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The Saga of the Descendants of Rodinia during the Assembly of Western Gondwana

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All proposed reconstructions for Rodinia published during the last decade present a series of problems, of both virtual (like some of conceptual nature) and real geologic character. Besides a greater investment on the geological research itself, it is necessary to give much more attention to the published articles and maps of the geologists of the third world, and become acquainted with the regional geology of those countries.

For the particular case of South America there are data enough to point out that the agglutination and the further fission of Rodinia were rather long and diachronous tectonic processes, from one place to another. The singularity of Rodinia (if it really existed) as a supercontinent was episodic, a short-lived stage. With good level of confidence, it is possible to affirm that some the processes of agglutination (1.5 up to 0.96 Ga) and fission (1.0–0.8–0.63 Ga) could coexist and compete for the same time interval, from one place to another. It is advisable to talk about absolutely independent and separated processes of fusion and fission during geological time.

The amount of blocks generated (the children of Rodinia) during the fission of Rodinia was large and diverse in terms of magnitude, crustal composition and tectonic nature, thermal ages, as well as tectonic and rheological behavior during the subsequent processes of agglutination of Gondwana, in Neoproterozoic times (up to the Ordovician, in Western Gondwana). There are data enough to assure the operating coexistence of large, intermediary and small plates, microcontinents, terranes, etc. ("children") and island arcs during the agglutination of Western Gondwana. Nevertheless, in most of the reconstructions of Rodinia already published, only the three largest blocks have been considered, namely the Amazônico, S. Francisco-Congo and Rio de la Plata blocks. This is very far from geological reality.

This paper attempts to discriminate all descendant blocks of Rodinia and their roles -and levels of crustal reworking- during the agglutination of Gondwana. In addition, it is being proposed a preliminary comparative table of behaviors for these descendants, with all possible gradations, since the almost undisturbed large blocks (e.g. Amazônico) up to the small and entirely restructured blocks (e.g. Luis Alves, Tróia-Tauá, etc.). There are some particular cases of strong reworking, where the discrimination of the previous blocks was possible to be done only with the use of isotopic investigation. Different kinds of blocks and many tapes of gradation are expectable, and we should be aware of the impossibility of discriminating all of them.

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