A NEW THEORETICAL FRAMEWORK FOR EXPLAINING SEASONAL CHANGE

There is a tendency of many scientists to adopt the position that new theories should not be proposed if established theory seems to adequately explain the requisite facts. More than one argument can be presented to in order to contest an assertion of this nature. Although existing theory may *seem* to explain all known facts, a more developed theory may be able to explain other facts which nobody ever imagined could be explained via a more advanced theory. An example of this pertains to Newton's law of gravity. No physicist ever imagined that a more advanced theory of gravity was required to explain the anomaly of Mercury's perihelion. However, this is exactly what transpired when Einstein presented his theory of gravity (the General Theory of Relativity). Another (somewhat tenuous) example of why it is appropriate to present a new theoretical framework is as follows.[*] Within physics there is a theory called quantum electrodynamics. It's one of the most rigourously tested theories in all of science. The alternative that I've presented is, in certain respects, more simplistic. Despite this fact, I still possess the ability to explain certain mysteries within physics that existing theory cannot explain. Secondly, although my model is more simplistic than QED, with time these simplicities will be "ameliorated" and it will become just as scientifically sophisticated as QED. The last point pertaining to this example may be the most essential of all. Within QED is something called renormalization (there's no need for the geologist to know what this entails in order for me to effectively illustrate my point). There are a small handful of physicists who are opposed to the entire framework (quantum field theory) because of this illegal mathematical trick. My model does not incorporate renormalization. Consequently, these examples illustrate that there is justification for the proposal of new theories even if existing theory *seems* to be explaining the existing facts.

Obviously the reader is fully cognizant of what induces seasonal change. The belief is that gravitational dynamics is what effects the tilting of the earth as the earth orbits the sun. This paper will propose an alternative theory. One potential advantage of this new theory, is that it may explain other aspects of earth's history such as the ice age epochs, and exactly why the earth's magnetic field has undergone dramatic changes in the past.

The prevailing belief is that there is an iron core at the earth's centre which is responsible for the earth's magnetic field. This paper will postulate that it is this iron core, *not* gravitational dynamics which is responsible for the tilt of the earth, and subsequently, seasonal change. In striving to present this new concept, a few new theoretical constraints will be introduced. Specifically, the spatial orientation of this iron core within the centre of the earth, and the composition of the iron core itself.

The spatial orientation of the iron core within the earth is somewhat unique. The "chamber" (loosely speaking) which contains the core is described as follows. Firstly, the amount of free space surrounding the iron core will be scrutinized. There is a dichotomy when assessing the free space by measuring from pole to pole, and the amount of free space when measuring from *one specific point on the equator* to a second *specific*

[*] The reason this example is tenuous is that it pertains to new physics which I've developed on this site. Since this work has yet to be accepted (to say the least) it obviously does not constitute a highly effective example.

point on the equator which is 180 degrees from the first point. When measuring from pole to pole, the amount of free space surrounding the iron core is minimal. The freedom of movement of the core is severely constrained. However, when measuring from two diametrically opposed points on the equator, there is a substantial amount of free space which enables the core to move within this space (when subjected to "appropriate" forces). Furthermore, at a point that is fundamentally equidistant between the poles, the space within the "chamber" becomes even more severely constrained. The ramification of this is as follows. The centre of the iron core, for all intensive purposes, "adheres" to the walls of the "chamber" with (almost) no freedom of movement. However, there is a modicum of free space within the "chamber" as we move towards the two poles. This means there is some minimal amount of movement of the iron core as it pertains to the two ends which are at the poles. (This would help to explain why there is some degree of "drift" of the magnetic poles.) With the presentation of this spatial orientation, we can now continue to delineate the next step in presenting a new theoretical framework for inducing seasonal change.

The next physical parameter to be addressed is the composition of the iron core itself. This paper will hypothesize that the core is not completely solid. A small portion of its internal structure is comprised of metallic liquid. This liquid cannot flow throughout the *entire* iron core. There would be a sufficient amount of internal space within the core to enable it to flow within the (approximate) central areas, but that internal space would become greatly constricted the further we move from the central areas.[*] Furthermore, within the central area (where there *is* some area for flow), this physical area is minimal so that the rate of flow is reasonably slow. These are all the physical parameters that are required to expound upon this new theory.

The fundamental thesis of this paper is as follows. The tilt of the earth (and subsequently, the seasons) is affected by the tilt of the iron core. This thesis begs the question, what affects the tilt of the core? The liquid metal within the core is in a constant, albeit slow, rate of flow. The basis of this statement pertains to the length of days. The days are *always* either becoming longer, or shorter. In order to illustrate whether it will be winter or summer, let's present an exceedingly simple analogy. If we have a spring balance, what will affect whether one side is lower than the other? Obviously, the side that has the greater mass placed on it will be lower than the other. The situation is similar with the iron core. Whichever end possesses the greater amount of liquid metal will possess a greater density. It is this end which will be lower than the other end. It was previously written that although there was a modicum of space between the ends of the iron core within the "chamber", the reader must comprehend that this space is minimal at best. It is *only* sufficient to enable a modicum of movement. When one end of the core is lower than the other, it makes sufficient contact with the walls of the "chamber" to affect the tilt of the entire earth.

In relation to the flow of the liquid metal within the iron core, certain other components must be addressed. There is insufficient room within the ends of the core to enable the liquid to flow towards the very ends of it. The basis of this statement is the simple fact that the earth never tilts to such an extent that the either of the poles ever directly face the sun. The flow would transpire in the following manner. For this scenario, the initial conditions will constitute a Northern hemisphere winter. On

[*] This latter statement will be qualified in a subsequent part of the paper.

December 21st, the optimum amount of liquid metal (that can be in any one part at a time) is in the "uppermost" part of the core (that is the part which faces the North pole). Barring exceptional conditions (the precise nature of these conditions will be expounded upon in a subsequent part of the paper), no more liquid will be able to flow into this area. Once this maximum value is reached, the flow of the liquid will reverse itself towards the "lowermost" part of the pole (obviously the end facing the South pole). Once a sufficient amount of this liquid reaches the centre portion of the core, the flow of liquid will rapidly increase. The postulated reason for this is that the amount of free space within the central portion of the core is greater than in any other area. The *factual* basis of this statement is that there is a dramatic/rapid change in the weather in March and November. Once the optimum amount of liquid metal is in the "lowermost" part, the process will be reversed on June 22.

The astute reader may feel that there is a significant problem with what was just outlined in the former paragraph. In fact, it may seem so egregious that there may be geologists who are shocked that I, as a physicist, did not pick up on it myself. From all outward appearances, the previously delineated physical "machinations" could not transpire as the result of gravity. What the geologist must recognize is the following. Even if we work independently of the new theory of gravity on this web site (which radically alters our current comprehension of gravity), gravity does not render the "upward" flow of metallic liquid (from the South pole towards the North pole) impossible. In order to comprehend why this is the case, there will be a brief review of gravity (which is independent of the *new* framework that is being espoused on this site) for the sake of the geologist.

Newton's law of gravity pertains to the attraction between two masses. That attraction is inversely proportional to the distance between the centres squared. What we're dealing with are two objects which are, in essence, "facing" each other. If a smaller object is to be attracted to a larger object, it must be "facing" a great deal of mass in relation to the larger object. This is why on the earth, water does not flow upwards away from the surface of the earth. It can only flow downwards towards the earth. When dealing with the core of the earth, the physical situation is radically different. The iron core is not "facing" another mass in the sense of what Newton's equation dictates. The iron core is surrounded *on all sides* by mass. Consequently, there is not an attractive force exerting its influence in *one particular direction.* Therefore, gravity, as we understand its "mechanism" on the face of the earth, would not function in the same way within the core of the earth.

If I am to be forthright, I will have to admit that I'm not certain how gravity would operate within an environment of this nature. However, "broad speculation" would be as follows. Since the core is surrounded by an equivalent amount of mass on all sides, this situation *may* be analogous to having the iron core in outer space in the absence of any other masses, and consequently, any gravitational effects. The rationale behind this is as follows. Since the mass is equivalent in all directions, any potential gravitational effects are equally balanced (and subsequently "canceled out") by the equivalent distribution of mass. If an iron core were in outer space and away from all masses, then the only effects that would transpire (as it pertains to the flow of metallic liquid) would be governed by the principles of fluid mechanics. This means that what was previously outlined in relation to the flow of metallic liquid could take effect.

Therefore, if the geologist is opposed to what was outlined on the grounds of the theory of gravity not "allowing" it, he should give due consideration to the dichotomy between the effects of gravity on the face of the earth, and the physical situation within the core of the earth.

The introductory paragraph of this paper presented justification for the proposal of a new theory. The second paragraph stated that with the proposal of this new theory, other aspects of geology may be more effectively explained. What follows will elucidate how this new theory of the inducement of seasonal change will also demonstrate how the earth's magnetic field has changed direction several times in the course of the earth's history.

The spatial orientation of the iron core has a reasonably important role to play in delineating the alteration in the direction of the earth's magnetic field. As was previously written, there is some freedom of movement at the poles while the centre portion of the core is greatly constrained. This would enable there to be a certain "swiveling" movement about the centre if the proper forces were brought into effect. The pre-conditions that would enable a "swiveling" of the core to transpire would be as follows. The core would have to be surround by a liquid. The precise chemical composition of this liquid should, in principle, be irrelevant towards the achievement of the requisite goal. However, since the change in the direction of the earth's magnetic field has not been inordinately frequent in earth's geologic history, it would be reasonable to postulate that this liquid is predominantly comprised of lighter elements.

If the liquid, in its totality, is moving with sufficient force in the same direction (let's say counter clockwise), then this would be sufficient to induce a change in the direction of the iron core. When this transpired, there would be a change in the direction of the earth's magnetic field. The obvious question is, what would induce this liquid to move *with sufficient force* in the same direction?

The answer to this would obviously be of a highly speculative nature. However, here is one hypothesis. Although the *precise* nature of the liquid surrounding the iron core is fundamentally unknown, would it be unreasonable to state that a small percentage of it would be comprised of solid magmatic material? The basis for this precept is as follows. Solid magmatic material would constitute a more condensed form of heat/energy. If there were certain temperature gradients within the liquid, this material may melt if it stayed within one of the hotter gradients for a period of time. If this were the case, then this condensed energy would be released. With the release of this energy within the liquid the requisite forces may be in effect to induce the liquid to move in the same direction with sufficient force.

The final new aspect which this theory will address is the ice age epochs. Obviously, a prerequisite for the establishment of an ice age entails *prolonged* periods of cold. How can this theory develop a model by which prolonged cold periods would be established? On the second page of this paper, the footnote indicated that the nature of the internal structure of the iron core would be further delineated.

It was previously stated that the amount of free space within the iron core would be further constricted the further we moved away from the central portion. Although this postulate will not be "withdrawn", it will be further qualified. To explain ice ages, the

following will be hypothesized as it pertains to the internal space of the iron core. As previously stated, within the centre of the core is a substantial amount of free space *in relation* to the internal free space as we move towards the poles. As we move further away from the centre of the core, the amount of free space becomes so greatly reduced/constrained that there is nothing but an iron core which is (almost) completely solid. However, if ice ages are to be explained, there would be an incrementally tiny amount of free space that runs throughout the majority of the iron core (but not the core in its *entirety*) and "loops around" to form an elliptical shape within the core. If there were "special circumstances" (the precise nature of these special circumstances will be momentarily outlined) then the following will transpire. When the majority of the metallic liquid was at one of the poles, instead of flowing backwards towards the other pole, it would then begin to flow into this tiny amount of free space.. Because this particular space is so greatly constrained, the rate of flow would be minimal. The ramification of this would be that the tilt of the earth would remain at one position for an *extraordinarily* lengthy period of time. This would be in contrast to the situation during normal seasonal change. This would enable there to be the requisite level of low temperatures for an extended period of time to allow the occurrence of ice ages. The tilt of the earth (and the subsequent return of warmer temperatures) would only return when the metallic liquid had completed its flow through the ellipse towards the opposing pole.

The reader may feel that there is an obvious flaw in what was just presented. Even a child is cognizant of the fact that water will always flow to its lowest level. This same precept would be fully applicable to metallic liquid. If this theory were to be viewed as meritorious then we would not witness the regular change of seasons. The liquid metal would *always* flow into this incremental hole and we would either have regular ice ages. Consequently, this theory of what caused the ice ages cannot be correct.

The way to answer this anomaly is as follows. When the liquid flows into this tiny hole, the rate of flow is exceedingly slow. As the majority of the metallic liquid flows *away* from the opening to the hole, any heat that is present in this substance would also flow away from this area. Given the very slow rate of flow of the metallic liquid, whatever liquid may have been present towards the (general area of the) opening would have solidified. This would have, in essence, sealed the hole. If there was any possibility of the liquid were re-entering this hole in a future epoch, the following would constitute a realistic scenario. When dealing with the distribution of heat in a liquid, it is not *always* equal. There would be times when a certain portion of the liquid temporarily experiences a higher temperature than another. When this particular portion was "directed" against the tiny hole, it would have melted, at least a portion, of the solid material present there. The metallic liquid would have then "bore" a hole into this area and, eventually, allowed an ice age to be brought about.

Finally, there is one last question to be addressed. What would transpire if the metallic liquid flowed in the opposite direction from the South pole towards the North pole via this tiny hole? The obvious answer to this is that there would be periods which were the opposite of ice ages. Namely, geological epochs in which the vast majority of the earth was warm. This would not merely entail slightly higher than average temperatures, but periods where very high temperatures were maintained for extended periods of time.