Organizational Silos

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Organizational silos are herein defined and contextualized from a behavioral perspective. Specifically, silos are not only seen as barriers to communication and information flow, but they are analyzed in terms of their consequences on organizational structure, process and function. This three-tier division drawn from the literature on complex systems and networks is next adapted to fit a framework of behavior in organizations, which is a function of its environmental consequences. As learning may occur, the concept of silos can be informed by complexity theory, findings from cognitive-behavioral sciences, and a socio-cultural perspective. Moreover, the role of clusters are discussed in light of the aforementioned approaches to silos in organizations.

Keywords: Organizational silos ; behavior ; consequences ; network analysis ; cooperation

1. Introduction

Most applications of complexity theory in the organizational field assume that increases in environmental complexity usually require that organizations facilitate variation and interaction across formal levels and borders [1]. However, organizational research has also demonstrated that there is a complex relationship between formal structures and informal webs of interaction in organizational settings [2]. The emergent and evolving structure of webs of interactions is called networks in complexity studies [3]. Emergence is an important property of a social network, often leading to the formation of clusters. Interestingly, clusters are often labelled as “silos” [4][5], which is a term that implies different perceptions of value, namely a negative one, in many organizational discourses.

The term dates back to agricultural silos in the 1800s in Europe, which were trenches dug to store grains during the winter. In North America, silos are understood as storage towers separating different grains from each other [6]. Similar to their structure for storage (retention), within boundaries of steel, wood, and cement in agriculture, organizational silos are a metaphor used to illustrate pockets of interaction and knowledge in organizations. Within organizations, silos mean the presence of barriers to communication and exchange. For example, organizational silos have been considered barriers for open communication and information flow: different to their utility in separating grains, they possess negative effects insofar as they separate employees, posing a problem for both small and large businesses alike [7]. Silos are not as much a technological phenomenon as they are a cultural phenomenon[8]. As such, they encompass a multi-perspective approach: organizational decision-making and socio-cognitive frames and economics, which are concerned with the role of incentives (and costs) [9].

As a consequence, proposers of these sorts of silos definitions infer and advance the need for breaking down or bridging silo structures; they are seen as the result of technical, but mostly cultural, barriers for information flow[8]. This has generated a whole set of recommendations about how to break down silos in organizations. Similar to their function of keeping materials completely separated in agriculture, organizational silos prevent resources and information from being shared across an organization [10]. Such sets of recommendations are permeated by the assumption of the existence of silos mentalities defined as the absence of systems thinking and vision of the overall organization [11]; this type of mentality “will reduce efficiency in the overall operation, reduce morale, and may contribute to the demise of a productive company culture” [12]. It is alleged that the silo mentality results in the reluctance to share information and cooperate across departments. For example, Tett [13] has argued that the financial crisis of 2007–2008 was partially caused by an extreme structural and cognitive fragmentation of banking institutions, leading to the absence of a holistic understanding of risks in the financial market. On the other hand, more recent research in network analysis has provided indications of the importance of network clusters as spaces of social reinforcement necessary for the spread of complex information and behavior change in organizations [5][14]. The findings suggest that although the spread of complex information requires highly densely connected networks, the dissemination of complex information and behavior change demands a balanced network structure, combining the existence of local clusters as spaces of local interaction and wide bridges through which

information may flow. Interestingly, highly connected networks without subgroups tend to facilitate the spread of simple information but may lack the processes of local social reinforcement necessary for the spread of complex ideas and innovation [5].

Networks are understood as the structures of social systems. They consist of dynamic ever-changing flows of members of system, flows of information, and availability of social reinforcement. According to social network analysis, social reinforcement is defined as “the situation in which an individual requires multiple prompts from neighbors before adopting an opinion or behavior” [15] (p. 2). Thus, silos represent threats to the availability of social reinforcement, although they do not necessarily possess negative normative values outside of the organizational literature.

2. Organizational Silos: Barriers and Consequences

Network analysis is the branch of network of complexity sciences that studies emerging social structures [16]. Although much of the work in network analysis has assumed static structures, more recent research has demonstrated how temporality enhances the evolution of cooperation in social systems [17]. As previously mentioned, the term silo refers to subgroups in webs of interaction. In network analysis, clustering means assigning objects to groups in a way that properties in the same group are more similar to each other than to those in other groups [18]. In social networks, a cluster can be intuitively defined as a “collection of individuals with dense friendship patterns internally and sparse friendships externally” [19] (p. 56). The level of connectivity and overlap among different groups may vary but it is important to have in mind that the terms “cluster” and clustering do not carry the same negative connotation that silos have in organizational literature. The emergent nature of complex systems indicates the temporal existence of subgroups. However, understanding the emerging properties of such groups, and the level and content of connectivity demands transdisciplinary tools beyond those of network analysis. Networks are investigated through different perspectives [20]. On one hand, there are studies that place network structures as antecedents of individual behaviors. Those studies aim at identifying network features that play a role as independent variables or predictors of actors’ behaviors. On the other hand, there are studies that look at network structures as emerging consequences of interlocking behaviors. The emergence and maintenance of network clusters may be regarded as both antecedents and consequences of human behavior. This highlights the need for bridging network theory with behavioral sciences and cognitive theory in order to understand silos as sociocultural phenomena.

The importance of this work lies in the different understanding and conceptualizations of the concept of silos that are currently available in the organizational literature. In order to achieve a better understanding of the phenomenon, it was deemed suitable to explore and classify the research on this topic through a scoping review [21] and expand on its analysis from an organizational behavior management approach. This is the applied branch of behavior analysis concerned with learning and performance (organizational behavior) in organizations [22], which are herein broadly defined as based on the product of the work of a group of people [23]. While resorting to a behavioral approach to exchanges and flow in and across organizations, there are few publications that mention explicitly silos. For example, the silo mentality denotes an organizational situation in which there is disjointedness between resources and goals [24]. However, it seems advantageous for the leader or decision maker who aims at intervening on silos within the organization to rely on an operationalized version of exchange of information and flow of behavior.

Silos have been termed based on their functional properties [25] or their structural properties [26]. In the former case, they represent a lack of coordination that is not only sufficient, but rather necessary for the behavioral contingencies of agents across functional areas or departments to interlock (i.e., be interdependent) [25]. In the latter case of organizational silos as structures, silos are able to hinder the productivity of the workers, for the structure is intended in the Weberian view of a system of reporting relationships [26], which may only be overcome by reorganization. Nevertheless, silos may also characterize the processes of information flow within and between units of an organization or system. For example, Baker and colleagues analyzed the case of silo-based decision making as a barrier for exchange and they consented to minimal feedback loops for organizational self-correction [27]. Processes are siloed when they hinder the practices of sharing between units or departments. These practices include the sharing of information, goals, tools, and other operations and resources that are vital to the organization’s survival. Thus, silos represent process barriers, for they hinder coordination and interlocking behaviors within an organization [25].

Silo effects comprise threats for the interlocking behavioral contingencies (IBCs), insofar as they limit interdependency. Consequently, a lack of interdependency may impose a threat to the presentation of the aggregate product (AP), especially in cases of tasks with high complexity. For example, a siloed functioning of the different departments or business units that comprise a manufacturing organization is not only likely to decrease communication and collaboration

across the delivery of raw material, production, the packing and inspection unit, and the warehouse, but it may hinder the degree to which the product of their produce is able to reach the consumer; for this is possible only thanks to the interdependent work of all previous roles and steps, which comprises a metacontingent relationship [28].

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