PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

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The relevance of biogeography to palaeogeographical reconstructions

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I would like to discuss here the palaeogeographic maps for the late Silurian (figures 1 and 2) used by Smith *et al.* (1981) and by Bambach *et al.* (1980; essentially the same maps are used by Parrish *et al.* (1983)). On these two late Silurian maps I have plotted the best available late Silurian biogeographical data (Boucot 1975; Wang *et al.* 1984). Note that the Smith *et al.* (1981) maps are biogeographically untenable, that is, the surface current circulation patterns consistent with the postulated palaeogeography are unable to explain the high level endemism which is present. Additionally, note that the presence of major evaporitic bodies in an equatorial position is unlikely. By using the same approach the Bambach *et al.* (1980) palaeogeography for the late Silurian is rejected for the same reasons. The maps for the Lower Devonian published by both groups have been rejected earlier (Boucot & Gray 1983); the similar arguments will not be repeated here. I (Boucot, this symposium) provide pangaeic reconstructions for these time intervals which are consistent with the biogeographical and lithological information.

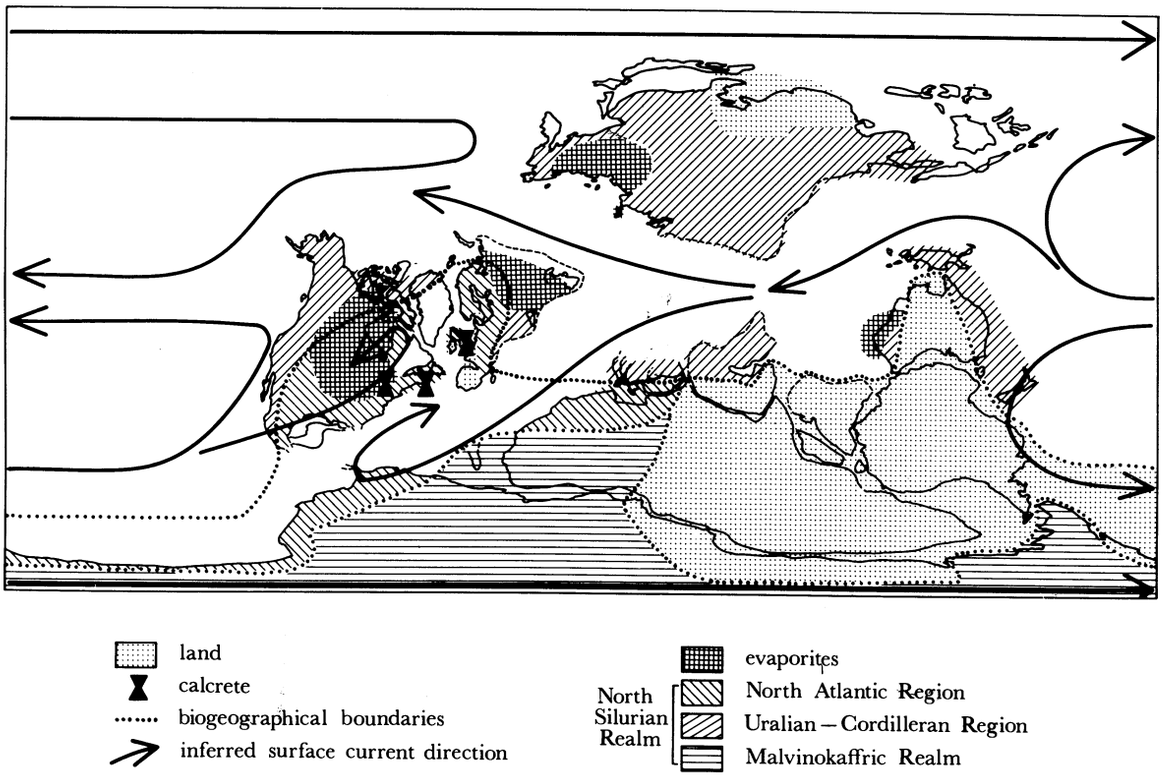

Figure 1. Late Silurian palaeogeography postulated by Smith *et al.* (1981) on which biogeographical data has been plotted, as well as the location of marine evaporites, and a reasonable surface current circulation pattern.

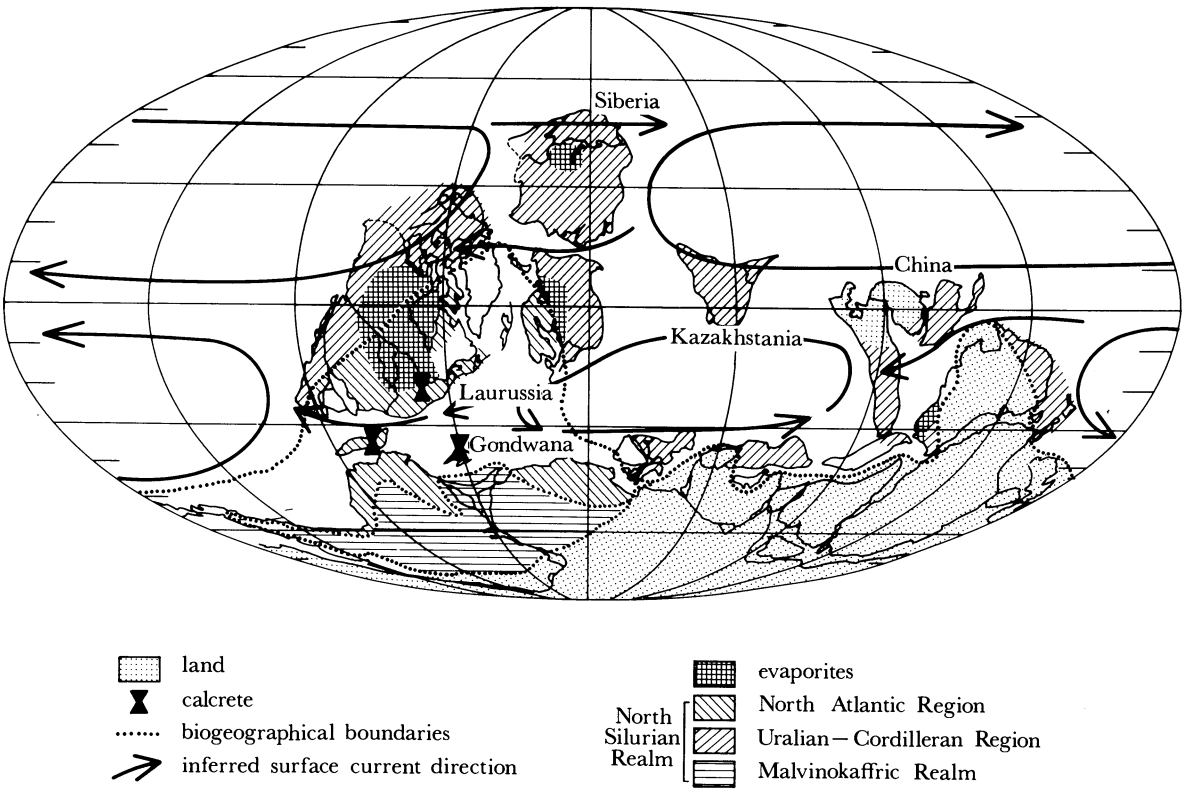

FIGURE 2. Late Silurian palaeogeography postulated by Bambach *et al.* (1980) on which biogeographical data has been plotted, as well as the location of marine evaporites, and a reasonable surface current circulation pattern.

It would be interesting to consider whether or not the Upper Silurian and Lower Devonian data could not be better explained by means of an expanding earth model of the type advocated by Carey (1982; see also Owen 1981). I would be very curious to learn whether a thorough reconsideration of the palaeomagnetic data in light of the pangaeic suggestion might not reconcile the palaeomagnetic data with that obtained from both biogeography and lithofacies of the time intervals?

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