11 times at the *University of Colorado*, Boulder, Colorado and 5 times at Davenport, Iowa, Atlanta, Georgia, Sunnyvale, California, San Lorenzo, California, and Seoul, Korea.

Inspiring findings from the literature were initially from DD Palmer's 1920 book (p295):

> *The subluxation of a vertebrae is a slight deviation from its normal relation to adjacent vertebrae. The Atlas, the first cervical vertebrae, which articulates with the occipital bone, is very often subluxated. The atlas may be forcibly slipped to one side- to either the right or left-which lesion constitutes a lateral subluxation*

Then he searched X-ray papers in medical, engineering and other scientific journals for his research on '*X-ray Analysis of the Cervical Spine*' the fifteenth paper toward '*The Proof of Subluxation*' idea. He wrote:

> *After publication of the paper in the Journal of Biomechanics in March 1974, I was indeed surprised to find hundreds of positive responses I received from all over the world ... who requested the copies of the papers. I sent these requests to the ICA to help me to respond since I had no staff to do the mailing for me in the Biomechanics lab at the University of Colorado ... Many of the doctors and scientists after receiving the paper continuously requested more information and some of them wanted to visit me at the ... lab... . Some of them invited me to visit their institutions to present my research in person.*

In 1990 with a new research department under Sid Williams at *Life College* and two years into it, Suh was told that the subluxation could not be demonstrated using computer programs, that '*the subluxations are so small and X-ray distortions are so great no computer*

program in the near future could be developed for true subluxation measurement' and '*no way can it prove the subluxation*'.

Three years later Dr. John Grostic invited Suh back as he was now with *Life Chiropractic College* as research director, and not with *Palmer Chiropractic College* for some time and that Dr. Sid Williams wanted Suh back visiting again as the research department staff had changed. Suh knew Grostic from an initial personal invite when he was *Director of Roentgenology* at *Palmer College of Chiropractic*, upon which Suh personally invited Grostic to the *University of Colorado* to do the research work on Chiropractic X-ray Analysis for several months. After this collaborative work he came back to the 1979 *Biomechanics Conference* to present his research paper: '*Clinical Adaptation of Computer Aided X-ray Analysis*'.

Because of these reasons Suh accepted his invitation to visit *Life Chiropractic College* again as a research consultant. He approved the three year research containing three major steps:

1. Development of mathematical kinematic equations and computer programs for distortion free X-ray analysis.
2. These test equations and computer programs with real dry bone model of cervical spines with precision protractors in the atlas and taking pre-post X-rays
3. Select a prominent doctor of chiropractic willing to supply hundreds of pre-post X-rays

To this end Suh was grateful he met Roy Sweat in 1985 when he came to the *Biomechanics Conference* to present his research. Then he came to the conferences several times and presented his research with 6 papers which include the following 4 papers:

1. Atlas Orthogonal Percussion Adjusting Instruments Percussion Force
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No doubt Suh was deeply impressed by Sweat's consistent and measured approach at treating the subluxation as a reducible entity that comprised a structural components married with his palpatory and static postural findings (characteristic of ALL the upper cervical programs), which improved when the radiographic measures approached orthogonality.

Sid Williams wanted to establish the *'Computer Center*' at *Life University* with a hefty budget to help chiropractors study subluxation by distortion free X-rays and improve the adjustments by computing the best vectors. To this end, after three years, Suh provided to *Life University* the software and hardware developed with detailed instruction.

After retirement from the university he moved to California to concentrate on *Automobile Mechanisms* research and consulting work with *Hyundai Motor Co.*, Korea. He said '*Life University ... never contacted me for any assistance year after year' a despondent Suh wrote, 'but I had a hope that Dr. Sid Williams will eventually establish the center since Dr. Cliff*

Smith PhD, my former student, was still

"Research Director" at Life University.'

Several years later Suh discovered that Williams resigned from Life's Presidency, and lost hope that the '*subluxation computing center*' would ever again use the research and computer materials he left there.

Suh wrote '*I started collecting all the research material during the 10 years with Life University including computer software and hardware materials. I wanted to publish these in a book but I was already involved in the research of "Computer-Aided-Design of Automobile Mechanisms"*.'

Conclusion

Suh was a pioneer of computerised biomechanical documentation of a lesion that is ultra complex. He showed how

1. pressure attenuation on nerves was possible and
2. that alignment could be the cause of this pressure and reliably measured on radiographic imaging.

Surely a simple start to a complex problem.

This is reflected in the sheer number of biomedical specialities that focus on this rather tiny '*cranial-atlas joint*' (4) facilitated by visionary giants in chiropractic (one my greatest mentor), to which technology outran and academic politics failed to sustain.

Was this merely the case, or did the premise to '*prove*' subluxation rather than provoke a null hypothesis erode his case beyond reincarnation? It seems so, but no matter how you look at it in the context of daily events of the past five or so years, clearing the illusive subluxation is not worth the penny on the nerve to the giants that systematically discredit even the slightest possibility that Suh's '*proof of subluxation*' is minutely plausible.

It is too simple to even be the cause of anything other than divisive dogma, perhaps. Fortunately, going into the 22nd Century, some of us will remember, however, it was a bit more complicated than that.

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4. Sweat, RW. Personal Communication to the author. 2018