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A small network with two distinct communities : Neo creationists vs. Evolution Defenders. Organizational and Dynamical Aspects of an Opinion Controversy

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Introduction

New areas of science continually evolve; others gain or lose importance, merge, or split. Sometimes one might refer to *parascience* or *metascience* in order to distinguish established fields from controversial ones. Still it can be accepted that progress can be through some controversy, though one should not too often waste time to discuss unscientific problems, in scientific meetings and publications. In fact, it may happen that the tackled questions touch upon exclusivity/monopolization principles, which are not, in our opinion, sustaining a sound scientific attitude or a truly positive image.

On the other hand in some science the notion of interdisciplinarity is very delicate and might be challenged. The more so when scientific aspects border philosophical ones. The caveats should be sometimes obvious. We consider a controversial issue, in a tentatively unbiased way, but with nevertheless some ‘‘hard’’ scientific view point.

Let us disregard here the question of determinism or free will as a criterion for society evolution. However aspects like Darwin Evolution (DE) theory and Intelligent Design (ID) ideas, *per se* raise scientific (and other) questions. One neutral way to touch upon the questions is through statistical physics, like in recent studies of opinion formation on (social) networks. This subject of intense interest is considered here, from the point of view of a small network; the DE-ID controversy is used as an illustrative set of data for observing the emergence of communities, a lack of irreconcilable views even though communication and correlations do exist.

Let us recall that several topics are of intense interest nowadays in networks science (Pastor-Satorras *et al.*, 2003), opinion formation (Holyst *et al.*, 2001; Lambiotte and Ausloos, 2005), policy implementation (Moss, 2002), internet epidemics (Ganesh *et al.*, 2005), medical epidemics (Potterat *et al.*, 2002), econophysics and/or sociophysics (Chakrabarti *et al.*, 2006). All these studies concern the organizational processes of populations and their dynamical evolution.

Whence we propose to study a case of network structural content when there is some self-organized collaboration, in a given community, rivalry with respect to the other, through arguing about the validity of neighbouring disciplines in the course of time, thereby eyeing the spreading of ideas, some would like to call them ‘‘scientific’’ through society. It is intuitively obvious that there is no transition to be expected in the DE-ID phase diagram, since the communities are pretty much behaving as in very deep potential wells separated by huge barriers. There is not much changes/fluctuations to be expected in the node state value, whatever the link weights or number. Yet, it is interesting to see whether local features can nevertheless be carried over into global aspects of the network, and into some dynamical processes or

features. No need to say that most of the questions tackled in this communication can encompass many (rigid) networks, not only those formed by the DE-ID controversy.

Results

It will be explained how we have constructed an approximately equivalent in size set of nodes belonging to two different communities. It will be emphasized that the “assortativity coefficient” shows some imbalance between homogeneous and inhomogeneous triangles, i.e. between those for which all nodes belong to one given community and those for which nodes belonging to different groups. This structural fact reflects the strong interaction between both opinion groups, from which therefore we can expect some non trivial dynamics. We have analyzed the degree distribution and other network characteristics. Several nodes can be considered as “opinion leaders” because of their “high degree”. They are also most often on the edges of links connecting the communities.

In order to elucidate the dynamical aspects of the interaction between the ID and DE groups, we have focused on two key quantities, (i) the degree of activity of each group and (ii) the corresponding degree of impact on the intellectual community at large, - through measures of the rate of production of publications and the rate of increase in citations. The distributions seem unusual, while specific time lags can be observed.

Discussion

The results indicate that the dynamics can be seen as geared by triggered or damped competition as in biological processes and religious activities (Ausloos and Petroni, 2007).

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