Toppling the Timescale
Part IV: Assaying the Golden (FeS_2) Spikes

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Abstract

Stratigraphers today claim that chronostratigraphy and geochronology are one and the same, but this presents a problem; they have not found a reliable absolute chronometer for the rock record. To solve this dilemma, a new strategy has been proposed: define the timescale's stages by the arbitrary assignment of each time-stratigraphic boundary. Above the Proterozoic, the beginning and end of each stage is either currently or soon to be represented by a "Global Stratotype Section and Point"—type sections scattered around the world. Below the Phanerozoic, each boundary is defined by a slightly different "Global Standard Stratigraphic Age"—an equally arbitrary numerical standard against which field radiometric dates can be correlated. As a result, the structure of the timescale has now been finalized, not by empirical science, but by the fiat pronouncements of the International Commission on Stratigraphy. Thus, the "scientific" discipline of stratigraphy diverges yet again from empirical science. This bureaucratic solution is a diagnostic symptom of the timescale's erroneous core and a confirmation of decades of creationist critiques of uniformitarian history.

Introduction

Up to this point in this series, we have seen that the geologic timescale is inextricably linked to the worldview of naturalism (Reed, 2008a). Thus it functions as a trans-empirical template to cement uniformitarianism, deep time, and evolution into the rock record, building a bulwark of anti-Biblical history. The chief cornerstone of this fortress is the deceptively simple, yet powerful stratigraphic assumption that rock units reflect globally correlative synchronous time periods (Reed, 2008b). This assemblage of extra-scientific presuppositions is commonly masked by voluminous empirical studies. But when seen clearly, they are sufficient to show that the geological timescale is incompatible with Biblical Christianity.

Since truth is unified across theology, philosophy, history, and science, the theological and philosophical errors inherent in the timescale should be manifested in its science and history. This is, in case, what is seen: in particular, the methods used to define the ages associated with each stage of the timescale are deeply flawed, as is the logic with which they are applied (Reed, 2008c). Since both the chronostratigraphy (relative age) and geochronology (absolute age) of the timescale depend on "clocks" that do not keep time, the timescale itself cannot be calibrated or even logically

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defined. Evolutionary fossil sequences, radiometric dates, magnetic reversal signatures, and sedimentary properties thought to mirror astronomical cycles all fail to deliver objective calendars when examined closely. In an attempt to mask their individual flaws, they are often jumbled together as if their sum would be less flawed than the parts! That logic has never worked; milk that is half sour is not made palatable by adding more of the same from a different cow!

The anti-Christian underpinnings of the timescale reach back to its origin amidst nineteenth-century Enlightenment secularism. It has always been intended as a weapon against Biblical reliability. After all these years, its time-worn cloak of scientific respectability has grown increasingly threadbare as the model fails again and again.

Undaunted, stratigraphers still claim that the timescale is an observed phenomenon, and they point to parts of the rock record, like strata in the walls of the Grand Canyon, to prove their point. But under the glaring light of the axioms, this supposedly seamless transition from rocks to history looks less self-evident. Instead, growing knowledge shows that more and more rock units are better defined as products of catastrophic deposition. If so, either "deep" time is much shallower than currently believed or the rock record is the equivalent of a few random minutes on a calendar, and thus not very useful as a historical record. And if the rock record cannot provide a reliable history at a given location, how can the everyday global extrapolations made by stratigraphers be trusted? Despite the appearance of a well-established scientific "fact," the timescale faces two recurring problems: (1) a tenuous link to the empirical rock record, and (2) a persistent inability to present an accurate global record of history.

Because the vocal advocates of stratigraphy understand that the old reliable method of drawing time lines at the bedding planes of local-to-regional rock units is no longer feasible and since fossil zones have proven no better (Gradstein, 2004), they have selected a new method to maintain their grip on history. They have used their academic authority to force a definitive set of "golden spikes" to mark every age boundary in the timescale by establishing type locations. Because these "Global Stratotype Section and Point" (GSSP) markers are hammered into the rock record by the International Commission on Stratigraphy (ICS), they are assumed to be definitive, cementing a nonBiblical history into place. And in a logical sleight of hand, they imply that the global distribution of these individual points ensures the global reach of the timescale throughout history. Thus, instead of fossil zones, radiometric dates, or magnetic polarity chrons, it is really these GSSPs that prove a global timescale. Any lingering doubts are brushed aside by reminders that the work is sanctioned by the prestigious ICS, part of the International Union of Geological Scientists and the European counterpart of the North American Commission on Stratigraphic Nomenclature.

But do these new spikes really bind the rock record to an evolutionary and uniformitarian version of history, or are these new golden spikes really a "golden fleece" that cons the gullible public into yet another faulty scheme to define Earth's past in opposition to a growing confidence in the accuracy of the Biblical record? After we grasp the nature of these GSSPs, the latter possibility appears much more likely.

What are GSSPs?

Nineteenth-century stratigraphers believed that specific European rock units, as defined by lithology and/or fossil content (e.g., the "Cretaceous chalk"), defined time lines of Earth's history. Most people who are not professional stratigraphers still believe that to be the case. But stratigraphers have long recognized that these "stratotypes" are inexact at best and need replacing.

> This concept of a Global Stratotype Section and Point (GSSP) has replaced the earlier usage of "stage stratotypes," and has enabled compilation of an international stratigraphic chart." (Gradstein et al., 2004, p. 21.)

This new system identifies a single GSSP for each age boundary at a single locale, much like a roadside marker at an outcrop reading, "Base of Devonian." The goal is to have one definitive GSSP for each age boundary. Once all the boundaries are marked by these stone tablets, stratigraphers believe that the timescale will finally be the textbook of history they have long hoped for.

> Since the global chronostratigraphic scale is ultimately defined by a complete sequence of GSSPs, the limits of chronostratigraphic units (stages) are fully defined in time. (Gradstein et al., 2004, p. 41.)

Given their importance, these points are not chosen haphazardly. Each GSSP must meet two essential criteria: (1) it must be located within a geological section that shows continuous sedimentation, and (2) the boundary must be recognizable so it can be correlated around the world. While impressive at first glance, these criteria are much harder (if not impossible) to meet. As of 2004, only 18 of the 50 boundaries for the Cenozoic and Mesozoic had defined boundaries and only 28 of the 44 for the Paleozoic (Gradstein et al., 2004, p. 25). Thus, of the 94 boundaries in the Phanerozoic, only 46 of them were identified. Given the innumerable man-hours spent on field stratigraphy since the first geological congress in 1878 in Paris, it seems strange that so few type locations are available. But Gradstein et al. (2004) note that

> difficulties in identifying global correlation criteria, problems introduced by biogeographic provincialism, and the occasional need

> to abandon stage concepts based on historical regional usage have slowed assignment of GSSPs in some periods. (p. 24)

One wonders whether "insurmountable" belongs at the beginning of that sentence.

The geographic and stratigraphic locations of defined GSSPs are shown in Gradstein et al. (2004, pp. 28–40), and can be found on the ICS Web site. Most are based on biostratigraphic criteria such as first appearances or extinctions of some index organism. Some are based on geomagnetic polarity reversals, and a few on isotopic excursions thought to reflect astronomical cycles. Of course, most are directly or indirectly calibrated by radiometric methods. Although some creationists assert that the chronostratigraphic and geochronologic facets of the timescale are separable (e.g., Snelling et al., 1996; Tyler and Coffin, 2006) and thus useful for diluvial interpretation, this new stratigraphic tide is ebbing in the opposite direction.

> We consider that the practice of Chronostratigraphy today defines the time framework of Geochronology, because intervals of geological time are now being precisely defined within rock successions by GSSPs. The effect of this is that Chronostratigraphy and Geochronology should become one and the same discipline (Gradstein et al., 2004, p. 41).

The next logical step would be to proclaim that the rock record and the timescale are one and the same empirical phenomenon, followed by the conclusion that the empirical study of rocks "proves" uniformitarian history.

It is interesting that although GSSPs are proposed as a means to escape the inconsistencies and uncertainties of individual dating methods (cf., Reed, 2008c), stratigraphers cannot escape these techniques. In other words, it appears that GSSPs are camouflage; the faulty methods are still applied, but they are applied surreptitiously rather than out in the open.

Thus, GSSPs are really nothing more than the latest in a long line of schemes by stratigraphers to rescue their uniformitarian and evolutionary vision of the past from the repeated failures of their methodology. Their patience with the timescale is amazing in the face of the cold, hard reality of the rock record. Despite the demonstrated and admitted failures of biostratigraphy, radiometric dating, magnetic polarity ages, and sedimentary isotopic curves (correlated to astronomical cycles), stratigraphers will go to any lengths to preserve a vision of a history that excludes Creation, the Flood, and the God who brought them to pass. Rather than reconsider their model, they rescue their flawed methods by fiat proclamation. Unfortunately, this presents numerous and obvious problems to a so-called scientific worldview.

Problems with GSSPs

GSSPs do not solve any problems; they merely package all of the existing flaws in modern stratigraphy and then add more. First and most obvious is the oldest problem for the "empirical" study of prehistory—uncertainty rising from our as-yet-imperfect understanding of the rock record in all of its detail. A sparse record provides little certainty. And GSSPs add a new dimension to this problem. One wonders how a purely empirical mind-set could reconcile itself with the concept of GSSPs, since they are by definition a permanent and final delineation of a rock record that is not fully known and understood. A true empiricist would spurn such an effort, since he would expect today's spikes to require repositioning with tomorrow's research. Only someone who believed in an authoritative version of the past would dare to drive permanent spikes—and is it not that type of thinking that secular science claims to despise?

In addition to that methodological tension (Christians of course have no problem with authoritative history as delivered by God), the GSSP scheme falls short in several other important areas.

Precambrian Boundaries

An unscientific aspect of GSSPs is the *arbitrary* assignment of time zone boundaries. The most glaring example of this problem is the fiat pronouncement of golden spikes for the Precambrian. Though the timescale has been generally unchanged for many decades, geologists continue to struggle to assign exact historical dates to specific rock units. This becomes even more difficult in the case of detailed time periods for the Precambrian. The successive failure of various methods finally led them to simply impose age boundaries. GSSPs do essentially the same thing for the Phanerozoic, but a kaleidoscope of fossils, magnetic zones, and isotope excursions offer an attractive disguise. But the naked audacity with which the Precambrian is defined staggers the imagination. When the smoke has cleared, it is simply a case of "Thus saith the committee!"

The scope of this problem becomes clearer when we recall that uniformitarians hide most of their history in the basement. Nearly 90% of the supposed historical record is represented by that part of the earth's crust that is composed predominantly of igneous and metamorphic rocks. These are not layered in any stratigraphic sense (with rare exceptions), they contain no "index" fossils, and they are relatively poorly explored. Attempts to define the Precambrian stratigraphically have historically met with frustration.

> The "Precambrian" is not a formal stratigraphic term and simply refers to all rocks that formed prior to the beginning of the Cambrian Period. The task of establishing a rigorously defined and globally acceptable time scale for the Precambrian is an exceedingly difficult, and often

> frustrating, exercise. The reason for this is related to the fact that studying the Earth becomes increasingly difficult and uncertain the further one goes back in geological time (Robb et al., 2004, p. 129).

But difficult or not, the committee has found a solution. They simply define eons, eras, and periods; give them impressive sounding names; pick boundaries out of the proverbial hat; and assume that the imprimatur of the ICS will suffice: "By contrast, Precambrian stratigraphy is formally classified chronometrically…the base of each Precambrian eon, era, and period is *assigned* a numerical age" (Gradstein, 2004, p. 3, emphasis added). You have not misread this quote; as strange as it sounds that is exactly how the committee operates.

> Due to the fact that most Proterozoic and Archean rocks lack adequate fossils for correlation, a different type of boundary definition was applied for subdividing these eons into eras and periods… For these two eons, the assigned boundary, called a Global Standard Stratigraphic Age (GSSA), is a chronometric boundary [based on radiometric ages] and is not represented by a GSSP in rocks, *nor can it ever be*" (Gradstein et al., 2004, p. 26, emphasis and brackets added).

Once we wade through the terminology, this boils down to the committee defining the vast majority of the historical record in a fashion so blatantly dogmatic that the stereotypical medieval theologian would turn green with envy, if it were not such a deadly sin! Of course, the committee did show some consideration; they made their construct easier to remember by rounding off the boundary dates for convenience.

> By contrast, the Archean and Proterozoic time scales are currently defined chronometrically, with subdivisions into eras and periods being defined and allocated boundaries in terms of a round number of millions of years before present (Robb et al., 2004, p. 129).

Some of these flaws are obvious.

> This Precambrian time scale…has a few major problems. First, a purely chronometric definition…is not, and cannot be, located precisely in the stratigraphic record [i.e., empirically]…. Definition of boundaries in terms of arbitrary, round, absolute ages, although superficially appealing, is therefore naïve…. Second, boundaries within the Precambrian scale are defined by a completely different method to the Phanerozoic time scale, in which boundaries are based on GSSPs in stratigraphic sections…. Third, the formal or proposed subdivisions…of the current Precambrian time scale are either not being used or are used inconsistently…. Fourth, the present time scale is incomplete, leaving the lower boundary of the Archean undefined (Bleeker, 2004, pp. 141–142, brackets added).

But these do not begin to address the most serious failures of Precambrian GSSAs. The most immediate is practical. Under the ICS scheme, a geologist can only correlate his field area to the timescale by radiometric dating. Not only are there serious questions about the results of any given date (Vardiman et al., 2000; 2005; Woodmorappe, 1999), but the continued "improvements" in dating methods also render older dates—the vast majority of actual ones—ever more questionable. Furthermore, correlation by radiometric dating is impractical except for well-funded research programs. A geologist must spend thousands of dollars to obtain even one result, which even if correct would represent the age for only that individual piece of rock. The exigencies of budget force him to extrapolate his results more widely than may be justified. Third, most Precambrian rock bodies are not layered like sedimentary strata, so even the illusion of physical correlation along time lines is lost. For that reason, the fine divisions of the timescale are essentially meaningless in the field—true correlation would require a closely spaced grid of radiometric results.

Even if radiometric dating was correct, and correlation was possible, what criteria would define the historical eras for which these time boundaries have been established? The Mesozoic is the "age of dinosaurs;" perhaps the Proterozoic could be the "age of algae." But even where these fossils are preserved in rare Precambrian sediments, they offer no time differentiation.

> Surprisingly, perhaps, stromatolites are just as common in late Archean as in Proterozoic strata…. Cyanobacteria are particularly widespread in Proterozoic cherts and shales, but their record strongly suggests early diversification followed by the long persistence of little varying lineages. In consequence, cyanobacterial fossils tend to provide better indicators of environment than age (Robb et al., 2004, p. 136).

In their own terminology, stratigraphers are left with both chronostratigraphic and geochronological problems. And given that the chronostratigraphy of the Precambrian is defined by geochronologists, it is not even clear which set of problems should take precedence! But there is a problem of logic too. One cannot define an era without the dates, but one cannot look for beginning or ending dates without having some criteria to define the era. At least with fossiliferous sediments, there is a lithological or faunal appearance or extinction to mark a distinct historical period (granted the assumption that rocks represent globally correlative, synchronous time periods). With igneous and metamorphic rocks there is not even that—in the end there is only the naked authority of the committee.

If nearly 90% of the historical record can be subdivided by fiat and justified with a wave of the hand at radiometric

dates, then why bother with the fossils, magnetic polarity chrons, astronomical cycles, and so on for the remaining fraction? Why not just admit that the entire timescale is an arbitrary construct? Why not just have the ICS make pronouncements and save everyone else the expense of field investigation? Obviously, their solution does not appeal to everyone.

> Contrary to historical practice, however, and against the specific critique of many leading scholars in the field…the Subcommission on Precambrian Stratigraphy chose a purely numerical basis of absolute ages for subdividing over 4000 million years of geological history…. The ages assigned to the boundaries of Proterozoic periods are not uniformly distributed, but were theoretically chosen to delimit principal cycles of sedimentation and tectonics….The resulting time scale is "convenient" in terms of round numbers, but is divorced from key events in the stratigraphic record (Bleeker, 2004, p. 141).

But the problems of arbitrary age assignments are not restricted to the Precambrian. They are just more obvious than the "dating" of the Phanerozoic. That portion has its own problems; its GSSPs appear to be empirically based, but upon closer analysis they are just as arbitrary as the Precambrian GSSAs, though perhaps for different reasons.

The Authoritative (or Is It Authoritarian?) Committee

Though the rest of the timescale is not as blatant as the Precambrian, in the final analysis it is no less arbitrary. Cambrian and younger strata are predominantly sedimentary rocks with bedding boundaries. They contain fossils, measurable magnetic signatures, minerals that can be radiometrically dated, and chemical signatures that supposedly can be correlated to astronomical perturbations. However, the quantity of the data does not guarantee its inherent historical accuracy, especially given the failure of these methods to establish reliable chronologies (Reed, 2008c). It appears that they essentially provide nothing more than superior camouflage for the nonempirical imposition of an absolute timescale. Even the language used by the timescale guardians is bureaucratic, not scientific.

> Suitable GSSPs with full documentation are *proposed* by stratigraphic subcommissions or working groups under ICS; undergo *approval voting* through ICS and *ratification* by IUGS; and then are published (Gradstein et al., 2004, p. 24, emphasis added).

True empirical facts are reproducible and often self-evident. Sir Isaac Newton did not require committees to determine whether or not his principles of optics were valid. No working group is needed to assess whether water really does consists of hydrogen and oxygen; anyone can perform a variety of tests to verify the fact. Bureaucracies establish rules; scientists verify existing truth. So why do the "empirical" GSSPs require this bureaucratic boost? The approach seems to reflect more of the present European political and social climate than the sober application of the scientific method!

As noted above, these problems point back to those with the underlying presuppositions. Uniformitarians believe that their investigations into the past are science. Failing to see that natural history is (1) a subset of history rather than science, and (2) a mixed question (Reed, 2001), it is unsurprising when their attempts to force their task into the framework of science results in frustration. One difference between science and history is the level of confidence that can be placed in the outcome. Rather than accept that diminished certainty of historical investigation, uniformitarian stratigraphers continue to be bedeviled by empirical challenges, such as the missing parts of the rock record. They recognize on one hand that their sparse data present problems.

> However, the geologic record is discontinuous, and these stratotype-based chronostratigraphic units are an imperfect record of the continuum of geologic time…. How can one standardize such fragmentary and disparate materials as the stratigraphic record? (Gradstein et al., 2004, pp. 20, 21).

But rather than stop and consider the implications of this question, they pretend that a blue-ribbon panel of experts can provide the certainty of experimental science by driving a series of fully ratified golden spikes.

Sometimes creationists get caught in the same net. Desiring empirical relevance, they opt to cover their confusion with meaningless verbal distinctions, such as "operations science" versus "origins science." In doing so, they miss a golden opportunity to demonstrate the inconsistency of attempting to create a purely empirical history. The point of revelation and historical records is to illustrate that history is much larger than empiricism—a lesson the Biblical emphasis on historical accounts ought to have driven home. Forensic investigation within the domain of history may seem similar to "empirical" history, but the framework is quite different (Reed, 2001) and presents an apologetic line of attack that has not yet been fully exploited.

At root, one's view of history is driven by one's worldview. In a sense, creationists are content to acknowledge this and work to integrate forensic investigation with Biblical accounts. In their zeal to displace the Bible's authority in culture, Enlightenment thinkers proclaimed freedom from any authoritative system and so thought they had no worldview, as illustrated by the hard positivism of the nineteenth century. Early uniformitarians were caught up in this zeal and developed a timescale that reflected

that thinking (Mortenson, 2004; Reed et al., 2006). But worldviews are like birthdays—everybody has one. And the secular worldview has come full circle; after decades of effort, stratigraphers have discovered authoritarianism—but now it is that of the academic elite rather than the Christian elite. The supposed Enlightenment preference for science over dogma has (inevitably) lost out to a new dogma—that of naturalism. Its adherents, many modern scientists, prefer their worldview to the reality of scientific information. Their nineteenth-century façade of "science" has become virtually transparent, yet they still act as though it covers their naked commitment to naturalism.

This tendency to choose power over science is seen in the hostile takeover of chronostratigraphy by geochronology. The former at least maintained a connection to the empirical rock record in spite of its errors, but it seems now that even that tenuous hold on empirical reality is being discarded. Since the committee has now both defined the eras and the ages of their upper and lower boundaries, what they did overtly in the case of the Precambrian is being done surreptitiously for the Phanerozoic. The ages now *are* the column, not a tentative addition to stratigraphic divisions well established in the field by empirical properties of the rocks.

> The two concepts of geochronologic and chronostratigraphic scales are now united by formally establishing markers within continuous intervals of the stratigraphic record to define the beginnings both of each successive chronostratigraphic unit and of the associated geochronologic unit. This concept of a Global Stratotype Section and Point (GSSP) to define each stage has replaced the earlier use of "stage stratotypes"… In some respects, the concept of the beginning of each chronostratigraphic unit being bound by an isochronous surface defined at a GSSP has made the dual nomenclature unnecessary for the units of the geologic time scale (Gradstein et al., 2004, pp. 20–21).

Thus, GSSPs do not summarize current empirical knowledge; they dictate both local and global correlation. This illustrates the importance of the foundational assumption of globally synchronous correlative time (Reed, 2008b), which must be true for these golden spikes to define history.

> A GSSP is the precise definition of the base of a stratigraphic boundary in a rock sequence, but that boundary is defined only at one point on Earth. Assignment of the chronostratigraphic boundary within other stratigraphic sections requires correlation to the GSSP (Gradstein et al., 2004, p. 27).

Failing Basic Geometry

A true timescale would not only be empirically evident in the rock record, but it would be so worldwide. But in the new stratigraphy, there is a breakdown in both logic and in elementary geometry. GSSPs fail the "global test" because they are *points* in the three dimensional crust. Since the flow of time is the same at all points on the earth, the correlation of a particular time horizon throughout the rock record should approximate a sphere (Figure 1). Vagaries in deposition and preservation make the actual rocks too discontinuous to provide such obvious global time markers, and so geologists have spent decades finding ways to correlate as many points (from outcrops, wells, and seismic data) as possible to extrapolate or interpolate the spherical horizon that represents a time marker. One could even argue that the essence of stratigraphy is correlation. Gradstein et al. (2004, p. 23) got it right in theory:

> Without correlation, stratigraphic units and their constituent boundaries are not of much use, and devoid of meaning for Earth history.

But GSSPs are points, not spheres, and therefore they cannot define *global*

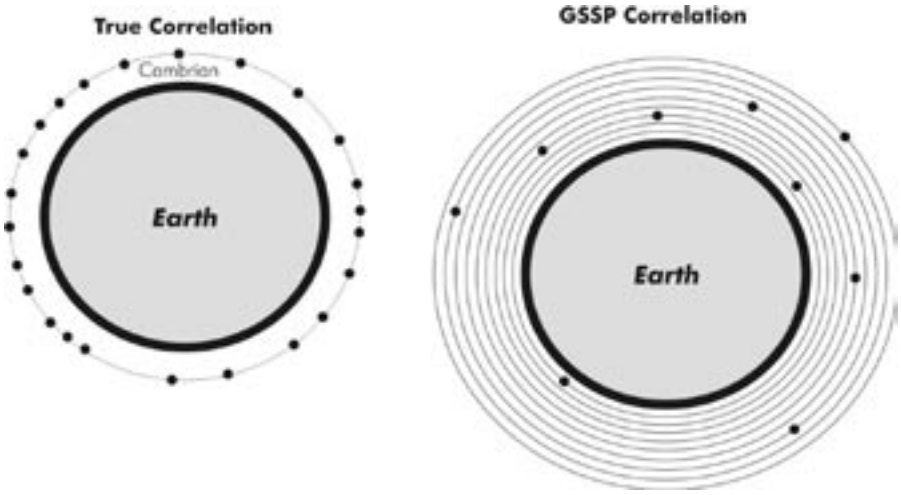

Figure 1. Correlation requires numerous points along one particular horizon as shown to left. Greater certainty requires denser spacing; commercial applications often require dozens of points within a few acres. The ICS proposes to radically redefine correlation. GSSPs correlate by reference to only one point per horizon. Note that the multiplicity of horizons leads to a multiplicity of scattered points along the spherical surface, creating the illusion that correlation coverage is adequate. Note also that this two-dimensional illustration drastically understates the true extent of the problem.

time markers. Strangely, this seems to have escaped the stratigraphers.

> Ideally these "key events" should be observable globally, but at a minimum should be significant in one well-preserved section (Bleeker, 2004, p. 142).

Not so! If something defines a *global* horizon, then it should be observable at regular points all over the world. Something that exists in only one "well-preserved" section can only be correlated to itself. It seems that stratigraphy has given up on global correlation by empirical means. The assumption of global synchronous correlative time (Reed, 2008b) is so ingrained that people no longer believe that correlation must be empirical.

> The approach adopted by GTS2004 places more emphasis on the relative stratigraphic position of the few samples for which precise age dates are available (Agterberg, 2004, p. 106).

How can we know that an outcrop on the other side of the planet is the same age—especially if the biostratigraphic, radiometric, magnetic, etc. criteria that position the spike are flawed (Reed, 2008c)? It all comes down to faith, which we were once led to believe is the antithesis of science.

And the public (including many geologists) is being misled. They think that age boundaries are determined by the evolutionary stage of fossils. Evidently not.

> Even so, the practice continued of treating strata divisions largely as biostratigraphic units, and even today it is an article of faith for many Earth scientists that divisions of the developing international stratigraphic scale are defined by the fossil content of the rocks. To follow this through, however, leads to difficulties: boundaries may change with new fossil discoveries; boundaries defined by particular fossils will tend to be diachronous; there will be disagreement as to which taxa shall be definitive (Gradstein et al., 2004, p. 21).

The ICS seems to have forgotten the very relevant observation of Gould (1987, pp. 157–158), who noted,

> A chronometer of history has one, and only one, rigid requirement—something must be found that changes in a recognizable and irreversible way through time, so that each historical moment bears a distinctive signature…. But life is complex enough to change through a series of unrepeated states. Today we attribute this irreversible sequence to the workings of evolution.

Absent this chronometer, there is nothing with which to tell time. For decades, stratigraphers have pinned their hopes on evolution. If that is not adequate, then one of their most powerful arguments against creation science and diluvial geology has been washed away. Apparently not seeing that danger, they have decided, like Alexander, to simply sever the empirical Gordian knot by brute force.

> The traditional stratigraphic scale using stage stratotypes has evolved into a standard chronostratigraphic scale in which the basal boundary of each stage is standardized at a point in a single reference section within an interval exhibiting continuous sedimentation… The global chronostratigraphic scale is ultimately defined by a sequence of GSSPs (Gradstein et al., 2004, p. 23).

Note, too, the logical sleight of hand in the GSSP strategy. Individual points are located all over the world. Therefore, the timescale is "global"—give or take a dimension or two! Less than a hundred points scattered around the earth would be considered woefully inadequate to correlate just one time horizon. How, then, can they define the same number of different time horizons?

Put That Spike Here…No, Here… No, Here…No, Here…

As if these problems were not enough, the committee is faced with the insurmountable task of placing its golden spikes. It seems strange that if natural markers within the rock record were not evident for global correlation to begin with, stratigraphers could confidently place each spike. And if the markers were so evident, why would there be any need for the spikes?

Soldiering on through these difficulties, the committee set two key criteria for placement of each spike. The first is that the chosen outcrop be a section showing continuous sedimentation.

> The requirement for continuous sedimentation across the GSSP level and the bracketing correlation markers is to avoid assigning a boundary to a known "gap" in the geologic record. This requirement has generally eliminated most historical stratotypes for stages, which were commonly delimited by flooding or exposure surfaces and formally represent synthems (Gradstein et al., 2004, p. 23).

As an aside, note once again how the previously assigned stratotypes (on which the timescale has won such wide acceptance) were inadequate due to missing section. There is no explanation of how GSSPs overcome this inherent weakness in the rock record. Furthermore, GSSPs face at least three other problems.

(1) How continuous does the section have to be, and for how long? In other words, is 2 mm of "continuous" sedimentation on either side of the spike boundary sufficient; or is it 2 cm or 2 m? A thin section can be correlated more precisely but is less likely to extend any great distance. Given that the correlation is to be extended around the world, where does the committee draw the line?

(2) How can a stratigrapher be assured that sedimentation was "continuous" if there are such things as "paraconformities"? If a paraconformity is defined as missing section visible only by biostratigraphic correlation, then clearly they are nearly impossible to detect in the field. If sedimentologists have been fooled by known paraconformities, how are we to know whether or not they have really found a continuous section for each GSSP? But then again, how are paraconformities defined at all if the old biostratigraphic methods are no longer definitive?

(3) Furthermore, just what does "continuous" mean? Does it mean sedimentation that is truly uninterrupted? Or maybe that some sediment is deposited every year…every century…every millennium? Given that more and more of the rock record seems to be composed of units that were deposited almost instantaneously, with long periods of non-deposition in between, how can the outdated Lyellian concept of slow, continual sedimentation really be met in practice? Even if theoretically possible, how would we ever really know that it was true historically?

Finally, what happens if subsequent investigations show that the original criteria were not correct? Gradstein et al. (2004) have the perfect answer—ignore the problem!

> However, once the golden spike has been agreed, the discovery, say, of *Monograptus uniformis* [the index fossil marker] below the GSSP does not require a re-definition of its position, but simply an acknowledgement that the initial level chosen was not in fact at the lowest occurrence of the particular graptolite. For that reason, multiple secondary correlation markers, including non-biostratigraphic methods, are desirable within each GSSP section (p. 23. Brackets added.).

Evidently, when the committee speaks with regard to golden spikes, it speaks "ex cathedra."

The second criterion is that the ideal GSSP section would show characteristics that can be correlated globally. However, once again, if global correlation is evident in the field, then why bother with golden spikes? And if not, how is it possible to establish golden spikes? If traditional biostratigraphy has failed and we need new committee-defined stratotypes, why are most of the golden spikes established by biostratigraphic criteria?

Another difficulty—that of finding sufficient correlative criteria—is factored into the definition but seems a much greater obstacle in nature.

> The ideal GSSP would be in a low-latitude highly fossiliferous marine section (for global biostratigraphic correlation) that contains cyclic sediments or interbedded volcanic ash or lava beds (for isotopic dating or measurement of durations), unambiguous magnetic polarity changes (for high-precision global correlation), and one or more geochemical signatures (to provide additional high-precision global correlation markers (Gradstein et al., 2004, p. 27).

But if the defined type locale includes a specific set of environmental parameters, how can all the correlative points around the globe that were not deposited in that particular environment be correctly correlated to the GSSP? This logical breakdown, significant in the uniformitarian paradigm, would be much more so given the reality of the Flood. Even uniformitarians see the problems.

> Surprisingly, perhaps, GSSPs located in sections that have an abundant fauna may also introduce unknown correlation errors, particularly if they are in shallow-water shelf environments likely to give rise to an hiatus… (Gradstein et al., 2004, p. 27).

And this is not the only barrier to driving spikes.

> However, some GSSPs…are tightly folded and may no longer retain magnetostratigraphic, geochemical, or other secondary markers for global correlation (Gradstein et al., 2004, p. 27).

No wonder it is taking so long to establish a full suite of GSSPs!

Finding the right site for a spike is even harder when we add the requirement that the "perfect" type locale be easily correlated elsewhere.

> The ideal GSSP is at a horizon amenable to radiometric and/or astronomical cycle calibration or is bracketed by dateable horizons. This coincidence has been achieved for only a few GSSP placements…. If such a horizon is absent, it is essential to be able to correlate to dateable horizons elsewhere using precise global correlation markers (Gradstein et al., 2004, p. 27).

Once again, if these "precise global correlation markers" are so obvious, why bother with GSSPs?

When one begins to tally all of these difficulties, it becomes clear that there probably is no such thing as an "ideal" location. Those with many correlative criteria are restricted to a few specialized environments.

In short, GSSPs appear to be nothing more than another layer of confusion designed to obscure significant problems in uniformitarian historiography. If the time were self-evident in the rock record, none of this effort would be needed. If the time is not evident, then the central thesis of this series has been sustained: the timescale is not the empirical culmination of two centuries of hard science; it is instead a template sinking under

the weight of its faulty assumptions. Creationists should readily understand that the powerful, absolute timescale is nothing more than a house of cards, with its GSSPs often strongly influenced by the favorite field areas of influential members of the subcommittees. Thus the title of this paper; analysis of the new timescale spikes reveals they are iron sulfide (FeS_2)—fool's gold.

Conclusion

The geologic timescale is presented in schools, from elementary to university, as an empirical construct with all the veracity of the Julian calendar. Yet this rock-solid edifice is in the process of getting a radical face-lift, exposing in the process many weaknesses previously suspected, but seldom admitted. For years, creationists have noted that the stratigraphic assumptions hidden behind the façade of temporal elegance were biased, that its methods were flawed, and that its reasoning was invalid. Yet how many times did evolutionists tell Dr. Morris, Dr. Gish, or other creationist debaters that biostratigraphic correlation or radiometric dating had clearly established the timescale and that the resulting construct "proved" the superiority of evolutionary history and uniformitarian geology?

Now it seems that the creationists were right all along—validated by no less than the International Commission on Stratigraphy. GSSPs and GSSAs further expose these weaknesses, further separate stratigraphy from science, and impose historical reality by bureaucratic fiat. Given the antipathy of their Enlightenment forefathers for authoritarianism, it is fascinating to see an exemplar of elevated European civilization humbled by the wisdom of the Okefenokee Swamp: "We have met the enemy… and he is us!"

The times, they are a'changing!

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