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Editorial

Paleoinformatics: The Superhighway to Modern Paleontology

Riedel and Budai (1980) declared that the major problem with paleontological information is that the names by which fossils are recorded tend to change in meaning over the years, and to be applied differently by different authors. The statement of these two authors is true and we can imagine the conflict in the field of taxonomy when two different authors assign different names to the same taxon!! Fortunately, paleoinformatics could solve this problem and more.

Several geologists have never heard about the term "paleoinformatics". Even those who continuously use techniques related to this theme, still the term is strange to them. On the other hand, some experienced workers of this field confine the term to paleontological arena; some others generalize it to cover all geological researches related to the subject.

MacLeod and Guralnick (1997, 2000) defined paleoinformatics as that area of paleontology which focuses on the management of information, including the preservation of systematic information and expertise. Elewa (in preparation) summarized the definition of MacLeod and Guralnick in the term: Paleontological Information Systems (PIS).

The Center for Advanced Spatial Technologies of Arkansas University described paleoinformatics to include the application of integrated information technologies in a comprehensive, multi-scalar approach to field data acquisition, processing, analysis, dissemination and archiving of information about the human and pre-human past (see their website at: http://web.cast.uark.edu/home/research/archaeology-and-historic-preservation/archaeological-informatics/paleoinformatics/paleoinformatics-vision.html). This center presented examples of technologies and methodologies to be such as:

(1). Digital field data acquisition methods including photogrammetry and related high density survey, and geophysical systems

(2). Satellite, aerial and terrestrial remote sensing analysis and management systems including statistical systems, simulation/modeling systems, geographic information systems, database management and related areas such as ontologies, semantic web, data mining and interoperability

(3). Tomography

(4). Representation and interpretation systems including landscape, architectural and object visualization, animation and other related 3D methods.

Actually, I would add that a new term confining biological and paleontological taxonomies in one hand is urgently needed; this term could be "Taxoninformatics", or in other words "Taxonomic Information Systems; TIS".

Riedel (1989) introduced program in Turbo Prolog to assist users to identify fossils consistently and expeditiously. He designed this program for paleontological applications; however it can be used, according to Riedel, with other databases in a wide spectrum of disciplines in the natural sciences. Therefore, why biologists together with paleontologists do not try to use this program or any other developed programs to compile an international database for taxonomy?

Another major problem is that most databases are still unavailable to researchers. Of course, some organizations are quite right in keeping their databases out of hand due to commercial or secure purposes; yet researchers themselves (paleontologists as well as biologists) should find a way for making their databases available to audience.

It is easy to solve this problem if electronic journals permit publishing databases of each article as supplementary materials associated with these articles. Even though, not all electronic journals are available with full articles online, and this is another story (see Elewa, 2009).

In spite of all problems that are related to restrictions in presenting several databases online, in my vision, I see paleoinformatics as the superhighway to modern paleontology.

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Prof. Dr. Ashraf M. T. Elewa
Geology Department,
Faculty of Science,
Minia University,
Egypt.

Editor in Chief