Chapter 35

The Impossibility of "Old" Planation Surfaces

Geomorphology is the study of landforms and the processes that shaped them. Up until the last few decades geomorphologists believed most landforms are no older than Pleistocene[1] or at most late Tertiary.[2] This would be very late in the uniformitarian time scale

The reason they accepted this date is current weathering and denudation rates are so fast that no landform should remain for more than a few to several million years of geological time. Some studies have shown that at the present rate of erosion, the continents would be reduced to sea level in roughly 10 million years[3] or possibly up to 33 million years if other variables are included.[4,5] The variables include the influence of man on erosion and the fact that the erosion rate slows down as the continents wear down. Regardless of how fast the continents can be leveled, some geomorphologists now believe many planation surfaces are "very old"—well over 50 million years old—and yet, in all this time they have *retained their planar shape*. This is self-contradictory. Instead, could the claimed age of millions of years be fictitious?

"Old" Pediments

Pediments are relict (a surviving remnant of a past process) planation surfaces from a time and paleoenvironment in the past (see Volume III on pediments). Figure 35.1 shows a pediment from the Marsh Valley, southeast of Pocatello, Idaho. It is difficult for geologists to date pediments, but most of them can be inferred to be late Tertiary based on their relationships with other dated sedimentary or igneous rocks. The way uniformitarian geologists date pediments, planation surfaces, and inselbergs and obtain such old ages is examined in Appendix 16. Dohrenwend and others infer at least a late Miocene age (around 10 million years old) for pediments in the Mojave Desert[6] (see the boxed section at the end of Chapter 5 for the geological column and timescale). This would make pediments about 2 million to 20 million years old. Even if the pediments were "only" 2 million years old, we are left with the question: How can the planer surface of a pediment last that long, not to mention how did it form in the first place?

Twidale claims arid environments preserve a veneer of gravel on top of pediments, preserving the remarkably smooth surface for many millions of years.[7] [8] How is it possible for a

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[1] Ollier, C., 1991. *Ancient Landforms*, Belhaven Press, New York, NY, p. 1.
[2] Hill, S.M., 1999. Mesozoic regolith and palaeolandscape features in southeastern Australia: significance for interpretations of denudation and highland evolution. *Australian Journal of Earth Sciences* 46:217–232.
[3] Roth, A.A., 1998. *Origins: Linking Science and Scripture*, Review and Herald Publishing Association, Hagerstown, MD, pp. 263–266. .
[4] Schumm, S., 1963. Disparity between present rates of denudation and orogeny. *U. S. Geological Professional Paper 454*, Washington, D.C.
[5] Twidale, C.R., 1997. The great age of some Australian landforms: examples of, and possible explanations for, landscape longevity. In, Widdowson, M. (editor), *Palaeosurfaces: Recognition, Reconstruction and Palaeoenvironmental Interpretation*, Geological Society of London Special Publication No. 120, The Geological Society of London, London, U.K., pp. 13–23.
[6] Dohrenwend, J.C., 1994. Pediments in arid environments. In, Abrahams, A.D. and A.J. Parsons (editors), *Geomorphology of Desert Environments*, Chapman & Hall, London, U. K., p. 340.
[7] Twidale, C.R., 1976. *Analysis of Landforms*, John Wiley & Sons Australasia Pty Ltd, New York, NY, p. 409.
[8] Twidale, C.R., 1981. Origins and environments of pediments. *Journal of the Geological Society of Australia* **28**:423–434.

veneer to protect a pediment like the southern Arcoona Plateau of Australia for 20 million years?

Figure 35.1. Pediment from Marsh Valley, southeast of Pocatello, Idaho.

Super "Old" Planation Surfaces

To make matters worse, there are planation surfaces that are much older than pediments. Based on various radiometric and fossil dating techniques, geologists have discovered that many planation surfaces (which were not exhumed from beneath sedimentary rocks), as well as the sides of some river valleys, have hardly eroded in many tens of millions of years of alleged time (see Appendix 16).[9] The flat to undulating plateau of western Arnhem Land, Queensland, is dated at *over 100 million years* old based on late Jurassic and Cretaceous fossils. These fossils were found in the sediment of shallow valleys that were cut into the planation surface, which means that the planation surface came before the sediment and fossils (see Appendix 16).[10] Figure 35.2 shows the dissected planation surface of Arnhem Land. The planation surface on Kangaroo Island, southern Australia, is believed to be over 150 million years old.[11] The regional planation surfaces on the foothills of the Andes Mountains in Argentina are thought to be 300 to

[9] Twidale, C.R., 2003. Canons revisited and reviewed: Lester King's views of landscape evolution considered 50 years later. *GSA Bulletin* 115:1,158.
[10] Nott, J. and R.G. Roberts, 1996. Time and process rates over the past 100 Ma: a case for dramatically increased landscape denudation rates during the late Quaternary in northern Australia. *Geology* 24:883–887.
[11] Twidale, C.R. and J.A. Bourne, 1975. Episodic exposure of inselbergs. *GSA Bulletin* 86:1,473–1,481.

400 million years old.[12] Ollier claims a super-old planation surface of Precambrian age, older than 540 million years, on the Kimberly Plateau of northwest Australia.[13] Such "old" surfaces are also suggested for southwest Australia.[14] Some of these "old" surfaces are in geologically active regions: "Consequently, it comes as some surprise to find ancient surfaces preserved in geomorphologically and geologically active regions."[15]

Figure 35.2. Planation surface on Arnhem Land, northern Queensland, Australia (courtesy of Tas Walker).

Interestingly, there are many of these "very old" surfaces, especially in Australia.[5] Twidale summarizes: "Surfaces and forms of earliest Cenozoic and Mesozoic age ranges [~50 to 200

[12] Costa, C.H., A.D. Giaccardi, and E.F. González Díaz, 1999. Palaeolandsurfaces and neotectonic analysis in the southern Sierras Pampeanas, Argentina. In, Smith, B.J., W.B. Whalley, and P.A. Warke (editors), *Uplift, Erosion and Stability: Perspectives on Long-Term Landscape Development*, Geological Society of London Special Publication No. 162, The Geological Society, London, U.K., pp. 229–238.
[13] Ollier, C.D., 1988. The Kimberly Plateau, Western Australia: a Precambrian erosion surface. *Zeitschrift für Geomorphologie N. F.* 32:239–246.
[14] Clarke, J.D.A., 1994. Geomorphology of the Kambalda region, Western Australia. *Australian Journal of Earth Sciences* 41:229–239.
[15] Widdowson, M., 1997. The geomorphological and geological importance of palaeosurfaces. In, Widdowson, M. (editor), *Palaeosurfaces: Recognition, Reconstruction and Palaeoenvironmental Interpretation*, Geological Society of London Special Publication No. 120, The Geological Society of London, London, U.K., p. 7.

million years old] persist in many parts of the world…"[16] Not only are some planation surfaces in Australia and Africa believed well older than 100 millions years, but such old planation surfaces are *worldwide*.

Uniformitarians Apparently Forced to Accept the Great Ages

Although many geomorphologists remain unconvinced the landforms are so ancient,[17] this "extremely unlikely" concept supposedly has been vindicated, according to Australian geomorphologist C. R. Twidale.[18] Twidale states:

> Yet for the past half century or more paleosurfaces have been recognized, and compelling evidence adduced pointing to their great antiquity, not only in Australia and Africa but also, and in lesser measure, in the Americas and Europe.[19]

It really goes against common sense that these planation surfaces can be tens of millions to over a hundred million years old, as admitted by Twidale:

> If some facets of the contemporary landscape are indeed as old as is suggested by the field evidence they not only constitute a denial of commonsense and everyday observations but they also carry considerable implications for general theory.[20]

Twidale and Campbell further state:

> In geological terms, in other words, there ought to be no landforms or land surfaces, even in areas eroded according to the scarp retreat model, of an age greater than Oligocene [about 35 million years old], and certainly no older than the Cainozoic [Cenozoic, less than 65 million years old][21]

But the concept of such very old surfaces, even in previously glaciated regions, is gradually being accepted.[22] How can such planation surfaces exist for so long, given the observation that planation surfaces are actively eroding today at high rates?

Fishing for Preserving Mechanisms

Twidale and other geomorphologists continue to fish around for mechanisms for preserving these "old" surfaces.[23] One possibility would be a resistant rock cap such as a hard sandstone or a duricrust. A duricrust is a general term for a hard crust on the surface, found mainly in semiarid climates.[24] Duricrust will be discussed in Chapter 42 and 57. Resistant rocks would indeed slow erosion, but most likely not enough to last anywhere near as long as postulated.

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[16] Twidale, Ref. 9, p. 1,165.

[17] Belton, D.X., Brown, R.W., Kohn, B.P., Fink, D., and Farley, K.A., 2004. Quantitative resolution of the debate over antiquity of the central Australian landscape: implications for the tectonic and geomorphic stability of cratonic interiors. *Earth and Planetary Science Letters* 219:21–34.

[18] Twidale, C.R., 1998. Antiquity of landforms: an 'extremely unlikely' concept vindicated. *Australian Journal of Earth Sciences* 45:657–668.

[19] Twidale, Ref. 18, p. 657.

[20] Twidale, Ref. 18, p. 664.

[21] Twidale, C.R. and E.M. Campbell, 2005. *Australian Landforms: Understanding a Low, Flat, Arid and Old Landscape*, Rosenberg Publishing Pty Ltd, New South Wales, Australia, p. 188.

[22] Smith, B.J., W.B. Whalley, P.A. Warke, and A. Ruffell, 1999. Introduction and background: interpretations of landscape change. In, Smith, B.J., W.B. Whalley, and P.A. Warke, (editors), *Uplift, Erosion and Stability: Perspectives on Long-Term Landscape Development*, Geological Society Special Publication No. 162, The Geological Society, London, U. K., pp. vii–x.

[23] Twidale, Ref. 9, p. 1,163.

[24] Neuendorf, K.K.E., J.P. Mehl, Jr., and J.A. Jackson, 2005. *Glossary of Geology*, Fifth Edition. American Geological Institute, Alexandria, VA, p. 197.

More than a resistant capping rock is involved because planation surfaces sometimes truncate tilted hard and soft sedimentary rocks evenly, which is unnatural. But this explanation would hardly justify attributing an "old" age to truncated surfaces that were cut on relatively *soft, easily erodible* rocks (see Chapter 32).[25,26] Soft rocks are known to easily form a drainage network, such as the formation of Providence Canyon, Georgia (Figure 35.3), within the past 100 years. So, it is easy to see that a planation surface on flat rocks would be destroyed in a relatively short time. Planation surfaces on top of soft rock give proof that planation surfaces have been *recently* formed.

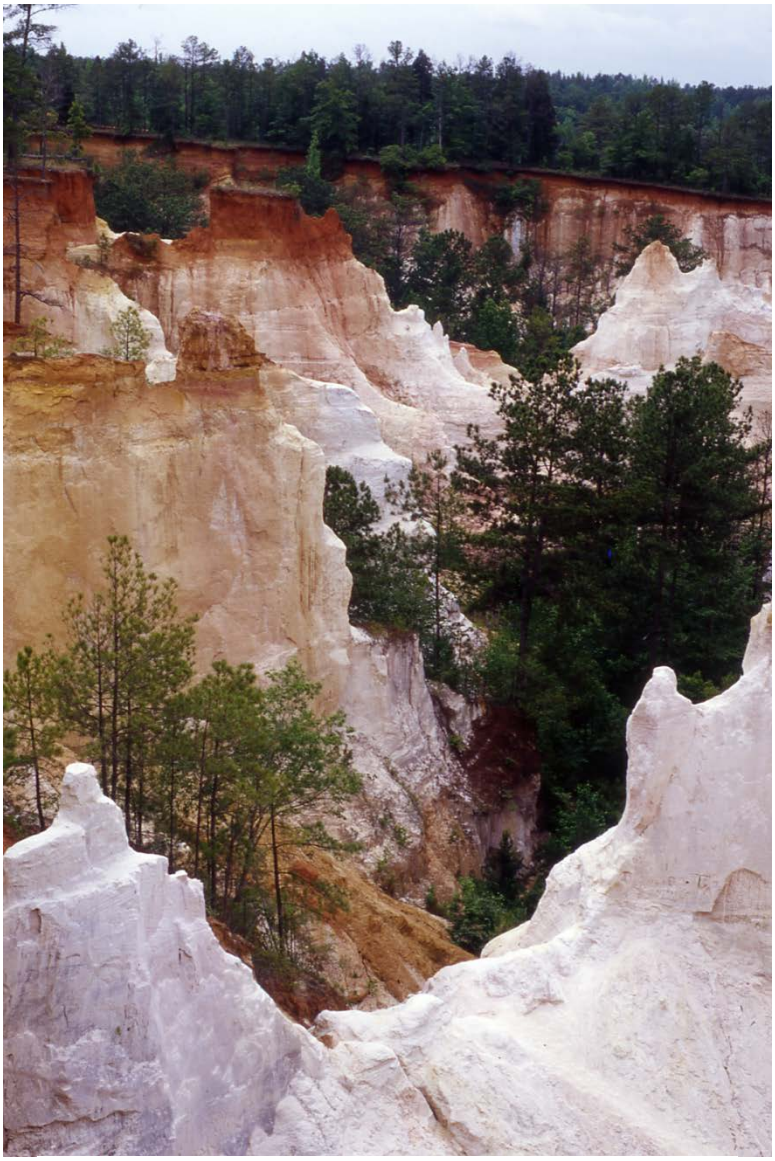

Figure 35.3. Providence Canyon, Georgia, eroded since about the year 1900.

[25] Twidale, Ref. 18, p. 663.
[26] Crickmay, C. H., 1974. *The Work of the River: A Critical Study of the Central Aspects of Geomorphology*, American Elsevier Publishing Co., New York, NY, pp. 207, 209.

Some geologists appeal to a dry climate as a preserving mechanism, but during geological time, planation surfaces are expected to have passed through several climatic regimes, including wet ones. Australia supposedly has been slowly drifting northward from the mid and high southern latitudes during the past 100 million years of geological time. Although much of southern and central Australia has a dry climate today, these areas would have been much wetter during the Tertiary. Moreover, erosion is not suspended in a dry climate. Semi-arid climates are known for occasional heavy rain from thunderstorms that cause much erosion. Summerfield lists average denudation rates for various climates and relief, based on both the solid and dissolved load of major rivers today[27] (Table 35.1). A landscape in a dry climate with low relief denudes at roughly 5-35 mm/1000 years. This is quite fast. Flat or nearly flat planation surfaces would not be expected to last long in this dry environment at this erosion rate.

Relief and Climate	Total Denudation
1. Mountainous, high precipitation	95-740
2. Mountainous, low precipitation	45-370
3. Moderate Relief, Temperate or Tropical	30-110
4. Low Relief, Dry Climate	5-35
5. Low Relief, Temperate Climate	15-30
6. Low Relief, Subarctic Climate	5-15
7. Low Relief, Tropical Climate	1.5-10

Table 35.1. Average denudational rates in relation to relief and climatic in millimeters per year.

Twidale seems desperate for explanations when he appeals to *glacial protection* in areas that were once covered by ice sheets.[25] Quaternary geologists once thought ice sheets were very erosive, but now they realize, except for local areas like coastal valleys, little erosion took place during the Ice Age.[28] Since some planation surfaces survived under the ice, Twidale suggests a thin veneer of debris helped to preserve these planation surfaces. Unfortunately, many old planation surfaces were never glaciated, so at best this hypothesis would only apply to a few. All of these preserving mechanisms are rather speculative and according to Twidale and Campbell do not solve the problem: "Their explanations reduce rather than resolve the problem, but at least the difficulty is being faced, and various factors conducive to survival have been noted."[29] They later marvel how incredible such old landforms are:

> Yet, many features that are several tens of millions, or even a few hundreds of millions of years old, remain incredible. On the other hand, it can be argued that since these landforms exist, they must be possible.[30]

This is the logical fallacy of circular reasoning. Maybe, the planation surfaces are not that old.

Powerful, Objective Evidence against Old Dates

"Old" planation surfaces are objective evidence that radiometric and fossil dates are not

[27] Summerfield, M. A. 1991. *Global Geomorphology*, Longman Scientific & Technical, New York, NY, p. 396.
[28] Lidmar-Bergström, K., S. Olsson, and M. Olvmo, 1997. Palaeosurfaces and associated saprolites in southern Sweden. In, Widdowson, M. (editor), *Palaeosurfaces: Recognition, Reconstruction and Palaeoenvironmental Interpretation*, Geological Society Special Publication No. 120, The Geological Society of London, London, U.K., pp. 95–124.
[29] Twidale and Campbell, Ref. 21, p. 285.
[30] Twidale and Campbell, Ref. 21, p. 286.

correct.[31] According to erosion rates today, there should not be any planation surfaces older than a few hundred thousand to a few million years within the uniformitarian timescale. This result confirms what creationists have been saying for years; there is something seriously wrong with dates that number in the millions and billions of years. This agrees with the RATE (Radioisotopes and the Age of The Earth) project which demonstrated radioactive dates have serious theoretical problems, and that there was a period of accelerated radiometric decay during the past approximately 6,000 years of biblical earth history.[32,33]

[31] Oard, M.J., 2000. Antiquity of landforms: Objective evidence that dating methods are wrong. *Journal of Creation* 14(1):35–39.
[32] Vardiman, L., A.A. Snelling, and E.F. Chaffin (editors), 2000. *Radioisotopes and the Age of the Earth: A Young-Earth Creationist Research Initiative*, Institute for Creation Research and Creation Research Society, Dallas, TX, and Chino Valley, AZ.
[33] Vardiman, L., A.A. Snelling, and E.F. Chaffin (editors), 2005. *Radioisotopes and the Age of the Earth: Results of A Young-Earth Creationist Research Initiative*, Institute for Creation Research and Creation Research Society, Dallas, TX, and Chino Valley, AZ.