

Structural and Dynamical Patterns on Online Social Networks: the Spanish May 15th Movement as a case study

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The number of people using online social networks in their everyday life is continuously growing at a pace never saw before. This new kind of communication has an enormous impact on opinions, cultural trends, information spreading and even in the commercial success of new products. More importantly, social online networks have revealed as a fundamental organizing mechanism in recent country-wide social movements. In this paper, we provide a quantitative analysis of the structural and dynamical patterns emerging from the activity of an online social network around the ongoing May 15th (15M) movement in Spain. Our network is made up by users that exchanged tweets in a time period of one month, which includes the birth and stabilization of the 15M movement. We characterize in depth the growth of such dynamical network and find that it is scale-free with communities at the mesoscale. We also find that its dynamics exhibits typical features of critical systems such as robustness and power-law distributions for several quantities. Remarkably, we report that the patterns characterizing the spreading dynamics are asymmetric, giving rise to a clear distinction between information sources and sinks. Our study represent a first step towards the use of data from online social media to comprehend modern societal dynamics.

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