

# In Memoriam

## Han Kloosterman – a romantic catastrophist (1931-2016)



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Johan Bert (“Han”) Kloosterman’s geological career commenced with his dissertation *Le Volcanisme de la région d’Agde, Hérault, France* (Utrecht, 1959) and thrived with his alluvial prospecting – cassiterite, diamonds and gold – for various mining companies in West Africa, for 4 years, and then the interior of Brazil until 1983. In this period, he published in professional journals and adopted a catastrophist perspective. As he reported in an early contribution to this journal (1: 3, 1976), his first foray into catastrophism was a “revelation” he had during a 9-day paddling trip down the Jamanxim River in 1973, when he discovered the contours of a giant caldera. He founded, edited and published the ephemeral journal *Catastrophist Geology* (1975-1978).

His life took a dramatic turn in 1998, when someone presented him with a copy of Walter Alvarez’ book *T. rex and the Crater of Doom* (1997). According to Alvarez, a carbon-rich layer found in 1985 by Wendy Wolbach at the boundary between the Cretaceous and the Tertiary periods demonstrated that a global conflagration – caused by an asteroid impact – had contributed to the demise of the dinosaurs. This reminded Han of the Usselo horizon, a similar sooty, charcoal-rich layer in the late-glacial Allerød stage of northwest Europe, which he had interpreted – as early as 1977 – in terms of a *Weltbrand* associated with the extinction of the Pleistocene megafauna. Finding that neither Alvarez nor Wolbach had heard of Usselo, the insight prompted

Han to return to The Netherlands and start a new geological project – the catastrophic end of the last glacial period.

Until his death, Han busied himself networking, collecting literature and geological samples of the Usselo layer both from Arizona and 12 sites in northwest Europe and studying the direction of tektite falls. His research received a boost in 2005, when the American scientists Firestone and West integrated the Usselo horizon into their model of a cometary impact over North America – a potent hypothesis which remains the focus of intense research and debate. From 2003 onwards, Han also compiled a database on catastrophist mythology, which – apart from deluges and fires – focused on collapse of the sky and the *axis mundi*, overturning of the Earth, pole shift and inversion of the sun’s movement. In this set of motifs he saw evidence for the late Peter Warlow’s theory that the Earth has repeatedly toppled over in the fashion of a tippe top, modified by Stig Flodmark’s demonstration that only the crust and mantle will turn over, leaving the core in its original place. One such inversion arguably occurred around the same time as the Allerød conflagration and the geomagnetic Gothenburg excursion, though much chronological and especially stratigraphical fine-tuning remains to be done. Han perceived a growing schism between a new orthodoxy of catastrophists who will only accept impact scenarios and more extreme ones who also consider Earth inversions.

With this work and his *Catastrophist Manifesto* (2007), Han ranked as the only professional Dutch scientist promoting secular catastrophism. With dignity, he resigned himself to his inexorable banishment to what he often called the ‘lunatic fringe’ of science. He lectured a number of times for the Society of Interdisciplinary Studies and planned to write a book on his discoveries. Regrettably, a decades-long writer’s block prevented him from composing scholarly work of any length and substance after the 1970s.

Han was a pacifist who walked the talk when, in 1961, he took ‘absence without leave’ from the Dutch army, fled to Brazil and endured 12 years of self-imposed exile until expiry of the offence, all to avoid service in western Papua New Guinea – a colonial exploit in a time of decolonisation. He cultivated a deep interest in spirituality, the paranormal, shamanism, ethology and animal consciousness. Wearing a cultural-historian hat, he developed the theory that a ‘materialist coup’ and *Kultursturz* had occurred in 1860, which purged the sciences of all catastrophist elements, banished the Romantic movement to the margins of society and stripped Mesmerism of all supernatural elements, which it had hitherto embraced. Han organised a moving exhibition in The Netherlands on the cultural history of the native American hammock (1992); was perfectly at ease sleeping out in the elements without the benefit of a tent, often in the

company of indigenous Brazilians such as the Guaraní nation; practised Venus- and solar yoga for years; and was an indomitable philosemite, a bibliophile, a committed vegetarian and a prophet *soi-disant*. A polyglot and self-styled ‘Europoet’, he composed scores of Persian quatrains in 7 languages, always in the style of Omar Khayyám and the *poètes maudits*.

Han seemed to defy the gods, surviving 28 cases of malaria, 6 bouts of amoebic dysentery, leishmaniasis and bilharzia, a crash in a Cessna aircraft over Amazonia while stricken with malaria (1969) and throat cancer (1993). Regarding the latter, he would flippantly remark that he had ‘already died’.

People close to him often described Han as a ‘man of coincidences’. I myself was introduced to him by two people in different countries who did not know each other. Weeks after my first meeting with him (2004), my wife and I bumped into him in the Louvre, although we had at no point discussed each other’s travelling plans. It seems only fitting, then, that Han died on the day of the closest supermoon since 1948, while a double rainbow was photographed over the funeral building just before his final send-off.

I am grateful for the many years I was able to compare notes with Han and have no doubt that posterity will recognise his intellectual legacy.

**Marinus Anthony van der Sluijs**

## ARTICLES

### A Geomagnetic Approach to Traditions of *Axes Mundi*

**Marinus Anthony van der Sluijs**

#### Part III

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#### **Solar Eruptions**

The Sun releases its energy into space both in the form of electromagnetic radiation, which includes its heat and visible light, and charged particles constituting the solar corona and wind. Geomagnetic storms and substorms are due to short-lived outbursts in both categories.

A solar flare is a relatively small-scale but violent explosion in any layer of the Sun’s atmosphere, often in the vicinity of sunspots. It is powered by the release of electromagnetic energy stored in the corona, which heats and accelerates the plasma contained in it. When a continuum of radiation is produced across the electromagnetic spectrum at all wavelengths, rather than in certain spectral lines only, the event is referred to as a white-light flare. The latter is far rarer than an ordinary flare, illuminates only a small portion of the disc of the Sun and lasts less than half an hour.

A coronal mass ejection (CME), formerly called a ‘coronal transient’, is a closely related phenomenon in which matter is emitted instead of only electromagnetic energy. It occurs when the Sun’s corona forcefully ejects a huge bubble of plasma, with its own magnetic field structure, into the solar wind – typically from an eruptive prominence. The eruption is frequently accompanied by a flare and lasts several hours. If the plasma is directed towards the Earth and hence ‘geoeffective’, it provokes a geomagnetic storm or substorm.

While these are common events, on the order of one or more a week, an estimated 1% of coronal mass ejections involve an invisible but intense outburst of solar energetic particles (SEPs), particles accelerated to very high energies which produce exceptionally powerful aurorae when striking the Earth. In the case of protons, these occasions are referred to as ‘solar proton events’ (SPEs) or ‘proton streams’, potentially triggering rare ‘proton aurorae’. Solar protons are