

ALL OR NONE

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Why does the average non-degreed person readily accept chiropractic rationale while the university graduate often calls it quackery or psychosomatic? A major obstacle is the "All-or-None" law, frequently quoted but out of context. We then compound the problem by using a "stepping-on-the-hose" concept to explain neurophysiology. The problem is one of semantics. Patients do make fantastic recoveries following adjustments and they don't question the neurology. The skeptic says that it is physically impossible so that the results must be psychosomatic. Is the "all-or-none" law valid? Does it allow for communication of "intelligence?"

The answer lies in a simple analogy. All of us have "turned on" a light switch and can see the lamp either "on or off." Blinker lights are used in the navy but are painfully slow. Some have used a telegraph with a simple on-off key. With proficiency one can transmit very s-l-o-w basic conversation. All have used a telephone. Here is capability of on-off at rates of nearly two thousand (2,000) per second. This frequency is capable of intelligible speech transmission at usual conversational speed. But wait a minute; there is a microwave transmission network for long distance phone calls which are sent by wireless with up to 12,000, yes twelve thousand phone conversations simultaneously emitted from ONE single tube. But that is not my nerve system, one can say. True, but the "all-or-none" law is the light switch counterpart and is being erroneously applied to much more complex systems. History? Yes, indeed.

About two hundred years ago Galvani put increasing pressure upon a frog sciatic nerve with gradual diminution of the kick response. Increasing pressure on the sciatic nerve caused progressive diminution of muscle response down to zero but releasing that pressure allowed gradual increase up to full response. For many years this was accepted at face value. Adrian, Lucas and others later demonstrated that a single nerve fiber responds to its maximum or not at all just as a muscle fiber contracts "all or none." To explain how a weak current induces a mild contraction while a strong current induces maximum contraction the investigators have reasoned that one after another of the fibers with varying excitability contracted in patterns allowing a graded response.¹ This would allow the validity of the "all-or-none" law to stand in the face of the graded response of muscle contraction. This on-off concept has been the axiomatic base for arguing against "quality" of a nerve impulse. The concept is like that of a room light where the electric switch is either on or off with no rheostat as a dimmer. It is even shown that slowing a nerve impulse passage by pressure, chilling or by narcosis does not slow the impulse beyond the partial blockade. Despite the fact that the transmission speed can be slowed by "partial block" of pressure, the transmission speed beyond the partial nerve block is nearly equal to the normal rate. However there is a change in the response with demonstrably altered details. As technology improves we should be able to measure the fantastic nerve impulse quality which will easily explain many observed phenomena that will remove a road block to "scientific" understanding. Fifty years ago a microwave tower was impossible. Today a single microwave tube will carry over 12,000 telephone conversations simultaneously.

But what does a microwave tower have to do with chiropractic? Precisely that we have seen many intricate responses which require very specific quality of the nerve impulses. In 1895 D. D. Palmer introduced a concept that has been branded “heresy” and nonsense by “scientists” and even by many chiropractors who seem to deny their own heritage. The intelligent communication which is demonstrated consistently in everyday physiological response cannot be mediated by single impulses any more than a telephone conversation can be done with one flick of voltage or by one tap of a pencil onto the microphone. However the speed of a short volley with millions of impulses comprising a complex firing pattern truly does elicit a specific, intelligent response.

Examples of this complexity have been documented under many different circumstances. Some of the more definitive, question-proof instances are those of antibody response through the auricular nerve of a rabbit when different bacteria are injected into the ear. With the ear amputated except for the nerve to obviate argument on blood flow there have been many experiments showing specific antibodies being produced in response to specific reflexes.² To further study the mechanism microelectrodes were inserted into the auricular nerve and the firing patterns recorded. Each species of bacteria induced a specifically different pattern within the nerve and a specifically different antibody response.³ This indicates a very complex intelligent message following that nerve pathway. It is not a simple-on-off switching but truly is an infinitely complex pattern built with thousands of on-off components. Thus in a sense both debaters were partially correct but the broad understanding was missing.

Another fine old argument was that of slipping off the torso skin of a young frog with a loosened belt-like strip rotated to place the belly side on the back and the backside on the belly. The skin soon grew back onto the torso. Tickling the back caused the frog to scratch the belly and tickling the belly over the skin previously from the back caused him to scratch the back.⁴ This indicates that there is a distinct quality of the nerve impulses and that the messages do get through regardless of the lack of usual pathways. There was an earlier experiment in 1923 by P. Weiss. The gastrocnemius muscle from the leg was transplanted from the hind leg of the young frog into his front leg. He could walk and hop but when the nerve to the hind leg was stimulated electrically the transplanted gastrocnemius rear muscle jumped along with the other rear leg muscles.⁵ This was a real dilemma for the “all-or-none” fanatics who said that there is no quality to the nerve impulses. Still more dramatic were several series of experiments of cutting the optic nerve to check on regeneration. Not only did the tens of thousands of nerve fibers grow back into the brain but they found their correct individual connections to re-establish vision. Previously it was thought that vision was just relearned regardless of the probable random connections. The return of normal vision after the optic nerve cut was quite startling. To prove more details on relearning the eye was cut loose and rotated 180° upside down and the nerve again allowed to re-grow. Now came the surprise. The frog would strike upward to reach a fly on the floor and would strike downward to reach a fly placed up in the air. With attempts to retrain the animals for as long as two years there was no real re-education possible. Next the eye was cut out and rotated back to its normal position. Upon recovery the frog again would strike but now in his old normal direction. The conclusion was that each nerve found its proper destination despite the spaghetti like tangle during re-growth.⁴ An attempted explanation was that each fiber had a distinct chemical difference, a special flavor. But that is even more difficult to believe than it is to admit that there is an intelligence acting through each and every cell in the body. This admission of cellular intelligence and the transmission of intelligence by nerve pathways may stretch the credulity of the “scientist” who has learned that it is impossible. As with the bumblebee which is aerodynamically incapable of flight from the calculations of physics. So it is theoretically impossible for many things to happen in the human body. But as the bee flies so does the body work and with admirable efficiency when we give it even half a chance.

Yes, there is an All-or-None Law but it does not preclude the concept of the neural imagery and the quality of nerve impulses. The individual quality of a neuron takes a “set” as soon as it is used. There is a demonstrable change in the RNA of the nerve cell. With each usage the set becomes more sharply unique. Hence each neuron does have a distinct flavor and a distinct response pattern to aid in its intelligent function. The cut nerve fiber with the sheath is going to regenerate and grow to reach its original end point even if given a scrambling with many thousands of others. Even the wild transplantation of an entire hind leg of a frog up onto another frog’s shoulder will give a thought provoking response when stimulated electrically. When the transplanted leg is stimulated the other rear legs will jump simultaneously. Just where are the specific pathways for that message??? Still it works consistently.⁴ After admitting that highly complex intelligent communication is possible and does occur over normal pathways as well as over interrupted paths with their wild detours then we should be able to reasonably discuss some of the more complex responses.

The normal physiology of the body is coordinated and directed by the nerve system. Hormones are sustaining assistants to reinforce and sustain the nerve reflexes during prolonged action. There is also the chemical intermediary of acetylcholine in the synapses or “spark gaps.” However their action is not at all like that of soaking a finger in hot water to warm it up. Acetylcholine is liberated in tiny droplets, does its job and then is erased by cholinesterase, all of this within 1/500 of a second. With many such “secretory spots” within each synaptic cleft and with recorded neural firing patterns up to 1,500 impulses per second we cannot truthfully think that the hormones control the body or even control the nerve system. One person stated that the nerve system is only a lot of detached individual cells, not even connected but triggered by hormones. Such a crude misconception entirely missed the grandeur of the magnificent mechanism of those billions of cells acting, reacting and interacting in a fantastic concert of highly intelligent activity. The mathematical probability of such a miracle “just happening” would require many more millenia than the radioactive elements allow in the age of the world. So perhaps it would be highly logical for us to consider the alternative of creation which does require a creator. Every doctor should be awed into submissive gratitude for being allowed to even look into such a complex display of intelligent programming. Then perhaps we can admit that the Power which created the body is able to heal the body.

How else than with the neural flavor, with the quality of the impulses can we explain the visual reversal reactions when the frog’s eye is rotated? How else can we explain the specific antibody response to the specific reflex when the antigen is never within the body or even near to it? How can we explain the recovery from chronic malaria and the utter disappearance of the plasmodia from the blood stream after spinal adjustments as the only change of health routine, no drugs or therapy of any kind? How can we explain the healing of the bleeding gastric ulcers following adjustments? How can we explain the easy passage of the lodged kidney stones following a light reflex contact to reduce a subluxation? How can we explain the disappearance of a positive Babinski sign and see the “MS” patient able to run within 10 minutes after an effectively positioned perianal contact of two minutes duration?

There is an additional factor which helps to explain all these dramatic changes consistently becoming more normal and only rarely worse. It is the relative stability of the neurological reflexes. The normal physiology is “learned” early during gestation by each tissue area. It is learned from the chromosomal template pattern with each cell group doing its own work effectively. Some of the tissue types divide just 38 times, some 42 times while the skin basement membrane continues dividing until death but at the proper rate as set by the pressures against adjacent cells. Still ALL these cells have the SAME chromosomes as did the original fertilized ovum. How does one group know that it is nerve tissue and other group know that it is bone, blood or skin??? When a piece of skin is cut out or scraped too thin

over one area the growth speeds up to again restore the normal structure. Only when a few of the cells “escape” from the nerve control pattern do we have cancer. Now again to the normal reflexes which are rapidly established during prenatal life. With each usage as the psychologists state, there is facilitation of the “well worn neural groove.” The cell extensions grow closer together by neurobiotaxis with closer spacing, broader contacts and an increasing number of synapses. These reflexes of normal physiology are the solid, stable ones. Next, let us consider an environmental irritant which is so drastic as to require much more adaptation than the body can accomplish. This can strain the reflex mechanism into a distortion and pervert the normal reflex into a new, unnatural, pathological but unstable reflex. Worry or mechanical trauma can introduce a subluxation into the vertebral column. The subluxation distorts the normal local sensorial conversational tone of information input. With garbled and jumbled information input there is **an abnormal response. This is pathology. It is physiology gone wrong.** But the chiropractor’s goal is realized when he can palpate, locate the offending subluxation and adjust it properly. Then the ventriloquist effect of the subluxation is set aside. The spotlight of clarification is shone onto the unstable pathological reflex. With adjustment of the information input, the nerve system is able to settle into the normal stable reflex pattern of health. When the subluxation is acting as a ventriloquist and garbling the information the nerve system is deceived and cannot precisely locate the subluxation well enough for the usual spontaneous correction.⁶ Is it then so inconceivable to believe the story of the patient who had aspiration biopsies eight days in a row and was told that the lung cancer was grade four. He stated that with the chiropractic adjustments there was a deep feeling of warmth the first day. The “glow” feeling persisted each of the next thirty days of light perianal contact adjustments and cancer disappeared. Eight years later he was still very healthy with no signs of lung cancer. Is it inconceivable that the cells which were once out from under the authoritative control of the nerve system have now submitted again to nerve control after correction of the subluxation which was distorting the information input?

Recent research has brought to light many of the concepts which D. D. Palmer intuitively grasped. Dr. W. Ross Adley of Space Biology Laboratory of UCLA’s Brain Research Institute reports, “The on-off of neurons is the minimum way the brain has of operating. The brain is not a telephone switchboard that operates only when signals arrive from outside. The switchboard is always flooded. It is altered by subtle, QUALITATIVE changes in the incoming signals, not by presence or absence of lights in the switchboard, but by shifts of brightness or color.”⁷ Dr. Holger Hyden of Goteborg, Sweden has shown that during a great deal of learning there is an explosive increase of RNA in the brain cell. Dr. Adley then comments on the electrical changes in the neuroglia, the supporting cells OUTSIDE the neurons as altering the RNA and the protein inside the neuron. Memories are thus not only stored by the synaptic closure of neurobiotaxis but also by subtle changes in the RNA, a deposition in the protein of the neurons. “Dr. Philip Nelson of the NIH has shown that the nerve cells in the spinal cord interact, not only by firing bursts from one to another, but also on the basis of the more subtle electrical fields they themselves generate.” Hence “we may view each of its neurons (brain) not merely as a computer-like cell with a single function, but as a versatile, complex personality in miniature. It may have a specialty, but is also able to participate in a multitude of memories, moods, perceptions and actions.” This applies to EACH one of the TEN BILLION cells. “It (the cell) has a stable, recognizable character but is willing to change, to learn from experience. A brain composed of such neurons obviously can never be ‘filled up’. Perhaps the more it knows the more it can know and create. The ultimate creative capacity of the brain may be, for all practical purposes, infinite.”⁷ Does this concept by leading current brain research teams sound like a refutation of D. D. Palmer or is it more an opening of much broader vistas than he or most recent chiropractors dare dream about? **The limitation of the profession to manipulation of gross strains and sprains sounds like a denial of our heritage, of an abandonment of not only the early chiropractic concepts but also a denial of the validity of the many case histories documented over the past 75 years.**

We can well marvel at D. D. Palmer teaching the transmission of intelligence by the nerve system which he intuitively knew to be true. Seventy five years later his viewpoints are being scientifically vindicated and proven. The many years of opposition have worn down some chiropractors to the point of becoming "modern and progressive" to the point of abandoning the sick patients. Shame on us. We can well review the Palmers' early writings and find that they were far ahead of their time in spite of the "scientific" opinion of that day.

After seeing many such dramatic recoveries over the years we realize that chiropractic was literally built on medical failures. Patients with almost every known disease have recovered. Now we can begin to see that is quite possible neurologically. Genetic and degenerative limitations are minor when compared to the mental limitations we place on ourselves, being "unable" to even try correcting the cause. Is it then logical to try limiting chiropractic to a narrow scope of "pounding down the high spots" of spine straightening as a strain & sprain specialist, as a "chiropractic orthopedist?" Is it logical to believe the hopelessness of all the so-called "irreversible" pathologies listed by specialists who never gave an adjustment? The pioneers of chiropractic who repeatedly went to jail and even adjusted patients while in that jail knew that anyone with a spine who was still living could at times benefit from proper chiropractic care. Of course they knew that there were limits of damage beyond which there was no return but who can say "no return" until proper adjustments are made for correction of the subluxation?

Why does the grateful patient believe the chiropractic rationale? Because results are hard to disprove. After all he experienced disease, pain and recovery. To the theorist there is no such motivation. He may argue that the on-off switching of a room light is totally incapable of intelligent communication. But the almost infinite complexity of nerve transmission makes such results possible. Forty years ago television was an idealistic toy but considered to be an utterly useless waste of energy. It could not be at all useful. If those critics had seen the TV picture of Neil Armstrong stepping onto the moon they would have said "faked." So the person who has been told that the nerve system is not even a system but just scattered cells dependent upon hormonal balance will have much trouble understanding the pathogenesis of a subluxation. He will say that the recovery from terminal disease was either a technician's mistake or that it was psychosomatic. The patient who recovered KNOWS better even though he cannot explain what happened. He knew that he was deathly sick and that he is now healthy.

Yes, the All-or-None Law has been demonstrated but it does not prove chiropractic to be quackery. A little knowledge is dangerous but a full understanding of the character of the nerve impulse, of the speed of firing, of the complex firing patterns and of the unique neural flavor of each neuron makes one say that the most dramatic recoveries are only a scratching of the surface. We will someday realize that our best results today are like children playing with sand castles. The critics still have their eyes shut and can't even see the beach let alone the sand castles which we have so laboriously built as test models for much bigger real castles.

Yes, there are different viewpoints. Like the blind men describing the elephant as a rope, a tree trunk and a wall, each was partly right. Let us wake up, open our eyes and see the grandeur of the nerve system and the magnificence of the body in its entirety. Then we can all grow and realize that All-or-None is just the beginning. It is not a stumbling block but rather it is the first step in a long stairway of understanding ourselves, our problems and our great joys.

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