Catastrophic Plate Tectonics and Plate Tectonics—a comparison of two theories

Mark McGuire

Since the advent of *The Genesis Flood* by John Whitcomb and Henry Morris, young-earth creationists have interpreted much of geology through two events, the Creation Week and the Flood of Noah. This is based on the revelation of Scripture. Abundant evidence can be found to support a global Flood as described not only in Genesis chapters 6–9 but also in other biblical references. Several Flood-based models have been proposed. Catastrophic Plate Tectonics is the most prominent today building on the widely accepted Plate Tectonics model in uniformitarian geology. However, Plate Tectonics has some unsolved problems, some of which are significant for Catastrophic Plate Tectonics. Although Catastrophic Plate Tectonics can explain some things better than its uniformitarian counterpart, shortening the timeframe causes other problems. Also, there are subtle differences between the two which can cause confusion when comparing the models. In 1 Thessalonians Christians are instructed to examine ideas carefully. This paper applies this sound advice to both tectonic theories.

Catastrophic Plate Tectonics

Catastrophic Plate Tectonics (CPT) has been developed in recent years to incorporate plate tectonics within a young-earth framework and the Flood year. John Baumgardner is the foremost authority on this subject[1–7] and, in collaboration with many others, has defined a possible solution for the initial cause of the plate movements. The main evidence provided for CPT is runaway subduction, sea floor spreading, and magnetic reversals, which is similar to the uniformitarian plate tectonics (UPT) paradigm, except on a dramatically accelerated timescale. Below is a brief overview of CPT:

> "Geophysically, we begin with a pre-Flood earth differentiated into core, mantle and crust, with the crust horizontally differentiated into sialic craton and mafic ocean floor. The Flood was initiated as slabs of oceanic floor broke loose and subducted along thousands of kilometers of pre-Flood continental margins. Deformation of the mantle by these slabs raised the temperature and lowered the viscosity of the mantle in the vicinity of the slabs. A resulting thermal runaway of the slabs through the mantle led to metres per second mantle convection. Cool oceanic crust which descended to the core/mantle boundary induced rapid reversals of the earth's magnetic field. Large plumes originating near the core/mantle boundary expressed themselves at the surface as fissure eruptions and flood basalts. Flow induced in the mantle also produced rapid extension along linear belts throughout the sea floor and rapid horizontal displacement of continents. Upwelling magma jettisoned steam into the atmosphere causing intense global rain. Rapid emplacement of isostatically lighter mantle material raised the level of the ocean floor displacing ocean water onto the continents. When virtually all the pre-Flood oceanic floor had been replaced with new, less-dense, less-subductable, oceanic crust, catastrophic plate motion stopped. Subsequent cooling increased the density of the new ocean floor, producing deeper ocean basins and a reservoir for post-Flood oceans."[8]

Furthermore, the CPT model, as with the UPT model, uses the timings of the geologic column for determining the sequence of geologic events. It is not the intent of this paper to examine the fossil record/geologic column except to note how it relates to the diluvialist position. Snelling, one of the leading advocates for CPT, states that the geologic column is a physical reality and the "Law of Faunal Succession" applies, at least from the Cambrian to the present.[9] However, this has been questioned by others including Woodmorappe, Reed, Klevberg, Froede, and Matthews.[10–12]

Do unsolved problems in UPT go away in the CPT model?

I have previously discussed how UPT has many ongoing issues that still need to be addressed, and that these also impinge on the CPT model.[13] For example, how many plates are there? There are over 70 documented plates and sub-plates. Baumgardner used approximately 11 plates in his computer model but what about the other 60 plus plates? How would the addition of these extra plates affect the model? Did these other plates form before, during, or after the Flood? Part of the problem is that plate boundaries are not always well defined. The Alpine system, as defined

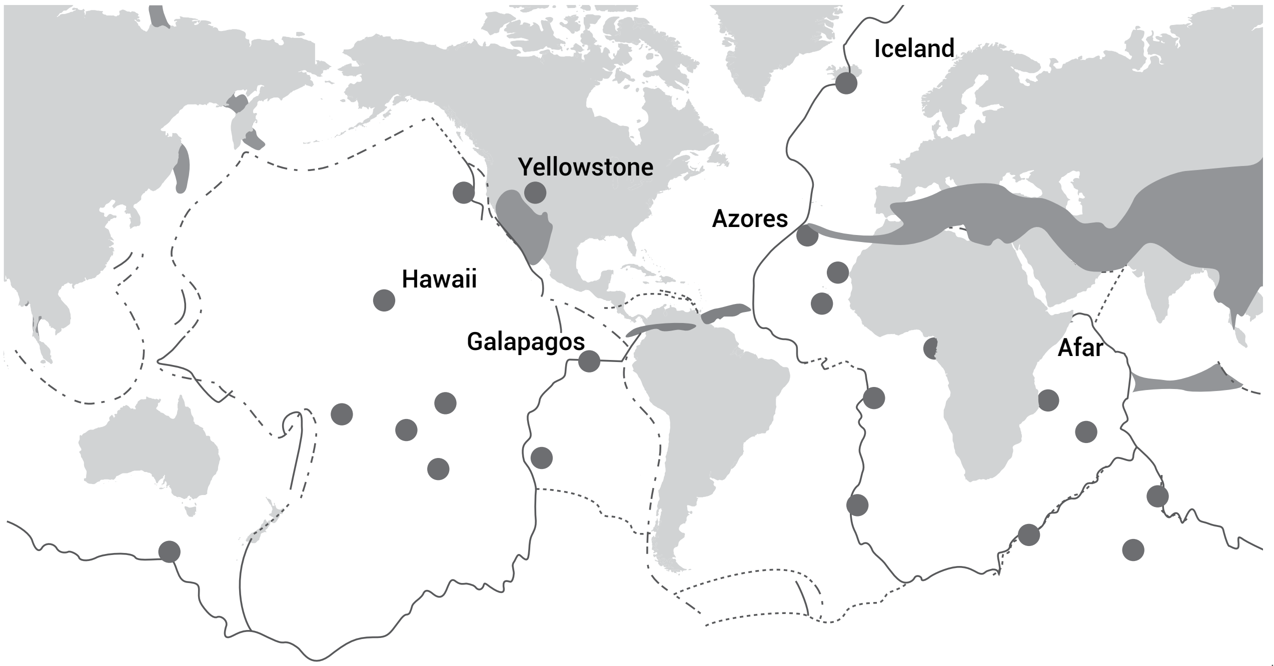

Figure 1. Plate boundary zones—shaded areas are broad belts in which deformation is diffuse and boundaries are not well defined

by Strahler, is very complex geologically and many sub-plates (as many as twelve) are added to fit the data.[14] There is a broad zone running from Europe all the way to China where boundaries are not clearly defined (figure 1). These are mountainous regions that do not fit the standard UPT proposal of colliding plates.[15] Does CPT clarify this and offer a better solution?

Also, folding (bending) of rocks at subduction zones produces high stresses, and different models have been proposed, based both on elastic and plastic behaviour, to reduce the stresses.[16] Evidence exists that normal faulting has occurred in the Japan Trench.[17] If normal faulting has occurred how would this change the model?

Moreover, how does CPT explain the Tibetan Plateau? Its great height is generally considered to be caused by a thickened continental crust. In the UPT model, there are at least three hypotheses for this, with one being delamination of the Eurasian Plate so the crust goes over the Indian Plate and the mantle goes under it.[18] There seems to be no clear answer to the problem. If it is uncertain in the UPT model, then has it been solved in the CPT model?

Furthermore, there are inconsistencies in plate movements which do not correspond with expected motions and could be interpreted as local or regional displacements. The San Andreas Fault has widely varying movements, which questions the postulate that plates are rigid, which is essential for plate tectonics to work.[19] Does CPT resolve this issue? What happens if plates are not rigid?

Lastly, in UPT paleomagnetic stripes on the ocean floor are depicted as magnetic reversals, whereas they are more appropriately described as magnetic anomalies or variation in intensity. These variations are usually depicted in uniform zebra stripe patterns (figure 2) but this is not an accurate representation.[20] The Great Magnetic Bight in the northern Pacific and the Phoenix lineations in the southern Pacific exhibit magnetic striping patterns which do not fit the proposed movement of existing

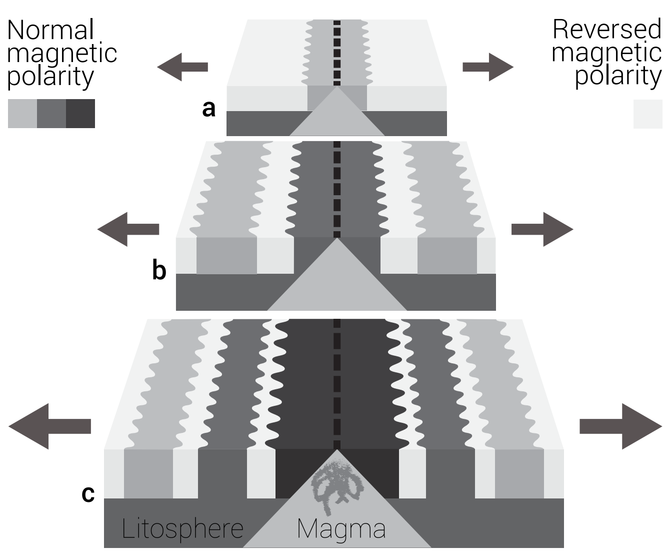

Figure 2. Idealized pattern of magnetic striping

plates, so additional plates, the Kula Plate and the Phoenix Plate, were added to explain the data. However, these plates have since disappeared.[21] Does the data support this or were these plates *ad hoc* additions to make the model work? Does CPT require the addition of these unobserved plates or does it offer a different solution?

These are just some of the problems in the UPT model which have not been resolved. The question is whether these problems disappear in the CPT model with its shortened timescale. For this paper, if something has not been specifically addressed by CPT advocates, then I have used the same explanations for CPT as used in UPT, except on a greatly accelerated timescale.

Problems caused by a shortened timescale

Amount of slab subducted

According to UPT, the supercontinent Pangea broke into separate continents about 200 Ma ago. However, the model assumes that continents have been moving over the earth for billions of years with repeated collisions and breakups, a process that has been called the Wilson Cycle.[22] Paleomagnetic data and the geologic column are used to locate the position of the continents prior to the last great supercontinent of Pangea. Plots of apparent polar wandering (APW) show that Africa was located over the South Pole at one time.[23] Also, Europe and North America took a circuitous path before eventually meeting around 200 Ma ago before the final breakup of Pangea.[24] The question then for Flood geologists is—was Pangea the original earth formed on Day 3 of Creation Week? If so, then how does CPT explain APW paths of the continents? If not, how did all the continents move around within 1,656 years between creation and the Flood, or did this happen as part of the Flood?

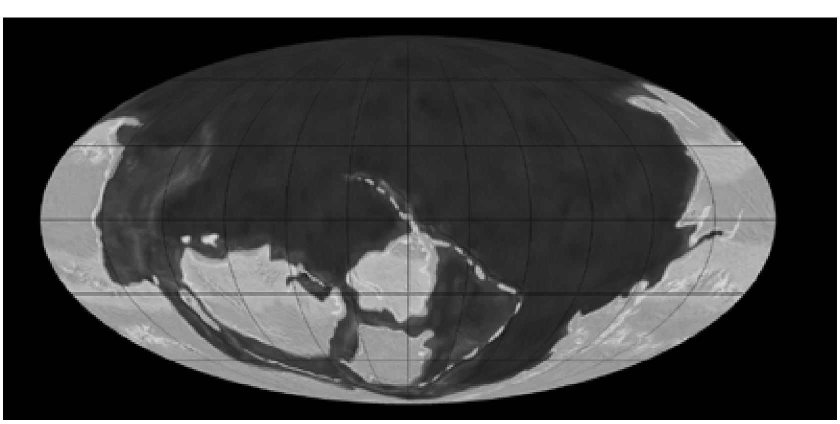

Figure 3. Map of the Cambrian continents at 540 Ma according to the uniformitarian timescale—from www.jan.ucc.nau.edu/rcb7/540moll.jpg. Note this is slightly different from the GTS 2012 map

Baumgardner briefly addresses this problem and states that CPT "emphatically" includes the Paleozoic and the Wilson Cycles. He estimated that it took about two weeks for the opening and closing of the Iapetus Ocean between North America and Europe.[25] There is no mention whether all other movement from the Cambrian (or earlier) in other parts of the world took place during this time. If CPT follows UPT then this is the case, and in the Cambrian approximately 85% of the earth's landmass was located in the southern hemisphere (figure 3).[26]

From that point until the assembly of Pangea in the Jurassic it is estimated that at least 60% of the earth's crust[27] was subducted in order for this movement to take place. Then from Pangea until the present all the oceanic crust was subducted, which was approximately 70% of the earth's crust. According to most uniformitarian geologists the oceanic lithosphere is eventually assimilated back into the mantle at a depth of about 660 km.[28] However, in the CPT model it is proposed that the slab descends to the core–mantle boundary and is deposited as a slab graveyard.[29]

Apparently, there is evidence from seismic images that indicates there are huge slab graveyards at the core–mantle boundary under subduction zones.[30] How big are these slab graveyards? According to CPT the slab goes through the mantle and hits the mantle–outer core boundary. The slab is still considered cold here and not yet 'melted'.[31]

One important issue with this scenario concerns the volume of the subducted plate. The surface area of the earth is about 514,775,000 km^2. Approximately 669,000,000 km^2 must be subducted in 40–150 days. That is enough crust to go around the earth's core four times![32] To put this in perspective, most of the subduction zones are in the Pacific Ocean and the ring of fire is approximately 40,000 km long.[33] The area of the Pacific is 166,242,000 km.[34] On average 4,160 km^2 of crust was subducted. The mantle is only 2,900 km thick. What happens when the crust reaches the core (figure 4)?[35] Does subduction stop or does the slab continue to accumulate in these 'graveyards'? What happened to the other 500,000,000 km^2 of slab? Where are all the other subduction zones or did they all disappear as postulated for the unobserved Kula and Phoenix Plates?

The problem only increases if the Ediacaran and other periods are included into the CPT model. Uniformitarians have spent a great deal of time and effort identifying where the plates were prior to Pangea. Do CPT advocates agree with their maps?[36] If not, where do they diverge?

We do not know the initial conditions of Day 3 of creation nor the pre-Flood earth, so where is the break point between CPT and UPT—the Ediacaran? The Cryogenian? CPT computer modelling depends heavily on initial conditions and at this time only starts with Pangea. Does that mean that anything prior to that is only speculation and conjecture? If the computer model depends on initial conditions and we do not know what those initial conditions were, then CPT is not a complete Flood model and further work is needed, including the exploration of alternatives.

Amount of sediment

It seems as though the amount of sediment deposited early in the Flood is a problem for CPT. Snelling puts the pre-Flood/Flood boundary at between 740–700 Ma according to the uniformitarian timeframe.[37] The amount of sediment in the Appalachians is thousands of metres thick, 8,000 m in places,[38] and could have been as much as 18,000 m thick.[39] In the UPT model, this sediment was deposited *prior* to the break up of Pangea. The corresponding mountains and folds reflect the Wilson Cycle in which the Atlantic Ocean was open, then closed, then opened up again. The formation of the Appalachians in the CPT model is summed up as follows:

> "Subsequent collisions of continental fragments at subduction zones are the likely mechanism for the formation of mountain fold-and-thrust belts, such as the Appalachians, Himalayas, and the European Alps. The rapid deformation, burial, and subsequent erosion of early-formed mountain belts within the year of the Flood, at this orders [*sic*] of magnitude [*sic*] acceleration of geologic processes, would seem to provide the only adequate explanation for the existence of high-pressure, low-temperature minerals in the rocks in the cores of these deeply eroded mountain belts."[40]

The mechanisms for the formation of mountains and fold belts may be easier explained in the CPT model, but their timing is not. Apparently, this vast amount of sedimentation needed to occur within the first few days of the Flood with the first cycle of the Wilson Cycle occurring in the first two weeks. The dramatic movement of the North American continent at metres per second, first one way then another, would seem to be erosive in nature and not depositional. It is generally assumed that the sediment in the Appalachians came from the east[41] but it is not clear in the CPT model which direction the water was flowing at this time. It is possible that this area had not even been covered by water as it took at least 40 days and possibly 150 days before the entire globe was inundated. That such extreme geophysical activity occurred during the Flood is a given, but scenarios that are not explicitly described in Scripture need to be examined.

Sea floor spreading and the Mid-Atlantic Ridge

Would following the UPT model (except of course the timeframe) cause a problem at the Mid-Atlantic ridge (MAR) and in the Atlantic Ocean? On the average the Atlantic is 4,270 m deep[42] and the mid-Atlantic Ridge is approximately 10,000 km long.[43] In the UPT model the spreading rate is about 2.5 cm/year[44] so the ocean basin fill and flow rates would be imperceptible.

However, this is not the case for CPT because the Atlantic is opening up at m/sec and moves 6,400 km in some places within 40 to 150 days. As a result, a great amount of water is needed to fill the ocean. At the initial break up of Pangea, at what depth is the newly formed oceanic crust? Was it at the current ocean floor or was it at or above sea level (figure 5)? According to the CPT/UPT model, North America moves first. Presumably, the initial water would

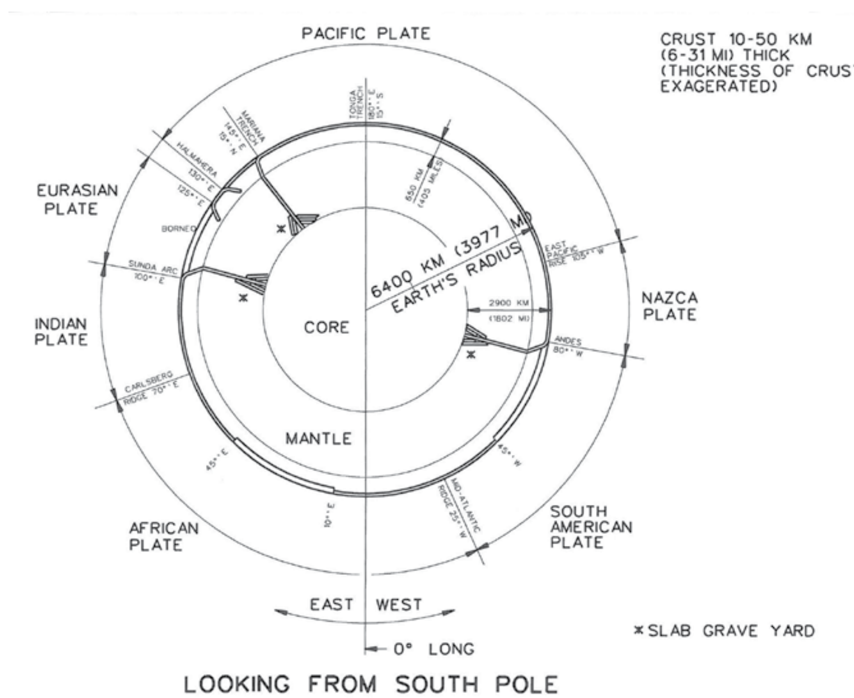

Figure 4. Plate subduction. Subducted slab passes through the mantle to the core–mantle boundary.

come from the Tethys Sea draining into it from the east through the Gibraltar Straight and over southern Europe, and then by water from the west from the Pacific Ocean flowing over Central and North America. South America then moved next with the water coming from the newly formed Atlantic to the north and from the Pacific Ocean around Cape Horn or the Cape of Good Hope.[45] Later, water would come from the west over South America. This would be as a result of the raising of the oceanic crust and subsidence of continental crust next to subduction zones in the Pacific. Further, that same model also showed that the oceanic crust in the Atlantic would rise and portions of the mid-Atlantic Ridge would be above sea level.[46] Note that present-day sea level is being used as a reference as water during the Flood would be above current sea level.

One thing to consider is how 4–7 km of oceanic crust in an ocean basin with little or no water could cool fast enough to be pulled at a rate of metres per second without splitting apart. Without sufficient cooling we would expect it would still be in a fluid (magmatic) state. One mechanism[47] that has been put forward to allow new oceanic crust to cool rapidly suggests that steam jets, based on a column of water 1 km deep, with a velocity of 14 km/sec,[48] could cool a 30-km rock column by 1,000 K.[25] In other words it would cool very quickly. The question is where did this 1-km column of water come from? How long does it take for water from the Tethys Ocean to get to the MAR, especially given the condition that the ridge is moving eastward away from it at m/sec?[49] If there was a 1-km column (or less) of water in the newly formed basin, how would it change crustal cooling?

Magnetic anomalies and magnetic reversals

In the UPT model it is universally accepted that magnetic reversals have taken place in the past. However, this is by no means certain because anomalies in rocks could be caused by any number of processes, including physical and chemical processes, which occurred at a large scale during the Flood.[50] The possibility of reversals can be accommodated in the Whitcomb–Morris (WM) model[51] if they indeed happened but they are not necessary in that model.

If reversals did happen in the past, then one possible mechanism for them is convection currents in the earth's core.

> "Irving (1966) has also suggested that the magnetic field would reverse frequently during times of active convection and tectonism (e.g. in the late Cenozoic)."[52]

Humphreys has proposed a model for magnetic field reversals based on heat differential and corresponding convection flows that occurred during the Flood.[53] In the CPT model this mechanism would be caused by subducting slabs hitting the core.[54]

According to UPT, the evidence of magnetic anomalies is there at the very start of sea floor spreading, which would correspond with Day 1 of the Flood. If that is the case, then this may be an argument that the reversals were not caused by subducting slabs but by the tremendous amount of tectonism which caused the convection currents at the onset of the Flood, as suggested above. That a great cataclysm happened during the Flood is a basic assumption for both the CPT and WM models. How the temperatures in the earth's mantle varied during the Flood is a matter of speculation. The breaking up of the great deeps could have the same effect on the earth's mantle as subducting slabs and such a model could be applied to it as well.

Furthermore, how fast did the new ocean crust cool below the Curie temperature in order for it to be magnetized? In the CPT Flood

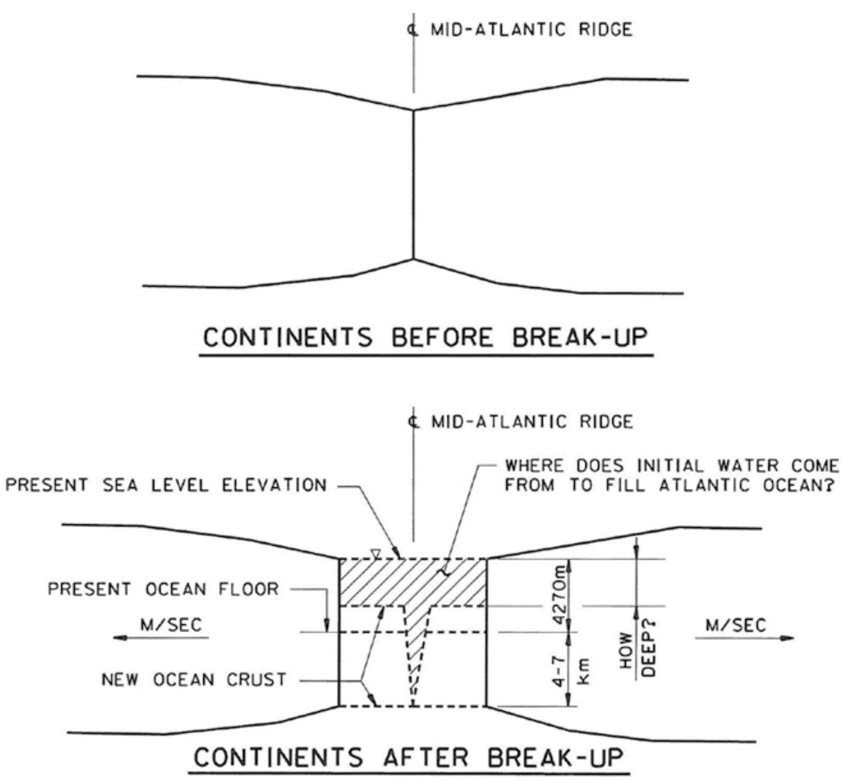

Figure 5. Mid-Atlantic Ridge as the supercontinent Pangea broke apart. Where did the initial water come from to fill the Atlantic Ocean?

model the oceanic crust was placed within 150 days. Although crustal cooling could be rapid, is it possible that the new ocean crust had not cooled enough to be magnetized before the reversals finished? If it cooled instantly, then what effect does the magnetic field have on the rock, as the grains would be 'frozen' in whatever orientation they happened to be in and magnetism would have little or no effect on the rock?

To sum up, magnetic reversals and magnetic anomalies are used as major evidence for plate tectonics and sea-floor spreading but they involve a great deal of speculation. Magnetic anomaly patterns are far from the idealized sketches that are often shown in text books and could be explained without the interpretation of sea-floor spreading or magnetic reversals. But if magnetic reversals did occur they certainly can be accommodated in either the CPT or WM models.

Differences between CPT and UPT

Mechanisms used to move slabs

Superficially, CPT is very similar to UPT but there are some subtle but important differences between the two. One difference concerns the forces required to move the plates horizontally. UPT appeals to a number of forces with 'slab pull' and 'ridge push' being the two dominant ones. At one time convection currents in the earth's mantle were thought to be a major force in the movement of plates.[55] The question arose as to whether the slab drags the mantle, or whether the mantle drags the overlying slab. This idea was seriously questioned in the 1970s by Soviet geophysicist E. Artyushkov. He argued that the viscosity between the lithosphere and the asthenosphere was significantly reduced and the force of a convection current was much too weak to be significant.[56] Eventually, the convection current dragging the lithosphere idea was abandoned so that the two dominant forces are slab pull near subduction zones and ridge push at plate spreading.[57] In CPT, the major driving forces are also slab pull and ridge push,[58] although mantle flow plays a major role, too.

Runaway subduction

Some of the problems of UPT can be better explained through CPT, and one of these is the mechanism for plate movements, which is provided by runaway subduction. Runaway subduction is explained as follows:

> "The combination of a gravitational body force acting on a cold slab of ocean lithosphere that possesses potential energy to release as it sinks within a lower density medium that weakens as the stress level increases provides the essential elements needed for an episode of runaway sinking. If the initial conditions allow the slab to begin sinking at a rate sufficient to heat the material immediately surrounding the slab at a rate that exceeds the rate of heat loss by thermal diffusion, this surrounding zone weakens, allowing the slab velocity to increase further, ultimately resulting in sinking rates many orders of magnitude higher than the normal strength of the rock would allow."[59]

That a cold, dense slab can sink is not disputed, and even that the rate can be increased many times, but could this not be applied to other possible Flood models, such as the WM vertical tectonics? Runaway subduction is based on gravity, heat flow, and the properties of the rock.[2] Gravity, the main driving force to begin runaway subduction, acts in a radial (vertical) direction towards the centre of the earth. Horizontal movement comes from the plate being pulled sideways by the runaway subduction.[60] In order for plates to be pulled along in this manner it means that they are in tension.

> "A second major geological constraint concerns the large lateral displacements of the cratonic blocks that also occurred during the Flood. From a stress distribution standpoint this requirement of translating continental blocks by thousands of kilometers in a short period of time severely constrains candidate mechanisms because it involves the solid-state deformation of the rock in the mantle below. That craton interiors display so little Phanerozoic deformation despite the fact the cratons traversed such vast distances so rapidly means that stress levels within the cratons never approached the fracture or yield limits and that the forces responsible for moving these huge bodies of rock were diffuse and relatively uniform over the area of the block. Mechanisms that move the plates by applying forces at their edges cannot produce the general absence of deformation in the craton interiors. The only conceivable mechanisms able to move plates so far and so rapidly with hardly any internal deformation are those that involve large scale flow in the earth's mantle and that apply relatively mild and uniform tractions on the base of the plates. This constraint as well as the previous one both point to catastrophic overturning of the mantle driven by gravitational potential energy in large volumes of cold rock at the earth's surface and/or in the upper mantle and assisted by a runaway instability resulting from a temperature and stress dependent deformation law for silicate rock."[61]

This brings up two points. First, that plates are in tension is a problem for both UPT and CPT. Rocks are weak in tension, and slabs being pulled along would be under a great deal of tension. There is also a high tensional stress on the top of the plates produced when the plates bend at sharp angles at the subduction zones and this would add to the tensional stress. If the stress exceeds the rock strength the rock will break. There is evidence that normal faulting has occurred in the Japan Trench.[16] Would subduction stop when such faulting occurs? UPT has the benefit of long ages so that the tension would be applied slowly and ridge push would help reduce the stress. However, CPT does not have that luxury as the plates are moving at metres per second. As noted above, the huge force required to move the plates cannot be applied at its edges as it would cause crushing on the compression side and cracking and pulling apart at the tension side. The only way it could be done is if there is large-scale mantle flow. Baumgardner, in his computer models, shows a mantle flow moving at metres per second.[31] Apparently, mantle flow is doing most of the work of dragging the slab. It is obvious that CPT advocates have these two mechanisms—runaway subduction and mantle flow—acting simultaneously. This is in sharp contrast to UPT and must be kept in mind when examining and comparing the models.

Second, it was assumed that the only way that cratons could have such little deformation is through large-scale flow in the mantle and low traction force. But there is another possibility for why such little deformation occurred in the cratons and that is that there was little or no horizontal movement at all.

Spreading ridge movement

Concerning the westward movement (assuming Africa is fixed) of the American Plate(s), it is not exactly obvious how this happened. UPT advocates propose that the plate moved toward the subduction zone. CPT advocates use a similar explanation. This 'enigma' was debated several years ago by Froede and Baumgardner. Froede pointed out that the UPT model usually shows a spreading ridge on one side of a plate with a corresponding subduction zone on the other.[62] Obviously, this is not the case with the African plate. One of the solutions to this problem is an asymmetrical movement of the mid-Atlantic ridge. That is, the ridge is not stationary but mobile, and moves at such a rate that produces symmetrical magnetic striping patterns as well as moving westward away from Africa.[63] Baumgardner's response was similar except that he referred to his computer model, which showed that the mid-Atlantic ridge could migrate in this manner.[49] Froede, however, pointed out that ridge migration is only one possible solution to the problem, and that there is no clear consensus among UPT advocates. He also pointed out that an asymmetric ridge requires a mobile source plume, which was not originally predicted in the model nor has it been demonstrated since.[64] Does the data show that asymmetric movement has occurred or is it required by UPT/CPT to make the models work? For instance, there are no hot spot tracks similar to the Hawaiian-Emperor Island chain on either side of the Mid Atlantic Ridge at Iceland. Also, has this migration occurred at the Reykjavik Ridge in Iceland? Even if there was evidence of movement there could be other explanations. There are many active volcanoes on Iceland and each eruption would change the topography of the area to some degree. Earthquakes could have the same effect as well.

Furthermore, Antarctica is surrounded by spreading ridges except for a small subduction zone at the tip of South America and a transform boundary at the Scotia plate. Spreading zones account for almost 90% of the boundary, the subduction zone less than 4%, and the transform boundary about 7%. There are no compensating subduction zones. Apparently, the subduction zones have since disappeared under Antarctica.

> "In the case of Antarctica, it moved mostly southward, away from Africa and Australia, and overrode a zone of subduction that was previously on its south coast (just as North America has overridden a zone of subduction that was previously along its west coast). So in the case of Antarctica, there actually is a compensating subduction zone. It is simply hidden from view today and no longer active."[65]

How are we to know if a hidden, once-active zone is now inactive? This is the mechanism of the disappearing plate which UPT advocates invoke to explain the data.[66] Does the data reflect this or is this simply required for the UPT/CPT models?

Computer modelling

Lastly, as far as computer models go, they are wonderful tools, but they have their limitations. For example, UPT advocates have developed computer models such as the NUVEL-1 program, which was generated in the early 1990s. It is a complex model using over 1,000 data items, including 277 plate-spreading rates based on magnetic anomaly data, 724 earthquake slip vectors and 121 transform-fault azimuths. The results of their model demonstrated that plates move uniformly over long periods of time, meaning millions of years.[67] Would any young-earth creationist agree with that assessment? Doesn't this model depend on initial conditions and current spreading rates? It is based on the assumption that motions have been uniform over long periods of time but is this valid? Computer applications are a powerful tool to help in understanding processes, but these do not do away with the need to examine everything carefully. Baumgardner's work is to be commended. However, it is based on certain assumptions such as that plates are rigid and they move considerable distances in a short timeframe. This validates CPT and shows that it is possible. The issue is not with the model but with the assumptions used—that plates are rigid and they have moved great distances. There is a growing minority in the uniformitarian community who do not agree with these assumptions and consider the earth's crust as inhomogeneous with properties that vary widely.[68]

Summary and conclusions

CPT is basically a condensed version of UPT. However, CPT does not address many of the problems in the UPT model, including the number of plates, plate boundaries, plate motions, and paleomagnetism. CPT appears to have solved the initial break-up of the earth's continents but it has unique problems of its own due to the shortened timescale. Magnetic reversals are by no means certain and the magnetic anomalies in the rocks could have a number of causes. If reversals did occur they could easily be explained in either the CPT or WM model. Finally, there are subtle differences between CPT and UPT, but not all issues have been specifically addressed by CPT advocates. In such cases we have to assume that CPT follows the UPT explanations only on a vastly accelerated timescale. At times, this requires careful evaluation when comparing the two models.

Geology is complex and historical geology even more so. In uniformitarian geology there are many models which are not much publicized, including expanding earth, contracting earth, surge tectonics, along with several others. These all make valid points based on observed field data. However, they cannot all be true. Currently, uniformitarian plate tectonics is the 'consensus' of most scientists to the point where other models tend to be ignored or ridiculed. But there is a danger, as noted by Lowman

> "Perhaps the most damaging tactic that can be used in scientific controversies is to ignore contradictory evidence, anomalies and dissenting view."[69]

It is important for diluvialists to present a plausible, detailed model to the world. At the present time there are several Flood models that have been proposed, including CPT, WM, Walt Brown's hydroplate model, the impact model, among others. They cannot all be true but each one makes valid points. The question is should diluvialists restrict themselves to a single model based on consensus science or continue with multiple hypotheses until the truth is obtained? The Bible is the key to understanding the past. Unfortunately, the Bible does not go into geologic detail about the Flood so we cannot be dogmatic. Thus, we should continue to explore multiple alternatives until the truth can be determined. The aim of this paper, by pointing out problems that need to be addressed, is to help in this process. If we can solve these problems, then the main objective of presenting a viable Flood model to the world can be achieved.

Acknowledgments

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Mark McGuire *graduated from Georgia Tech with a degree in civil engineering and is currently a registered professional civil engineer working for the City of Memphis, TN. He has an avid interest in creation science and in particular geology/geomorphology. These articles are a result of following the CPT/Vertical Tectonics debate.*