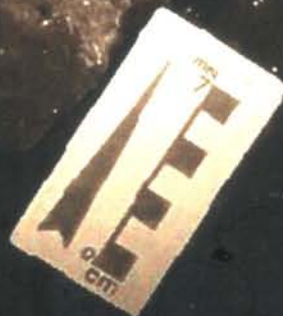




# QUINTA REUNIÓN ARGENTINA DE ICNOLOGÍA

## TERCERA REUNIÓN DE ICNOLOGÍA DEL MERCOSUR

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**RESÚMENES**

## **DEALING WITH DUBIOFOSSILS AND THE OCCAM'S RAZOR: THE CASE OF THE "PALEOPROTEROZOIC ICHNOFOSSILS" FROM MINAS GERAIS, BRAZIL**

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The discovery of two sedimentary collapse structures in the paleoproterozoic sandstones of the Cercadinho Formation (Minas Gerais, Brazil) which are comparable to Phanerozoic ichnofossils offers grounds for a lively debate upon their true nature. Their morphologies are clear enough to narrow down their classification up to the ichnogeneric level, and the structures certainly are synchronic to sediment deposition. The supposition that these structures are in fact of biological affinities in rocks of paleoproterozoic age is controversial, requiring other hypotheses to confront this statement. The philosophical principle known as the Occam's razor, also denominated as parsimony, is a normal rationale in matters where alternative hypotheses compete, stating that one should not make more assumptions than the minimum necessary to explain the full range of available data. Metazoan organisms, at least as we know them, capable of burrowing activities in paleoproterozoic times are improbable, as this statement would imply a major rearrangement on the current knowledge about the mode and timing of the evolution of life and also in part on the evolution of Earth conditions to sustain life. This reasoning is not supported by fossil evidences, relying only on arguments about the incompleteness of the fossil record. The Occam's razor tends to readily eliminate this hypothesis, rejecting speculations on the nature of imaginary paleoproterozoic burrowing creatures, although preventing the exploration of more intricate scenarios for the initial metazoan evolution. On other extreme, we could assume that these structures are of abiotic origin. This apparently uncomplicated assumption however offers two main problems, first that it would invoke a sedimentary abiotic process as far unknown, and second that it lead to the idea that similar structures, even when found in younger rocks, could also be of abiotic origin. In face of the problems presented by the anterior assumptions, a third hypothesis can be formulated: that the age of the rocks in which the structures were found is younger than the one currently accepted. This sole statement would explain easily the present data, and the Occam's razor would tend to favor this hypothesis, but only if one is unfamiliar with the wealth of geological data about the region involved. In this case parsimony fails in face of the popperian hypotheticodeductive method, as this is the only hypothesis that could be falsified, even though this rests on our present knowledge on radiometric dating and stratigraphy, but these are much more solid arguments. A complete acceptance of any other as yet unfalsified hypothesis, according to an adequate logical justification, should contain testable implications. The first hypothesis, of biotic origin and correct age, falls down in the category of historical sciences that could not be tested directly, as first hand eye witnessing is impossible, but as far as the fossil record goes, this hypothesis has no support. So, one could suspect that the hypothesis of abiotic origin is the most likely, even though the main reasoning in its favor is in fact the improbability of the other proposals. It is still necessary to find a testable sedimentary process that could generate similar structures.