Why social and political changes are almost impossible in democratic systems: An application from physics

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Part I

Modeling Rumors: The No Plane Pentagon French Hoax Case

The recent astonishing wide adhesion of french people to the rumor claiming 'No plane did crash on the Pentagon on September the 11", is given a generic explanation in terms of a model of minority opinion spreading. Using a majority rule reaction-diffusion dynamics, a rumor is shown to invade for sure a social group provided it fulfills simultaneously two criteria. First it must initiate with a support beyond some critical threshold which however, turns out to be always very low. Then it has to be consistent with some larger collective social paradigm of the group. Othewise it just dies out. Both conditions were satisfied in the french case with the associated book sold at more than 200 000 copies in just a few days. The rumor was stopped by the firm stand of most newspaper editors stating it is nonsense. Such an incredible social dynamics is shown to result naturally from an open and free public debate among friends and colleagues. Each one searching for the truth sincerely on a free will basis and without individual biases. The polarization process appears also to be very quick in agreement with reality. It is a very strong anti-democratic reversal of opinion although made quite democratically. The model may apply to a large range of rumors.

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Part II

Dictatorship Effect of Majority Rule Voting in Hierarchical Frames

The dynamics of voting in democratic hierarchical frames is studied using concepts and techniques from the physics of disorder. The case of bimodal competition is considered. Starting from the bottom of an organization, people are randomly aggregated by small numbers in separated cells. It is done independently of their respective political trends, either A or B. Then, each cell elects a representative A or B according to its local majority which can be different from the overall organizational one. All elected people constitute the first level of the hierarchical frame. There, new cells are formed exactly as before but now involving the elected persons. New higher-ranking people are thus elected yet using local majority rules. They yield a second hierarchical level. The process is repeated a certain number of times to reach the presidency. On this basis the associated distribution of power between A and B trends is calculated at each hierarchical level. Given a hierarchical frame with a fixed number of levels, it is found to obey a threshold dynamics. Above it, the presidency is won with a probability one. Below it is with a probability zero. However the threshold value turns out to be different for the trend being in power and the challenging one. Accordingly the respective value thresholds may be 23% and 77% transforming a voting democratic system into a de facto dictatorship.

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