



## Address Before the Ohio State Chiropractic Association

by David M. Drury

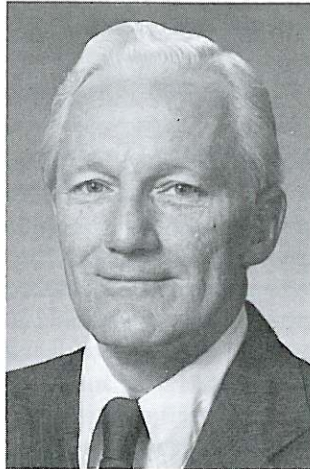
By way of introduction, I am in charge of radio and television public relations at Bowling Green State University and am director of television marketing for the University's public TV station, WBGU-TV.

My background includes 20 years as editorial director at a Toledo commercial television station—during which span I somehow survived 3½ years with the dual role as news director. Prior to then, I was editor for a year of a weekly business and professional newspaper, was market research director 3½ years at the Toledo Area Chamber of Commerce, and served 18 months as an administrative assistant for the City of Toledo.

The little all this has to do with the profession of chiropractic will be obvious to you in the immediate future.

My personal experience with chiropractic began and continues with Dr. Ralph Gregory and with his associate in research, Professor Dan Seemann. Dan and I go back to our gradeschool years, through the Marine Corps, and to the present highly valued friendship.

As for Ralph Gregory, well, the man saved my neck, literally. Several years ago I'd been in considerable pain, dreaded the thought of referring it to an excellent orthopedic surgeon, so I finally stopped procrastinating and went to see the man many of my friends and associates had visited and from whom they had obtained relief. Briefly, Dr. Gregory examined me, gave a portion of my head and neck what felt like several mild caresses and, within a few weeks, my problem totally disappeared. I tell people this and they shake their heads, frequently invoking the word "voodoo." I don't care what



it's called. I care a lot that he gave me prompt and painless relief . . . and for a fraction of what I would otherwise have expected to pay for an alternative treatment which might very well have been neither durable nor cure. My wife and two of my children have had similar and gratifying experiences under Dr. Gregory's care. Pain, treatment, relief. If this be voodoo, I'm all for it. But, of course, it isn't. Not in the hands of a very skilled and dedicated practitioner. His is the essence of the healing arts.

It is with this perspective that I approached today's assignment . . . that of a new oriented, public relations specialist taking an overview of medicine in general and chiropractic in particular in their relationship to trends in patient consumer rights and legislative potentials . . . and as that of a patient of a chiropractor, albeit a contented one.

It's been a rather interesting experience. What information and insights I was able to obtain came in scattered fragments. And these are many. If there is a comprehensive

(continued on page 2)

## Some Comments Regarding the Concept of Normal

by Ralph R. Gregory

Before chiropractic entered its third decade, differences of opinion among authorities pertaining to the adjustment began to appear in chiropractic literature. D.D. Palmer (1910) held that "adjustments are only made when the vertebra is returned to normal position...."<sup>1</sup> Alva A. Gregory, M.D., (1912), promoting his approximation theory, described the adjustment as a "relaxation of spinal ligaments thereby overcoming their contraction."<sup>2</sup> Seventy years later differences of opinion regarding the adjustment still flourish with the proponents unable to agree as to how the systems of vertebral restoration and spinal relaxation work. Is an adjustment simply a relaxation of ligamentous and contiguous vertebral structures or is it a moving of the vertebral segment to or toward normal position? Chiropractors advocating the restoration system are greatly in the minority, and have sought a mathematically determined normal as a point of reference. Despite the rejection of the calculated normal concept by the majority, considerable evidence in upper cervical practice supports the concept.

Chiropractic postulates the vertebral subluxation as a vertebra that is misaligned, and is subluxated because it is fixed out of its normal position, causing neurological harm. The objective of the adjustment is to generate sufficient mechanical energy to move the subluxated vertebra along a prescribed pathway. To move anything is to set it in motion; to change its place or position. Direction—the line along which the vertebra has abnormally moved—becomes, then, extremely important.

(continued on page 6)



## Address Before the Ohio State Chiropractic Association

*(continued from page 1)*

distillation of the subject, or subjects, I was unable to find one. As you know, even within the field of chiropractic there are sharp differences of philosophy, requiring the novice to learn the distinctions between "mixers," and "straights," and about the attitudes of those attempting to bridge these gaps as well as those separating chiropractors from unfettered involvement with medical practitioners.

To back up a bit, our forebearers of the 19th century—as late as then—had a rough and chancy go with medicine and those who practiced it. Along with so-called conventional practitioners there were coveys of homeopaths, eclectics, faith healers and cultists.

The mix of grab-bag services spawned formation, in 1848, of the American Medical Association, with the avowed purpose of ridding the nation of diverse and medically questionable SECTS. Medical societies were established at the county or district level, each setting their own qualifications for admittance to practice. Inevitably, this would control the **quantity** of physicians, while setting requirements for physician training and for hospitals. Control would evolve to state medical boards.

From this point—the mid-80's—to late in the century, the situation was characterized by rapid expansion of medical colleges with lax standards and a caliber of medical journalism, loaded with advertising, rated low at best. (The U.S. Supreme Court is weighing whether states can regulate the ads of physicians, dentists and lawyers).

In 1883 this latter problem—lousy med. journalism—was addressed through creation of the Journal of the American Medical Association which, in the view of consumerism author Joel Evans, "did more to enhance the image of the AMA than any other action in the 19th century." By 1900, its circulation had quadrupled.

Forty-five years after the AMA's establishment—by 1903—within the lifetime of many seniors still with us—an AMA committee was formed to

devise a framework for ethical standards . . . the duties of one physician to another, and to their patients . . . their pay or fees . . . their obligation to report charlatans, inform the public of medical dangers, and to refrain from public advertising.

Three years later, in 1906, the nation saw for the first time a Pure Food and Drug Act. The rights of a consuming public 100 million strong were in their dawn.

This momentum didn't really take another quantum leap until FDR and the Depression year of 1938 and the calling of a National Health Conference to draw attention to the high cost of medical care, unnecessary surgery, feesplitting, licensing methods, the need for greater government regulation in public health, promotion of national health insurance . . . and the hoped-for effectiveness of **self-regulation** in the practice of medicine. Meantime, the U.S. Attorney General was charging the AMA with violation of the Sherman Act for alleged opposition to the medical plan promoted by the Group Health Association.

At this point, some of you might be wondering when I'd insert a reference to chiropractic . . . in being since its introduction in Iowa in 1895. We'll get to this in due course. First, however, I want to establish a quick brush of the big picture, which really hasn't been all that appealing over the long haul.

To pick it up again, in the 1940's—quite simply, the war effort put considerations for consumerism on the back burner, 'way back. Accelerated college programs were developed to expedite doctors for the treatment of wounded servicemen and a frantically employed civilian population. And getting back to normal wasn't all that easy. By 1950, we were up to our ears in fighting again, in some far off spot called Korea and about which only Harry Truman seemed to know. The fifties saw the demise of the general practitioner and the advent of group medical practice, supposedly to keep down costs, improve service and efficiency. Alas, it was discovered that a hefty 30% did not have time to keep medically current. The seed that spawned "continued." The fifties also saw establishment of the U.S. Dept. of

Health, Education and Welfare (with its subsidiary Public Health Service and Food and Drug Administration). And before the decade was out, in 1959, the AMA had dropped its 20-year opposition to medical plans, especially those sponsored by unions. Consumerism was getting more sophisticated acquiring strong voices, twisting screws where penetration would make a difference.

In the early sixties, John Kennedy jumped in with promotion of federal medical insurance for the elderly—with the AMA clawing at the notion right down to its birth in 1965. By the late sixties, the nation discovered a doctor shortage. In 1967, a deficit of 50,000—at a time when the country was absorbing 45,000 foreign doctors. In 1959 there was a ratio of 76 family practitioners per 100,000 population; by 1967 the ratio was down to 50/100,000. And, another phenomenon: in 1970, one in six doctors is sued for malpractice. Consumer activism on a personal level. Word was getting around. Some settlements were mind-boggling. And so became medical malpractice insurance rates. The circumstances were to worsen dramatically, fed in part by such revelations as one in 1976 which showed 16,000—or 5%—of 320,000 licensed physicians, and who treated 7.6 million patients a year, were unfit or incompetent . . . that there were 2.4 million unnecessary operations a year (including 260,000 needless hysterectomies) resulting in 11,900 deaths . . . and that 10,000 patients died annually or suffered potentially fatal reactions following unneeded prescription use of antibiotics. Seeing this, the natives were bound to grow restless . . . against medical practitioners and those who were charged with regulating them.

Several years prior to these jarring revelations, membership in the AMA reportedly had been slipping—from 61% of the physical pool in 1962 to 50.3% in 1971. Reportedly, the slip-page continued. And, three years ahead of the 1976 report about unnecessary operations and dubious prescribing, the Professional Standards Review Organization was established to promote better physician regulation, with a strongly implied or



else. There was a coincidental push behind the Kennedy Medical Device Bill, to safeguard the public in the use and effectiveness of medical devices.

Last year, in a book entitled *Consumerism in the United States*, author Joel Evans assessed these trends and concluded that the AMA has not been very consumer oriented, that its policy changes occurred when government intervention seemed inevitable and not before, and that despite knowledge of abuses and incompetencies, there is no viable, voluntary effort to establish a formal disciplinary mechanism. Even the Professional Standards Review Organization of 1973 came about by government initiative.

As for the future of the medical profession, Mr. Evans foresees the major questions as being how to contain costs, which treatments to cover with medical plans, euthanasia, abortion, and when to require a second opinion. A preventive medical plan will keep evolving with voluntary groups, first, and—by 1990—probably a national health care plan. Alternative treatments will have to be explained, with no hold back on information supplied the consumer/patient. Malpractice insurance will rise as more suits are filed. On this, however, there are reports of some innovative break-throughs. In Indiana, for example, a patient compensation fund, where the risk of malpractice settlements is spread among a large number of participants and where the malpractice insurance rate dropped from \$13,250 in 1975 to \$3,380 in 1977. Other elements in the forecast: more time-consuming and expensive tests, attendance at on-going educational seminars and periodic testing required of all physicians, and more doctors becoming consumer oriented, with consumers demanding more service and openness.

Also anticipated for the near future is pressure in the field of consumer affairs to educate patients on available medical services, costs, benefits, risks, and acquiring a second opinion, plus re-licensing of doctors and periodic exam of medical records. Curricula will include doctors' responsibilities, community needs, and ethics (the latter now a required course in only half

the medical schools). Finally, Mr. Evans expects the advent of state medical superagencies which will supercede self-regulation.

How much of this will actually transpire—and when—remains to be seen. At our own state level, there seems to be a mix of activity and relative inactivity. A check with the Legislative Information Service reveals nothing in the bill hopper exclusively affecting consumerism in the medical or chiropractic fields. I got the same type response after contacting the Ohio Attorney General's Consumer Fraud and Crime Section. As for the Ohio Consumers Council—despite the all-encompassing impression given by its name—its interests are confined solely to utility rates.

At the national level, after contacts with privately-supported agencies such as the Public Citizens Health Research Group, present attention with regard to medical practice appears confined largely to consumer access to medical records. This is reflected in a national push for state legislation, a related bill for which has been sponsored in Ohio by Sen. Marigene Valiquette. As for Congress, earlier this year Sen. Robert Packwood indicated his sentiment in Congressional Quarterly that he didn't expect 1981 to be a time for expanding consumer programs—and Packwood ought to know. If anything, the new administration has raised the hackles of a number of special interest groups with a history of promoting government oversight and regulation. The massive public protest staged against Interior Secretary Watt is as good an example of this sentiment as any. Whatever, federal budget cuts would appear to be putting the damper on bureaucratic or legislative expansion of consumerism or almost anything else other than defense.

But, this certainly doesn't mean it's going to be "All Quiet on the Western Front." As previously noted, there's a push under way for patient access to medical records. This holds a potential to make real waves. Also, in Ohio, there's an overhaul in the works for the make-up and operation of the State Medical Board—spurred by news media charges of ineptness and apparently motivated in large measure

by a concern for consumer safety in the long run. And there's a whole gaggle of court cases pending or threatened, dealing with medical and/or chiropractic issues throughout the country, which will inevitably involve consumer patients and their rights.

Interestingly, proposed legislation for the State Medical Board applies to doctors of medicine, doctors of osteopathic medicine or surgery, doctors of podiatric medicine and **midwives**. Among many broadened features in the bill, one would expand the board from 10 to 11 members—with the additional member being either a **consumer** or a licensed midwife. Existing law already mandates one consumer on the board.

The bill would also permit the State Medical Board (with six votes) to suspend a physician's license without a prior hearing if they're convinced continued practice would result in immediate danger to the public.

The bill (Sub. H.B. 317) expands the field of disciplinary actions to be taken against those who publish a false or deceptive statement or misrepresentations of fact, or one which is even likely to create false or unjustified expectations of favorable results—and explicitly makes these and related provisions applicable to podiatrists. Advertising would no longer be grounds for discipline but soliciting would remain a no-no. As for advertising, the active word would appear to be **dignified**. No claims of superior skill or superior methods. No advertising of free service or examination. No assertion of pain-free operation.

Physicians would be required to register every two years beginning in January, 1983, with certification that continuing education requirements had been met. The latter would be changed from 150 hours every three years to 100 hours every two years. And, not to string this out in too much detail, the bill adds excessive use of drugs to the reasons for inability to practice, along with any "mental condition" which would pose a threat to patients. Physicians could also be required to submit to mental or physical examination at the Board's expense.

I'm told this voluminous bill will be approved largely intact. Regardless,



the thrust toward greater accountability and responsibility—the concern for enlarging protective barriers in the medical consumer's behalf—and the implications for healers beyond the scope of the State Medical Board are fairly self-evident. The title of physician is going to carry a markedly heavier load of responsibility. As I understand, many C's wish to be accorded this title and all it entails.

I don't know what any or all of this portends for chiropractic. But perhaps some observations from one who's spent a goodly share of his life in the news media and in public relations might be of value, however limited. First, the impression I've acquired over the past few years from persons who have never had a personal experience with a chiropractor is one of general skepticism, at best. Included, as I soon discovered when I began pulling together material for this presentation, are various lawmakers. In a nutshell, what they don't know bothers them . . . and they don't know much about chiropractic, other than some bad press reports or editorials they've recalled. Conversely, those who've had chiropractic treatment, in general, seem favorably disposed. But they're in a minority. My wholly non-scientific sampling but nonetheless gut reaction leads me to conclude your profession is bucking more negative image than not, however ill-deserved or inaccurate you consider this assessment.

For the sake of discussion, let's concede the image is more on the negative than on the positive side. I'd submit that the contributing factors are a combination of attacks from outside the profession and self-inflicted wounds. As for the shots from outside, probably the most painful or annoying have come from organized medicine . . . something your profession has been contending with since its inception. But from what I've been able to determine from current literature on the subject, the tide has been turning, however slowly. Last April, a special report in *MEDICAL ECONOMICS* bore the headline, "Medicine 1, chiropractic 0. But the war goes on." It is a very revealing headline in that it capsulizes the attitude, the mind-set for continuing battle. The story itself dealt

with a federal court ruling against chiropractors who had sought \$673 thousand in damages from the AMA and a covey of other organizations and individuals for conspiring since the early 1960's "to isolate chiropractic and make it 'wither and die on the vine.'" It was, or perhaps still is, the Wilks suit, inasmuch as there was an indication the ruling would be appealed to the Supreme Court.

To a layman such as myself, the article made for interesting reading. It gave at least partial credit to the suit for the 1978 change of a provision which had prohibited physicians from voluntarily associating professionally with cultists. Chiropractors were also accorded part credit for the demise of the AMA's committee on quackery, which, according to testimony in the account, referred to chiropractors as "rabid dogs" who "killed" people.

But for these other concessions, *Medical Economics* quoted the AMA attorney regarding extracts from a chiropractic booklet which claimed that "rigor mortis is absolutely the only condition that can't be corrected by chiropractic." That, I suggest, is a statement begging to be mugged. One has to wonder about the basis for such an assertion and how representative it is of the chiropractic profession as a whole. And, coming down to hard realities, how could this or similar claims possibly be made to square with the more stringent regulations being proposed in our state for physicians, osteopaths and podiatrists?

Incidentally, when I sought the help of a Congressional friend for current information on chiropractic, I received—after roughly a month of waiting—a hefty packet of materials supplied to him by the Library of Congress. Briefly, all the copies of the articles I had relayed to me were from medical magazines. None was from what might be termed a chiropractic publication. Pertinent news clippings were from items carried by the wire services, *NEW YORK TIMES*, and so on. I'm left to wonder if the Library of Congress is not on the receiving end of chiropractic journals, or does not consider excerpts from them appropriate for responses to the inquiries of Congressmen.

Whatever the reason, there is a recurring concession woven into the reports and commentaries I've read on our subject: despite a number of allusions to the low regard various physicians hold for chiropractors in general, many of their spokesmen credit chiropractors as a whole with extremely effective lobbying abilities, the capacity to enlist key legislative support, the tenacity to press for and achieve gains in terms of professional status, and the power to silence or partially muzzle some of your most antagonistic opponents.

On the other hand, there remains—as you're well aware—a potent coterie of physicians and their sympathizers who will apparently fight to their last breath any attempts toward further enhancement of chiropractic or anything remotely implying that it's a profession worthy of even near-equal status with medical practitioners. Aside from the alleged weaknesses inherent in the scientific basis of chiropractic, your opposition can recite a litany of reputed flaws, not the least of them being the wide differences among chiropractors as to what they can and ought to be doing. Intra-professional fighting has to be one of the surest ways of providing ammunition to the opposition, including cynical news media representatives. It would seem axiomatic that any hope of bridging gaps between chiropractors and their medical brethren would have to begin by the bridging of gaps between chiropractors. This might not even be possible. If not, maybe the ultimate answer lies in establishing who is and who is not a chiropractor, with the losers required to adopt an alternate name to fit the definition of their practice. I know this probably sounds terribly simplistic. But laymen, besieged by a world of complications, look to simplicity, especially when it comes to something as elemental as health care. Medicine has had an explosion of specialization. The general practitioner has been trying to make a come-back, but the specialist seems firmly entrenched. Internist, ear-nose-throat, eye, hand surgery—name a part of the anatomy and you're likely to find a platoon of specialists. Briefly, with medicine, the consumer/patient



has a fairly good idea who he's going to and for what purpose. Conversely, if he's at all aware of the squabble among chiropractors, he's got to wonder about the philosophies of "straights" vs. "mixers" and about the implications they hold for him.

The oft-repeated charges against chiropractors center on the words "research" and "education". In the jaundiced eyes of your beholders, both elements are vulnerable to attack. Your defenses, at least the ones I have seen, argue that tuition accounts for only 4% of the cost in medical schools; 68% in chiropractic colleges. And that federal dollars should be allocated for chiropractic research, as they have been lavished on medical research.

However reasonable this may sound to impartial ears, and regardless how the quality of chiropractic college preparation is lauded from within, the chances of tapping the federal till have to be rated dicey at the best. Federal budgets, most certainly including the National Institute of Health, are being quitted. Short of a miracle, or funding from alternative sources, I would guess you are going to be stuck where you are . . . still on the defensive at a time when efforts are underway for a large array of additional chiropractic privileges. You know these better than I. No point reciting a long shopping list.

Along with the grim realities of federal funding, chiropractors on the national political front are pegged as having backed a loser, Jimmy Carter, a point even Democrats like Ted Kennedy are not likely to soon forget. When spoils to the victors are slim to

begin with in terms of federal largesse, losers must adjust to the new equation.

How does one go about projecting a positive image in the interest of his or her profession, and ultimately fulfillment and well-being? Here are a few steps that I'd suggest:

1) Where there is divisiveness, get your act together. In unity there is strength, a strength which comes simply from not being divided and internally self destructive.

2) Try hard to be politically astute. I don't mean opportunistic or cagey or wheeler-dealer. Look beyond short term objectives. Chart a course that reflects continuously concern for the public well-being and your role in servicing that purpose. Ralph Nader's done well for himself and his causes, from a nothing beginning. Conversely, for all its wealth, influence, legal talent, etc., General Motors got creamed by Nader when it tried to slip him a sucker punch. Nader is certainly not invulnerable to attack. But I can't see anything short of an assassin giving him cause to lose sleep. Image, it takes time to mold, but once firmly established, it can resist a lot of heat.

3) Seek out and listen to responsible advisers. This includes media professionals. Communications is a cold and lonely place for the uninitiated. Daniel was a saint, but he was no match for a den of lions. If you project yourself into the public eye, you'd best go fully prepared. Even then, with the best of well-laid plans and the purest of motives, you wind up eaten alive. Remember George Romney and the day he was reportedly brainwashed

about the situation in Vietnam. There are countless similar examples. Regardless, ignorance of news media mechanics guarantees defeat. Knowledge of them merely gives you a chance.

Frankly, it amazes me how so many otherwise highly-educated articulate people, most certainly including college professors, look like dolts when they are being interviewed on TV, or guesting on a radio talk show, or being quoted in print. Garrulous, when every word is measured in fractions of seconds. Ramblings when conciseness is crucial. Pedantic, when only the opposite is appropriate. Myopic, when a natural blink or human smile would infuse life into their statements. Multisyllabic, when their audience is conditioned to simple, pertinent descriptions.

The most successful politicians, the most sought after spokesman are people who've installed a stop watch in their skulls, know how to anticipate curve-ball question, and can express concise, informative statement in 20 seconds or less for reporters under a deadline who, generally have neither the time nor the inclination to probe highly complex issues on the spot. Move fast and sure, or be run over. For those of you who may be interested, I've prepared a two page guide on contending with the most powerful medium, television. If you're into communicating, or considering the prospect, you might want to pick up a copy, on the house. Thank you.

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## Some Comments Regarding the Concept of Normal

(continued from page 1)

Direction must be reversed if a correction of the misalignments is to take place. This reversal of direction constitutes moving the vertebra to or toward normal.

Chiropractors on the one hand cannot logically maintain that a subluxation is detrimental, and on the other hand change its misaligned position to one of a greater degree of abnormal motion. Nor is it logical to set a vertebra in motion without regard for direction. The vertebra must be directed toward a position in which it functions normally and produces no evidence of neurological harm. If a decrease in the misaligned position of a subluxated vertebra is of benefit to the patient, an increase should be harmful. Otherwise the chiropractic theory is invalid. The future status of the subluxation in the Health Sciences rests on this proposition, as does the proving or disproving of the chiropractic theory.

D.D. Palmer did not define what he meant by "normal position" for a vertebral segment, but he did act within the accepted meaning of the term: "the bringing of a thing or things into proper or exact position or condition".<sup>3</sup> Palmer's intentions regarding the adjusting of vertebrae, however, are clearly inferred from his writings. He frequently speaks of replacing displaced vertebrae.<sup>4</sup>

If chiropractors are queried as to their reasons for adjusting vertebrae, their replies range from stimulation to relief of symptoms. Rarely is the answer to restore the vertebra to or toward a normal position, to replace it. In fact, the very concept of a normal position is refuted by the wide-spread practice of so many mechanically inept adjustic techniques still taught and practiced.

Proponents of the concept of a calculated normal define normal position for the skull, pelvis, and spinal vertebrae as an alignment with the vertical axis of the body. This axis is derived from the planes of reference of the body. It is the Z coordinate of the orientation planes of motion, formed by the intersection of the frontal and

sagittal planes, and runs perpendicularly from above downward.<sup>5</sup>

The vertical axis is often referred to as the "line of symmetry" and the "gravital line". Wells and Luttgens (1976) point out that "since each of the orientation planes bisect the body, it follows that each plane must pass through the center of gravity. Hence the center of gravity may be defined as the point at which the three planes of the body intersect one another, and the line of gravity as the vertical line at which the two vertical planes intersect each other".<sup>6</sup>

It is also quite well established that a vertical system runs through the entire row of vertebral bodies from the odontoid process which represents the first cervical body to the sacrum.<sup>7</sup> Kinesiologists, Anatomists, and Orthopedic surgeons use the orientation planes of reference in studying human motion or joint displacement. It is a line or axis where all parts correspond in size, form, and arrangement on opposite sides.

A vertical axis for the human body can be established in the perpendicular position from the center of the base of support, or from the center of the sacrum. NUCCA practitioners, Upper Cervical chiropractors, draw the vertical axis for the cervical spine and the skull perpendicularly on the 8x10 nasium x-ray film (A-P) from the center of the first or second dorsal vertebra. A triangular square is aligned with the base of the film so that its right-angled side passes through the cervical spine and skull from the center of the dorsal vertebra, and a line is inscribed upward through the skull. To this calculated normal, the vertebral segments and skull can be compared after the film is analyzed. Hence a standard or basis for comparison is established which also indicates the direction that the adjustic movement should take in correcting abnormal motion (Fig. 1).

The concept of normal incorporates direction, the line along which a subluxated vertebra should be moved from its abnormal position. Direction is one of the qualities of a vector, a carrier of force. Force applied to a vertebra is going somewhere. It must, therefore, be predetermined, controlled, and

predictable if the force is to be safely applied. Such control and predictability depend on the accuracy of the analysis and the proficiency of the adjuster.

While many chiropractors use symptom alleviation as an indication of a correct adjustment, experience shows this is not true. Chiropractic adjusting is a mechanical force producing mechanical energy as opposed to electrical, chemical, thermal, or other forms of energy. Therefore, it is not logical to assume that symptoms can be correlated or evaluated until the vertebrae have been restored to some previously established standard.

Symptoms fail as a standard of comparison until vertebral correction takes place because considerable evidence exists to show that the reciprocal relation between patient's complaints and the degree of subluxation-reduction is very subtle. Unless the time factor is taken into consideration, error in making the comparisons between alleviation of symptoms and subluxation-reduction will occur. The amount of reduction, furthermore, once attained must be maintained, because the symptomatic picture will change. A case of

VERTICAL AXIS LINE

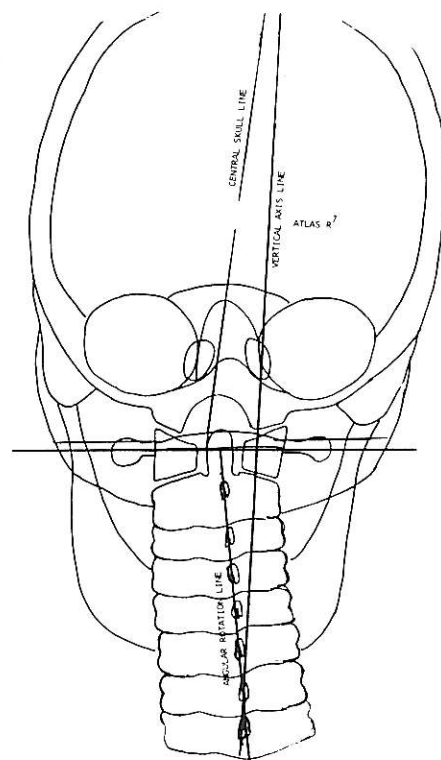


FIGURE 1



sciatica, for example, may be improving steadily from an adjustment that corrected 80 percent. If that degree of reduction is not maintained, the sciatic pain will worsen, generally within a three-day period of time.

Investigation also shows that cases that have been successfully treated and who returned for service after a few years showed as severe a neurological detriment as the original with considerable less misalignment of the vertebral segments. This phenomenon suggests that a change had taken place in the neurological component: less tolerance to the amount of vertebral misalignment than previously existed. Aside from indicating the necessity to restore vertebra that are subluxated to or toward a normal, this observation also suggests that a normal does exist toward which subluxated vertebrae should be directed. Because that normal agrees with the normal calculated by NUCCRA practitioners, it is supportive of the concept.

Those who would ignore or reject the concept of a calculated normal should realize the effect of its rejection on research. Without the concept we are severely hampered from seriously investigating the harmful effects of a subluxation, as well as its beneficial effects, on the human body. Even if the system may be somewhat flawed, it is preferable to no system at all. Of the several methods by which the effects of a subluxation may be tested, the most direct and effective is that which correlates symptomatic changes to subluxation-reduction or correction.

Thousands of cases have demonstrated that reduction of the misalignment factors of a subluxated upper cervical atypical vertebra are eventually comparable with symptomatic changes. The reductions are measurable and compared with the calculated normal as a standard. If the vertebra is restored toward the calculated normal, symptoms gradually alleviate. In cases where little or no restoration toward the calculated normal occurred, it was observed that symptomatic changes for the better did not take place. These observations indicate the existence of a normal.

Unbalanced opposing forces are inherent in every subluxation of the

upper cervical spine. If a correction is to be stabilized, equilibrium must be established by the adjustment. Equilibrium can be demonstrated to exist only when the entire cervical spine and skull are aligned to the calculated normal or the computed vertical axis. A tipped or turned skull, for example, exerts unbalanced gravital forces that must be balanced by the adjustment. A skull and cervical spine that has abnormally moved into one of the frontal planes must be returned to the vertical axis if equilibrium is to be restored, and the articulations of the displaced vertebrae set in direct apposition to each other, thereby restoring normal functioning. It is this point of alignment that identifies the vertical axis—the calculated normal.

Rejection of the concept of a calculated normal in practice leads to undesirable consequences. A correlation between the degree of subluxation correction and symptomatic changes can not be made without some standard with which to compare the two. Patient progress cannot be scrutinized in terms of subluxation reduction, and little evidence exists that chiropractic had anything to do with patient response. Nor has the chiropractor any recourse other than to be solely guided as to prognosis except by what the patient tells him from visit to visit.

A C1 subluxation is a stressor of the reticular formation of the brain stem. Because it is a stressor, a C1 subluxation is always accompanied by a syndrome physical and measurable evidence of the subluxation's existence.

As the subluxation modifies the electrical chemical flow, the response of the extensor musculature of the spinal column is contracture which results in bodily distortion. This syndrome itself is a guide, telling the doctor through Anatometer measurements of the distortion elements of the syndrome the current state of the amount of neurological involvement. Thus the effect and degree of the C1 subluxation on the body can be monitored with an Anatometer and related to the misalignment factors of the subluxation. Anatometer measurements of the C1 syndrome support the concept of a calculated normal, because as the C1 subluxation misalignment factors de-

crease so do the Anatometer's readings decrease.

Adjusting C1 and C2 differs in many ways from adjusting subjacent spinal segments. The former are the superior atypical vertebrae, lacking the built-in reduction pathway of the typical vertebrae in which adjustic movement is controlled by the slope and position of the articular facets. Adjusting C1 requires accuracy and control of force and depth. A reduction pathway must be calculated from the patient's x-rays. This pathway is a resultant of the force vectors required to reverse the abnormal directions of the vertebral misalignment factors to or toward a calculated normal. So accurate and exact must be the computed resultant, using x-ray in the analysis is imperative; palpatory methods are not sensitive or precise enough to establish the line of direction along which these atypical vertebrae must move toward normal position.

It has been found that various patterns of abnormal movement of vertebral segments and the skull exist. Based on these observations, the Atlas Subluxation Complex can be reduced to and classified into three basic types. Upon this classification system was based the lever systems so vital to vertebral restoration. (For a discussion of the lever systems, see Volume 3, Number 2 Monograph, *A Reevaluation of the Lever System in Upper Cervical Adjusting*, Daniel C. Seemann, 1981). Testing the existence and validity of this study required the restoration of the patterns seen in each basic type to a computed normal position.

Two clear sources of visible evidence supporting the existence of a calculated normal emerged from the three basic types and from post x-rays taken immediately after the adjustment. When the post x-rays showed that the cervical spine as a unit was returned to the calculated normal, excursions of the typical cervical vertebrae that had abnormally moved into the transverse plane were also restored to normally functioning and accurately situated positions on the vertical axis, strongly indicating that a calculated normal could be predetermined. When the x-ray included dorsal segments that were



previously rotated, these segments also were restored to normal. It was further observed through measurement that a corrective adjustment in every case wherein the cervical spine was returned from its excursion into a frontal plane, C1 and C2 were restored to a mathematically pre-calculated zero position, supporting the hypothesis that a calculated normal did exist.

The first and second basic types (Figures 2 & 3) comprise the majority of C1 subluxations. Each is characterized by an excursion of the cervical spine into either the right or left frontal plane. Excursions into a frontal (lateral) plane produce rotation of vertebrae into the transverse plane. Various configurations of abnormal vertebral motion into the transverse plane occur, dependent upon the distance that the cervical spine has angulated into the frontal plane. Other characteristics of the three basic types, not relevant to this discussion, are observable and measurable, and very essential to the correction of the C1 subluxation complex.<sup>8</sup>

It should be noted that severe rotations of C2 are also a factor in producing rotations of subjacent vertebrae, and account to some degree for some of the abnormal patterns seen. In the

majority of type 1 and type 2 cases, however, angulation of the cervical spine into one of the frontal planes produces the abnormal cervical rotations into the transverse plane.

In the two basic types, the immediate post x-ray discloses that full correction of the angulation of the cervical spine from the frontal plane aligns the cervical vertebrae with the vertical axis, thereby correcting the rotation of the subjacent vertebrae, indicative of the fact that a calculated normal can be predetermined.

The rather rare third basic type (Fig. 4) is one in which no angular rotation of the cervical spine occurs. This subluxation is caused by an excursion of the skull from the vertical axis, but the cervical spine remains aligned to the vertical axis. These cases show no rotation of the cervical spinal segments into the transverse plane, except for the two atypical vertebrae, C1 and C2. This phenomenon is rather conclusive evidence that the cervical spine must first angulate from a calculated normal, or vertical axis, to produce rotation of the typical vertebrae into the transverse plane, and if no angulation of the cervical spine from a calculated normal is measurable, the typical cervical vertebrae are not forced by grav-

ity into the transverse plane, thus supporting the hypothesis that the calculated normal is the true vertical axis.

Chiropractors point out the extensive incidence of vertebral asymmetry and posit that osseous malformation prevents exact calculation of a normal position. Examination of hundreds of upper cervical x-ray films reveals that contiguous osseous structures, vertebral and skull, tend to adapt to malformation *whenever equilibrium is an essential factor*. A short condyle, for example, will usually be compensated for by a larger lateral mass on C1 or a built-up superior articulating surface on C2 on the side of the shorter condyle.

Malformed bone structures on the upper cervical spine, therefore, should be evaluated in terms of equilibrium. If the malformation will not cause disequilibrium, osseous adaptation by contiguous structures will usually not be seen to exist. An odontoid process of C2 that is not centered to the body of C2, for example, does not affect equilibrium sufficiently to require contiguous adaptation because it is not a factor in balance. Similarly, a larger lateral mass viewed from A-P on the vertex x-ray film is not compensated for as it does not affect equilibrium.

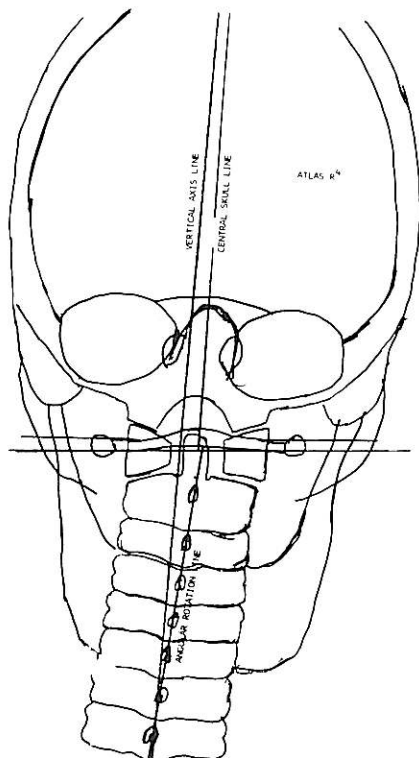


FIGURE 2  
FIRST BASIC TYPE

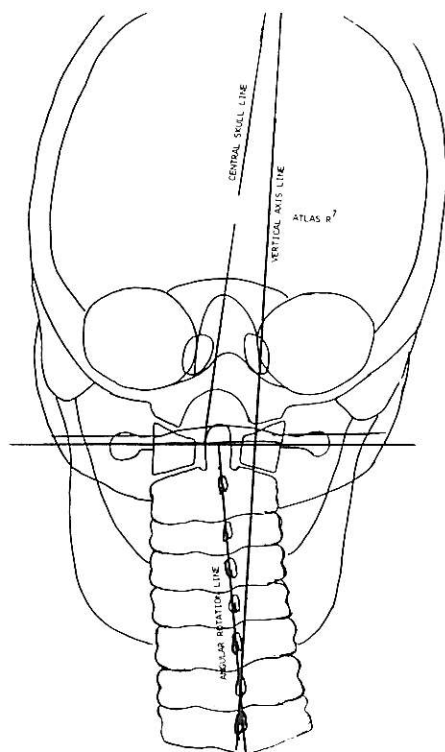


FIGURE 3  
SECOND BASIC TYPE

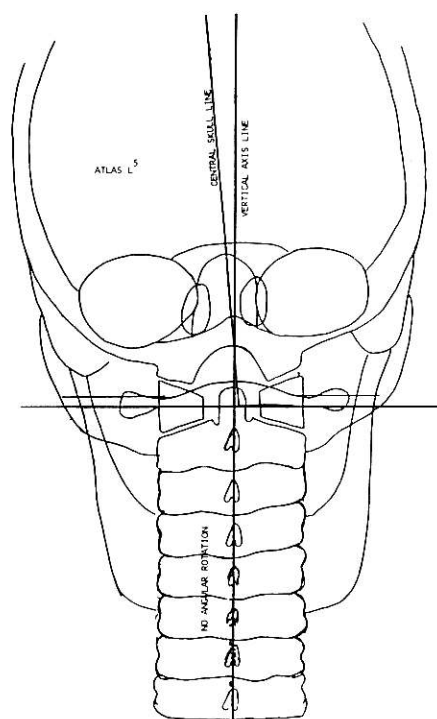


FIGURE 4  
THIRD BASIC TYPE



It is the abnormal movement (misalignment) of the vertebral segment that has been shown to cause neurological detriment; the abnormality of osseous structure does not. One, therefore, does not adjust to remove an abnormality, nor can he. The adjustive force vectors, however, must include both the misalignment distance and the increase in the distance caused by the abnormality which is present prior to the misalignment. When the pre x-ray films are analyzed, height and rotation vectors are computed. The rotation vector, for example, may be composed of 6° misalignment and 3° abnormality, making a total distance of 9°. The adjuster must stand the full distance from his point of contact, including both the misalignment distance and the abnormality distance if he is to successfully correct the rotational misalignment. Any attempt to subtract the distance that the adjuster thinks is malformation from misalignment can only result in an erroneously computed vector. The subtraction process can only be verified on the post x-ray, following a correction of the misalignment distance.

The process of subtracting malformed bone structure from misaligned bone structure on the post x-ray film is accurate to the degree that the vertebra(e) is maximally reduced. Proof of maximal reduction must be supported by Anatometer checks and all checks available of the C1 syndrome. If the syndrome is absent, or, as in extreme cases, keeps reducing from visit to visit, the C1 Subluxation Complex is stabilized and no evidence of neurological imbalance is recordable; therefore, further adjustment is not required, nor is it advisable because it is traumatic to the patient. These checks give supportive evidence that the misalignment factors have been removed, and the remaining readable distortion seen on the post x-ray films constitute malformation only. This residue may then be measured from the computed normal with greater accuracy.

To determine accurately the amount of shortness of one condyle of the occiput in relation to the opposite condyle requires more than a comparative measurement of the respective condyles. Until the degree that the skull

has deviated from the vertical axis is a known fact, the measurement is invalid because the tilt of the skull as seen on the nasium film gives the illusion of a shorter condyle opposite the side of the tilt. Experiments clearly show that condyles measuring shorter on pre x-ray films measured more equally in length on post x-ray films after an adjustment that corrected the C1 subluxation-misalignment in relation to the occipital condyles, and restored the skull to the vertical axis or computed normal.

This paper briefly comments on some of the evidence regarding the establishment and utilization of the calculated normal concept. Further investigation and study is, of course, required. It is hoped that, based on the material presented here, that interest will be stimulated in the concept sufficient to encourage vigorous investigation of its validity. Such might go far in improving the future course of chiropractic services.

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## NUCCA GLOSSARY

**NUCCA CONCEPTS ARE INDICATED BY THE LETTER "N" IN PARENTHESES**

### **Abnormal Vertebral Motion:**

Eccentric motion of a vertebra(e) in which the disc center of motion is no longer aligned to the vertical axis of the body. Off-center.

### **Acceleration:**

The rate of change of velocity in respect to time.

### **Adjustment (N):**

Restoration of the misalignments of C1, the skull, spine, and pelvis to the vertical axis of the body (normal) and the establishment of equilibrium.

### **Anatometer (N):**

An instrument for monitoring the human body for the measurement of C1 related spinal and bodily distortions prior to and after the adjustment.

### **Angular Rotation (N):**

The abnormal excursion of the cervical spine and skull as a unit about the vertical axis of the body and into either the right or left frontal plane of the body, thereby producing gravitational stresses resulting in rotations of the vertebrae and tractionalization of the contents of the spinal canal and nerve roots.

### **Atlas Subluxation Complex (ASC)**

(N):

An atlas that has lost its alignment with the vertical axis in one or more planes, resulting in neuromuscular stresses which in turn produce malalignments of the spine and pelvis and contiguous structures.

### **Atlas Subluxation Syndrome (N):**

Measurable distortions of the spinal column and subluxated body associated with a C1 subluxation. The physical signs of the C1 subluxation.

### **Axis Base of Support (N):**

The superior articulating surfaces of C2 on which the head turns and which provide support for C1 and the skull. The articulating surfaces of C2 are the fulcrum of the mechanical levers in the adjustment. The reduction of C1 laterality is consistent with the movement of the atlas-lever around the superior articulating surfaces of C2, restoring the vertebrae of the subjacent cervical



spine to the vertical axis or normal position.

**Axis of Motion:**

A straight line about which a body or geometrical object rotates or may be conceived to rotate.

**Base of Support:**

The length and width of a surface on which an object is supported. The area of support is determined by drawing lines along the outermost edges of the supporting structure(s).

**Basic C1 Subluxation Types (N):**

All C1 subluxations share characteristics of one of the three basic types. Type 1, which occurs most frequently, is called the opposite-the-kink type, because the atlas has abnormally moved opposite the side of the lower cervical angle, or kink. Type 2, which occurs second in frequency, is called the into-the-kink type, because the atlas has abnormally moved to the same side as the lower cervical angle, or kink. Type 3, seen less frequently than types 1 and 2, is called the no-kink type, because the cervical spine angle is zero; that is, the cervical spine has not deviated abnormally from the vertical axis into either frontal plane. In Type 3, vertebral rotations of cervical segments below C2 will not be present as a result of angular rotation of the cervical spine and skull as a unit into either frontal plane. Rotation of cervical vertebrae in a Type 3 case, occurring subjacent to C2, results from severe rotation of C2. Angular rotation of the cervical spine into one of the frontal planes and severe rotation of C2 on the transverse plane are the two causes of cervical vertebral rotation.

**Biomechanics:**

The application of mechanical laws and principles to the interpretation and analysis of the subluxation and its correction.

**Center of Gravity:**

An imaginary point representing the weight center of an object; the point about which the object balances in every direction. The center of gravity is that point at which the gravitational potential energy of the body is equal to that of a single particle of the same mass located at that point and through which the resultant of the gravitational forces on the component particles of the body act.

**Center of Mass:**

The point about which the sum of all the linear moments of mass of the particles in a body is zero.

**Concentric Motion:**

Motion arising from the same center; having a common center. Vertebrae execute concentric motion when their disc centers of motion are aligned to the vertical axis of the body.

**Contractured Leg (N):**

An apparent difference in the leg length of a C1 subluxated individual when measured in the supine position, and resulting from spastic contracture of the extensor musculature of the spinal column. Frequently called the "short leg".

**Curvilinear Motion:**

The motion of an object along a curved path.

**Depth:**

A dimension downward, backward, or inward. Depth in the atlas subluxation complex adjustment tends to defeat subluxation reduction. It is usually the result of body-drop which shortens the final optimum resultant of the force vectors.

**Direction:**

The line or course along which an object moves.

**Disequilibrium:**

Loss or lack of stability. See equilibrium.

**Dynamics:**

The study of the relationship between motion and the forces affecting motion. Dynamics is that part of the field of mechanics that studies objects in motion, as opposed to statics. It is the combined study of kinetics and kinematics.

**Eccentric Motion:**

Irregular or abnormal motion; off-center motion. Eccentric vertebral motion takes place when the vertebral disc center of motion is not aligned to the vertical axis. Eccentric motion "fixes" vertebral segments from their normal position.

**Effort:**

The use of mental or physical effort to do something. The application of force to a mechanical lever. Force applied against inertia.

**Energy:**

Anything that is capable of producing a change in matter; the capacity for doing work.

**Equilibrant:**

A force that is capable of balancing a system of forces to produce equilibrium or stability. The adjustment is an equilibrant when it balances the forces in the subluxation.

**First Class Lever:**

In a first class lever, the fulcrum (axis of motion) lies between the effort and the resistance. The three basic types of C1 subluxations are first or second class levers. Example: seesaw.

**Fixed Point:**

A point in the upper dorsal spine which is considered as aligned to the vertical axis and about which longitudinal rotation of the cervical spine and the head take place as a unit when abnormally moving into either the right or left frontal plane.

**Force:**

A vector quantity tending to produce an acceleration of an object in the direction of its application. Capacity to do work or cause physical change. A push or pull. A vector quantity possessing size and direction.

**Frontal Plane:**

A vertical plane which passes through the body from side to side, dividing the body. Also called the lateral plane.

**Fulcrum:**

The point or support on which a lever turns. In the adjustment, the fulcrum for the atlas-lever are the superior articulating surfaces of C2. A C1 adjustment activates the atlas (lever) and moves it about the superior articulating surfaces (fulcrum) of C2. C1 subluxations are of either the first or second class lever types.

**Gravity:**

The natural force that causes objects to move or tend to move toward the center of the earth. The cause of weight. A constant force that pulls vertically down on all objects at all times.

**Gravital Line:**

An imaginary vertical line which passes through the center of gravity. The weight center line. Line of gravity.



**Horizontal Plane:**

A plane that is parallel to the horizon; flat. A transverse plane.

**Horizontal Resultant (N):**

The hypotenuse side of a right-angle triangle, the two opposite sides of which incorporate the height vector and the rotation vector of a subluxation as computed from the nasium and vertex x-rays and depicted on the horizontal plane.

**Inertia:**

Tendency of a body to resist acceleration. The tendency of a body at rest to remain at rest or of a body in motion to remain in motion in a straight line unless disturbed by an external force. Inertia is resistance to motion, action, or change. Inertia is measured by mass.

**Kinematics:**

The study of motion exclusive of the influences of mass and force. It includes displacement, velocity, and acceleration without regard for the forces acting on a body. It is a mechanical concept, a subdivision of dynamics.

**Kinetics:**

The study of the relationship between motion and the forces affecting motion; bodies changing motion as unbalanced forces act on them. The concepts of mass, force, and energy as they affect motion.

**Kinetic Energy (KE):**

The energy possessed by a moving body. The ability of a body to do work by virtue of its motion. Energy associated with motion.

**Laterality (N):**

A rotational abnormal movement of C1 about the condyles of occiput and about the sagittal axis of motion. Rotation is angular motion about an axis of motion.

**Lever:**

Any rigid bar that turns about a fulcrum or point when effort is applied. In the process of turning, resistance is overcome. An adjustment may be defined as a force or effort applied to a lever to activate it.

**Line of Gravity:**

An imaginary vertical line which passes through the center of gravity.

**Linear Motion:**

Translatory motion or that motion in which all parts of an object move in the same direction and each part moves an equal distance.

**Longitudinal Plane:**

A plane running lengthwise.

**Mass:**

The measure of how much matter an object possesses.

**Mechanics:**

That branch of physics dealing with the action of forces on bodies which includes kinetics and statics.

**Mechanical Advantage:**

The ratio of the output force of a machine to the input force.

**Mechanical Energy:**

The measured amount of work a body can do. In any system, the total mechanical energy equals potential energy (PE) plus kinetic energy (KE).

**Misalignment Factors (N):**

The measurable malalignments of the vertebrae, skull, and pelvis. They are vertebrae and contiguous structures that have lost their alignment to the vertical axis, but are not necessarily subluxated. They are, however, malfunctioning structures.

**Motion:**

The ability or power of an object to move. Change of position. The forces that act on bodies determine their direction of movement.

**Moment:**

The tendency of a force to affect motion. Tendency, or measure of tendency, to produce motion, especially about a point or axis. The product of a quantity and its perpendicular distance from a reference point.

**Momentum:**

Mass of a body multiplied by its velocity. ( $M=mv$ )

**Neurological Component (N):**

Nerve structure that is tractionized, enfolded, or compressed by the misalignment factors of the atlas subluxation complex.

**Normal (N):**

That positional relationship of a vertebral segment, the skull, or pelvis in which these structures are aligned to the vertical axis, and in which the resultant of all acting forces is zero and the sum of all torques about their axes of motion is zero.

**Notch-Transverse Resultant (N):**

The final and optimum line of drive which includes the horizontal resultant. The distance from the adjuster's episternal notch to the atlas transverse contact point when the adjuster is "rolled in".

sum of all torques about their axes of motion is zero.

**Orientation Planes of Bodily Motion:**

The three planes of the body corresponding to the three dimensions of space. Each plane is perpendicular to each of the other planes.

**Orthogonal Axis:**

If two symmetrical planes intersect at right angles, the line in which they cut is called an axis of orthogonal symmetry. The central axis or origin of the coordinate system.

**Optimum Line of Drive (N):**

The measured and predetermined direction of an adjustive force applied to a given atlas subluxation complex as computed from x-rays and coplanar with the notch-transverse resultant, and consistent with the subluxation's reduction pathway.

**Perpendicular:**

Intersecting at or forming a right angle; a 90° angle.

**Phases of the ASC Adjustment (N):**

The setting up of the potential energy of the adjustment. The last phase of the adjustment (triceps pull) is the conversion of the potential energy of the adjustment to kinetic energy, overcoming the inertia of the adjuster's body.

**Pivot:**

The specific point on a shaft or rod about which angular rotation takes place.

**Plane:**

A surface containing all the straight lines connecting any two points on it. A flat or level surface. A flat surface determined by any two points in space.

**Potential Energy (PE):**

The energy of a body that is derived from its position, rather than motion, with respect to a specified datum in a field of force. The ability of a body to do work by virtue of its position.

**Predominant Factor (N):**

The single misalignment factor of the atlas subluxation complex that can be singled out to be responsible for the



ipsilaterality or contralaterality of spastic contracture.

**Pythagorean Theorem:**

The theorem that the sum of the squares of the lengths of the sides of a right triangle is equal to the square of the length of the hypotenuse.

**Rate of Motion:**

Speed. ( $V = \text{distance divided by time}$ )

**Rectilinear Motion:**

Motion occurring in a straight line; bounded or characterized by straight lines.

**Reduction Pathway (N):**

The single pathway through which a subluxated vertebra(e) must move as a result of the pre-calculated resultant of the force vectors determined from the x-ray films in restoring it to the vertical axis, or normal position.

**Resistance:**

Any force that tends to oppose motion.

**Resultant:**

A single force that produces the same result that all forces would if acting together.

**Rotation:**

Motion in which the path of every point in a moving object is a circle, or circular arc, centered on a specified axis.

**Sagittal Plane:**

An anteroposterior vertical plane passing through the body from front to back, dividing it in half.

**Second Class Lever:**

A lever in which the resistance point lies between the fulcrum and effort point. Example: wheelbarrow.

**Skull Center of Gravity:**

The weight center of the skull.

**Spastic Contracture:**

The cessation of the function of inhibitions which normally regulate muscle tone (Steindler, A.). Loss of inhibitory control over the extensor muscles, resulting in impairment of the antigravity function.

**Subluxation (N):**

A vertebra(e) that has lost its normal position, normal function, and its equilibrium sufficiently to modify nerve conduction.

**Subluxation Patterns (N):**

Configurations of the atlas subluxation complex, resulting from gravita-

tional stress forces and severe rotations of C2.

**Third Class Lever:**

A lever in which the effort point lies between the fulcrum and the resistance point. Example: screen door (force applied to door by spring)

**Triceps Pull (N):**

The conversion of the potential energy of the adjustment into kinetic energy by pulling the triceps muscles and activating the shoulder lever.

**Vector:**

Measurable quantities possessing magnitude and direction: force, weight, and velocity.

**Verifiable Element (N):**

A physical distortion of the spinal column or body that can be measured and correlated to the atlas subluxation complex.

**Vertical Axis of the Body:**

A vertical line formed by the intersection of the frontal and sagittal planes of the body, perpendicular to the ground. The pelvic girdle, head, and spine are normally positioned when they are aligned to the vertical axis.

**Vertical:**

At right angles to the horizon or to a base of support. Upright.

**Vertical Plane:**

A plane perpendicular to the horizon.

**Weight:**

The attraction between the earth's gravity and a mass.

**Work:**

Work is done only when a force succeeds in moving the body it is acting upon. The quantity of work done is the amount of force multiplied by the distance moved in the direction in which the force acts. ( $W = Fd$ )

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**Announcement**

Dr. Julia A. Hernandez is pleased to announce her association in practice with the Shaw Health Center, 7611 Melrose Avenue, Los Angeles, California 90038.

Dr. Hernandez began her studies of the N.U.C.C.A. system in 1975 through the influence of Dr. Marshall Dickholtz. While enrolled in the Palmer College of Chiropractic at Davenport, Iowa, she served as an officer of the student NUCCA Club for two years.

Following her graduation from the Palmer College in 1979, Dr. Hernandez engaged in an internship with Dr. R. R. Gregory in Monroe, Michigan for two years. While in Monroe she also conducted a private practice. In October, 1981, Dr. Hernandez left Monroe to relocate in Southern California.

Dr. Hernandez has been a NUCCA member since 1976. In May of 1980, she was elected to the NUCCA Board of Directors, serving as NUCCA secretary.

A Diplomat of the National Board, Dr. Hernandez is licensed to practice chiropractic in Michigan and in California.

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