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Pareto's 80/20 law and social differentiation: A social entropy perspective

Sorin Adam Matei [a,*], Robert J. Bruno [b]

[a] Brian Lamb School of Communication, Purdue University, 100 N. University Drive, West Lafayette, IN 47907, United States
[b] Communication Studies Department, City University of New York-LaGuardia, 31-10 Thomson Ave., Long Island City, NY 11101, United States

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ABSTRACT

Unequal contributions to social media, whereby a vast amount of content is produced by a limited number of users, need a better, theoretically grounded explanation. The present paper argues that contribution inequality on social media can be considered a symptom of social differentiation, which can be detected via social entropy. A conceptual foundation for this perspective is offered, supported by an empirical example. We use social entropy to detect the evolution of contribution inequality on Wikipedia over a period of 9 years. The paper also offers suggestions for using the conceptual framework for better understanding social media contribution structure and functional roles for practical applications.

1. Introduction

Inequality in content creation on social media is well documented (Kittur, Lee, & Kraut, 2009; Kumar, Novak, & Tompkins, 2006). Often, only a tiny proportion of users is responsible for most of the content produced (Shirky, 2004, 2008). The phenomenon is usually assigned as a particular manifestation of Pareto's 80/20 law: 80% of everything is caused/explained by 20% of the actor/units involved in the process. The skewed nature of the online collaborative process is a reason for concern (Palloff & Pratt, 2010), since it violates many expectations about the leveling effect of communication technologies (Tapscott & Williams, 2006). Yet, this inequality does not lead to the demise of the online production systems by discouraging low level contributors, as some expect. It might, in fact, play a positive role. Inequality in contributions typically betrays the presence of a leading group that is deeply invested in the fate of the online project or platform. Leadership groups ensure project continuity, motivate other users by example, and create shortcuts in the communication process (Preece & Shneiderman, 2009). Leaders induct new members in the ranks of productive users, teaching them how to behave in the new environment, how to perform simple or complex tasks, and coaching them for higher level roles. Furthermore, collaboration between leaders and the rest of the users creates a desire to excel, which may improve the quality of the knowledge produced by the group as a whole (Arazy & Nov, 2010).

In what follows we will provide some insights into why and how inequality emerges and how it matters. We will discuss some examples, especially culled from Wikipedia and I will discuss how the lessons learned in that context can be applied to communication research in general and to public relations in particular. Choosing Wikipedia is justified by the fact that

* Corresponding author. Tel.: +1 317 416 5807.
E-mail addresses: smatei@purdue.edu (S.A. Matei), rbruno@lagcc.cuny.edu (R.J. Bruno).

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the site has become a one stop reference resource for the entire planet. Wikipedia is the 6th most visited site in the World (Alexa.com). Nine out of 10 searches for common nouns on Google.co.uk provided a link to Wikipedia among the top three results (Siverwood-Cope, 2012).

Theoretically, we propose that inequality reflects the emergence of hierarchical organization. With it come division of labor and coordination mechanisms that foster knowledge transfer between members. These are phenomena that occur to a certain degree in most knowledge or interaction spaces that form with little or no central control. Understanding how self-organizing hierarchies and division of labor emerge in one domain (e.g. Wikipedia) may provide metrics, role modeling, or patterns of activity that can be transferred to other areas, especially managing sites and campaigns in social media environments. A key assumption is that social differentiation occurs independent of platform.

Our theoretical investigation has a macro- and micro-focus. The macro-focus investigates the optimal level of inequality and leadership involvement. The micro-focus examines under which circumstances social media users change from passive consumers to active, leading contributors. The present paper lays down the theoretical argument supporting this latter perspective. We will illustrate the theory with some preliminary findings about level of structuration over time of a major social media site, Wikipedia. We hope that these insights would offer PR professionals and researchers a new perspective for understanding social media or for deploying social media campaigns. The insight that leadership and social structures are crucial for the good functioning of any social medium matters in several ways. First, engaging social media is never an issue of triggering the right responses in isolated individuals. Social media are, as its name says it, first and foremost social. Individuals do things on it partly due to personal motivations and partly to implicit and explicit connections to other individuals. Some connections, however, are more important than other. Connections to and from what this paper calls following existing literature (Gleave, Welser, Lento, & Smith, 2009) "functional leaders" matters the most. Targeting and activating these leaders should be the core goal of any research or intervention process. In what follows we will present an approach for conceptualizing the nature and role of functional leaders in the social structure of online media. We conclude with some suggestions for leveraging this knowledge for practical applications.

1.1. Inequality and social differentiation

Informal online social groups produce a staggering amount of online media content, reference knowledge, entertainment, and educational experiences. Voluntary and spontaneous, such groups can grow to gigantic sizes of millions of members. Their emergence is a challenge for media producers and analysts alike. PR professionals should be no less interested in learning how they grow and function. Sites such as Amazon.com, Wikipedia, Quora or Yahoo Answers provide prospective customers, sellers, or the interested public a wealth of information about products and services at no cost and great speed. General purpose sites, such as YouTube, Facebook or Twitter may also serve as quick conduits for usable knowledge about brands, products, and services or commercial content production and dissemination. Other more specific applications of social media, such as crowdsourcing ad design (Shall, 2013), serve public relations with unique content delivery mechanisms. This begs the question how processes that have proven successful in general social media (Facebook, Wikipedia, etc.) might be most successfully applied to PR online campaigns and platforms with differing models of organization and participation. The authors propose that the first step in such investigations should be the examination of the social structures that exist in these environments, particularly as they pertain to the formation and role of leadership and group structure. So far, the role social structures and informal leadership play was not a core concern among PR researchers interested in social media. Yet, the success of social media is undeniable. It has been explored from many perspectives and social media are seen as sources of innovation for PR practitioners (Phillips & Young, 2009). It is then important to discuss how other disciplines have conceptualized the problem.

Investigations building on the older (Contractor & Seibold, 1993, 1996) Group Decision and Support Systems literature (Contractor, 2013; Hollingshead & Contractor, 2002), looked at group structuration and reciprocal interaction between technology and social forces. Other lines of research looked at user motivation systems, incentive structures, cognitive needs and rewards, user interface design, role systems, or modes of production (Adler et al., 2008; Bryant, Forte, & Bruckman, 2005; Kittur, Lee, & Kraut, 2008; Kittur et al., 2009; Kumar et al., 2006, Singh, Fan, & Tan, 2007; Zumbach, 2005). Recent research has investigated the manner in which leadership structures and new methods of command and control evolve within knowledge production systems (Kittur et al., 2008). Findings suggesting that leaders appear early and are important components of the production system (Singh et al., 2007) rejected the claims of inherent egalitarianism of online groups and a tendency for self-organization through "emergence", i.e. a type of self-direction that eschews mechanisms of conventional social organization (Fuchs, 2002a, 2002b, 2003; Fuchs & Gasse, 2006, 2008). The counterfactual finding is that many, if not all, online knowledge/social media systems are characterized by a steep power law distribution of effort. A very small, core group of individuals control the organization or contribute to its output (sometimes both) in a very lopsided manner (Shirky, 2000, 2004, 2008).

Inequality and leadership in social media need closer examination, particularly if the social dynamics of social groups that are dedicated to producing online content are to be incorporated in PR practice and research. In this context, the manner in which leadership structures and command and control methods impact these new on-line user generated media becomes of paramount importance. Some of the central questions that need to be answered are: