

# Taphonomy vs paleoecological interpretation: an actupoint of view

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Taphonomy has been recently defined by Emig and Racheboeuf (1990) as: "the study of the transition of biological entities from the biosphere to the lithosphere". Such entities are represented by the deme individual which life span goes from birth to death and only is the alone entity parts of which could fossilize.

**From T<sub>0</sub> to T<sub>1</sub>: the taphonomic processes.** The transition of an individual from the biosphere to the lithosphere is governed by two major processes: (i) processes of alteration due to biotic factors and abiotic factors; and, (ii) processes of conservation (or fossilization) due mainly to abiotic factors. The taphonomic processes are dynamic, applying from T<sub>0</sub> - the death of an individual - to T<sub>1</sub> - when this individual is sampled. Because taphonomic processes have to be investigated by either geological and biological-ecological methods, taphonomy is basically a multidisciplinary study. However, paleontologists would like to reduce taphonomy to a part of paleontology or to a geological science. Legal medicine methods and taphonomy are not only convergent as stated Villalain Blanco (1992) but these methods are taphonomic

and emphasize the importance of the biological processes in taphonomy.

**From T<sub>1</sub> to T<sub>0</sub>: the paleobiological and paleoecological interpretation.** The interpretation of the paleoecology of a fossil bed has to be based on the taphonomy of all the present fossil individuals, and is deduced going reverse from T<sub>1</sub> to T<sub>0</sub>. Nevertheless there is a basic point: at T<sub>0</sub> the individual was dead. Consequently, the interpretation leads to the conditions prevailing at T<sub>0</sub> for each individual. However, the attempt of a paleoecologist is, from the T<sub>0</sub> conditions, to reconstruct the normal life conditions when the individuals were living, and, for that, he has to try to compensate the taphonomic losses and biases. Such an attempt can be related to 'taphonomic gain' (Wilson, 1988) or 'positive taphonomy' (Elder and Smith, 1984; Brett and Baird, 1986). The task of the ecologist is easier because working in a complete real three dimensional space while the paleoecologist has to reconstruct this space from a nearly two dimensional space, highly incomplete and truncated (Emig and Racheboeuf, 1990).

