The Pyramid Fallacy

Self-Organizing Decentralized Open Systems for Sustainable Collective Action

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Contents

Abstract

The ubiquity of hierarchical structure has resulted in scholars rarely focusing on its possible influence when investigating the motives and processes underlying collective action. In terms of efficiency, it is generally suggested that hierarchy is an easily accessible way of thinking, low effort, and perhaps unavoidable. The article builds on scholarship pertaining to three unique models that challenge the prevailing hierarchical structure: hunter-gatherer societies, open source projects, and transitiontown initiatives. By linking the individual, collective, and organizational levels, the article suggests that in the social arena, a shift away from the prevailing hierarchical structure would result in sustainable collective action and greater potential for a cooperative society. The article offers a theoretical framework for self-organizing decentralized open systems (SODOS), prescribing the necessary conditions that effect a significant shift in human motivation stemming from the interpersonal dynamic. Avenues for implementation of the suggested framework are discussed.

Keywords

collective action, social identity, group process, organizational behavior, cooperation

Introduction

The urgent call to address our myriad social dilemmas is present in news headlines every day. The clock is running down on the time we have left to preserve natural resources such as oceans and forests, and consequently the need for collective action to create a sustainable future has never been more pressing.

Acknowledging the importance of human cooperation, scholars have tried for more than half a decade to understand the mechanisms that facilitate cooperative behavior by individuals that leads to collective action. Underlying these challenges is Olson's theory that individuals in large groups will choose to "free ride" and enjoy the benefits provided by others rather than cooperate, in light of the cost associated with the cooperative behavior (Olson, 1971).

An immense body of literature challenged Olson's free rider theory and its underlying assumption of rationality and self-interest behavior (van den Bergh, Ferrer-i-Carbonell, & Munda, 2000), and evolutionary scholars found empathy in primates' behavior, offering a different lens through which to examine nonselfish behavior in humans (Preston & de Waal, 2002). However, in modern societies, alternative models supported sporadic cooperation rather than sustainable collective action (for a review and discussion, see Marcus, 2016). In addition, there is wide scholarly agreement that the actual level of individual cooperative behavior results from an interaction of inherited attributes and environmental contingencies (Danchin et al., 2011). People from various societies behave differently because their beliefs, skills, mental models, values, norms, preferences, and habits have been inculcated by long-term participation in societies with different institutions (Richerson, Boyd, & Henrich, 2003). Unfortunately, following the earlier example of dwindling natural resources, most societies studied in this literature practiced free riding rather than cooperative behavior, overusing and polluting communal natural resources such as pastures, groundwater basins, and local fisheries, or large-scale resources such as oceans and interstate rivers (Marcus, 2016).

Although the structure of groups receives substantial attention within organizational theory, it is a largely overlooked element in collective action theory. Groups vary in numerous ways, yet whether existing within an organization or as a social movement, their structure often takes a common form: A hierarchical configuration is most frequently seen in the political, economic, and social arenas of group organization, manifesting in the common examples of parliaments, business management, churches, and NGOs. In each of these authorities, power is delegated to a relatively stable leadership framework.

The ubiquity of hierarchical structure has resulted in scholars rarely focusing on its possible influence when investigating the motives and processes underlying collective action. That said, the question as to what extent hierarchical frameworks influence humans' prosocial behavior is hardly new. Scholars have also suggested that hierarchy is perhaps unavoidable in societies (Van Berkel, Crandall, Eidelman, & Blanchar, 2015). It is argued that hierarchy is among the earliest understood facts of social life (Mascaro & Csibra, 2012; Thomsen, Frankenhuis, Ingold-Smith, & Carey, 2011); it is also suggested that people are born with a biological inclination to hierarchical structure (Chiao, 2010). It is argued, as well, that repeated exposure to hierarchical systems results in people valuing them more (Bornstein, 1989; Zitek & Tiedens, 2012); and that the understanding of hierarchical systems as common and long-standing would lead people to intuitively ascribe more worth to them (Eidelman & Crandall, 2014). In terms of efficiency, research indicates that hierarchy is an easily accessible way of thinking, low effort, and perhaps unavoidable (Van Berkel et al., 2015).

The opposite of a hierarchical system in terms of the distribution of economic resources or political power could be viewed as egalitarianism. It should be noted that the focus of this article is not equality, nor will it address economic and political structures. Instead, this article explores the manifestation of self-organizing decentralized open systems (SODOS), to be further defined in the second section, through the lens of social structure. It will be argued that the decentralized structure created under the conditions of the SODOS model privileges interpersonal skills, which facilitate trust, interdependence and process-oriented motivation, enabling sustainable collective action.

Environmental social dilemmas will be used occasionally in the article as illustrations, but the model presented in this article aims to address broader aspects as well. This article thus starts with a concise review of the theory addressing the underlying motivation for collective action. It continues by outlining the theoretical framework for SODOS, prescribing the necessary conditions to generate a significant shift in human motivation stemming from the interpersonal dynamic. This examination is followed by a discussion of three pertinent models. The first model follows history back to the hunter-gatherers, who existed before the agricultural revolution, as an example of the only decentralized structure free from the influences of prevailing modern hierarchical structures. The second model is the most prominent decentralized system today—open source. What seemed a unique phenomenon in the beginning of this century has now been studied and analyzed extensively. Open source has layered applicability: it provides an example of a decentralized structure that does not satisfy the SODOS model, thereby helping to decipher the restricting conditions of the SODOS model. It also provides an insightful theoretical framework, suggesting the consideration of broader theory and research that aims to cover the more complex interplay of motivation regarding institutions, goods, and social practice. The third model is the Transition Towns (TT) movement, an international organization of communal social initiatives, which offers a useful case study to examine grassroots innovation promulgating a de-

centralized structure in the arena of pro-environmental cooperation. It was selected from various initiatives that promote a decentralized structure due to the similarities of the different initiatives, which tried to duplicate the TT model and consequently facilitated a proliferation of research pertaining to it. All three case studies are analyzed in four categories: structure, member interaction, motivation, and stability of the model, with the aim of unveiling individual motivations for collective action with respect to the SODOS model. The last part of the article offers possible avenues to implement the model.

Theoretical Background: Motivation to Participate in Collective Action and Team Action

As noted, the focus of the SODOS model is a shift toward process-oriented motivation in collective action. To clarify the strength of the promulgated model, the following section provides a theoretical background of the prevailing motivation states discussed in the literature of collective action and team action.

Collective Action

Scholars in the field of social psychology studied group behavior that exhibit prosocial actions, mainly in the domain of social injustice and discrimination.

In this body of research, the concept of social identity developed by Tajfel and Turner (1979), defined below, plays a significant role in explaining collective action. As generalized by Hogg, Abrams, Otten, and Hinkle (2004), social identity theory proposes that collective phenomena are emergent properties of human interaction; it maintains that collective phenomena cannot be fully or properly explained in terms of individuality alone. The bridge between individual and collective phenomena was illustrated through the idea of the self-concept, one of the oldest concepts in psychology (Marsh, 1990), which captures both social identity and personal identity. It was suggested that social identity processes are motivated by the need to maintain a positive self-concept through intergroup distinctiveness. Yamagishi and Kiyonari (2000) suggested a different explanation for social identity, arguing that identification with the group plays a role in collective action phenomena by increasing an actor's expectations that in-group members will reciprocate cooperation (Simpson, 2006). As articulated by Yamagishi and Kiyonari, "people treat in-group members more favourably than outgroup members simply because they expect favorable treatment from in-group members" (p. 122).

As opposed to the prevailing focus of social identity on identification with the disadvantaged group, Simon and Klandermans (2001) offer a different conceptualization. The researchers suggest that identification with the social movement itself, rather than identification with the disadvantaged group, is a stronger predictor of collective action.

In this process the movement's norms, interests and goals become selfdefining, resulting in an inner obligation to become actively involved (Simon & Klandermans, 2001).

Social psychology research offers different models where social identity is a direct, moderate, mediating, or mediated determinant of collective action, and indicate additional factors that motivated individuals to participate in collective action. (For a review, analysis, and discussion of such models see Bamberg, Rees, & Seebauer, 2015). The most dominant among them are collective efficacy, the expectations that one's group will be able to achieve social change through collective action (Bandura, 2000), and subjective group-based emotion, which is motivation caused by the negative emotion of unfair collective disadvantage (Walker & Smith, 2002).

A departure from an exclusive focus on collective efficacy and group anger occurs in questioning the applicability of intergroup conflict to expansive campaigns such as the environmental movement. In such movements, as Wright (2009) articulates, "the broad goal is not to improve the status of the in-group relative to some out-group per se, but rather to convert as many nonmembers as possible to join the in-group and to take on the in-group's normative worldview" (p. 871). Respectively, in groups where the main goal is to convert "them" into "us," the motivation for collective action is unlikely to be associated with hostile emotions such as anger, but rather with a more compassionate representation of the out-group (Wright, 2009).

Such different models seemed misaligned with Olson's free rider theory, which predicts that rational individuals will choose to "free ride" in light of the costs associated with participation in collective action. Van Zomeren, Saguy, and Schellhaas (2013) tried to reconcile the paradox of collective action, attempting to explain why people do cooperate, whereas according to Olson's free rider theory they should just enjoy the benefit without incurring to costs of cooperation, formulating the concept of participative efficacy, which is the belief that one's own actions will "make a difference" to collective efforts at achieving group goals. Preliminary evidence suggested that this factor is an independent and significant predictor of participation intention in collective action (Van Zomeren et al., 2013). Another attempt to bridge this gap with Olson's free rider theory was made by economists Akerlof and Kranton (2005), who suggested that the utility function includes social identity, where the motivation for collective action springs from an inner obligation (i.e., internal motivation) engendered by the acceptance of group norms via social identity.

Teamwork Action

Early models of motivation in the field of organizational behavior aligned with Olson's free rider theory and assumed that the individual was a rational "maximizer" of personal utility. Such models calculated external incentives such as sanctioning and rewarding, and later included personal rewards based on an assumption about

individual needs for achievement, self-determination, competence, stimulation, and self-actualization or personal growth (Shamir, 1990).

The organizational research, which began by examining the individual's self-interest motivation, verified a positive relationship between motivation at the team level and motivation at the individual level (Chen & Kanfer, 2006). The two team level motivational states that received the most attention in the literature are collective efficacy, discussed above, which captures the shared belief among team members that their team can accomplish certain tasks (Bandura, 2000), and team empowerment, which captures the extent to which teams share the multidimensional belief they have the autonomy and capability to perform meaningful tasks that have the potential to make a difference in or beyond their organization (Kirkman & Rosen, 1999).

The common models of collective action motivation reviewed in this extensive body of research, as noted earlier, still have significant limitations in creating sustainable collective action, and in light of the pressing nature of current social and environmental challenges, a new direction of inquiry is called for. The following part first prescribes the SODOS model as different and perhaps more effective perspective on collective action. The model is further discussed and illustrated through unique cases that challenge the prevailing hierarchical structure: hunter-gatherer societies, open source projects and transition action initiatives, illuminating how a shift in human motivation can lead to significant and sustainable collective action.

The SODOS Model

This section of the article offers a theoretical framework regarding the necessary conditions that give rise to a significant shift in human motivation stemming from interpersonal dynamics. The conditions of the SODOS model advanced in this article will be discussed below, with an additional illustration in Figure 1.

1. Decentralized structure

a. Weak leadership that promotes ad hoc, temporary leadership.

b. Division into subgroups.

c. Up to 150 members in each initiative.

2. Members' interaction

a. Long-term interdependence

i. Long-term task interdependence.

ii. Long-term outcome interdependence.

b. Team process

i. Face-to-face: continues communication of expectations, goals, and group functioning, utilizing a significant amount of face-to-face communication. ii. Tolerance: respect for different views.

iii. Open and flexible: group members are willing to explore new, creative ideas and are willing to compromise.

3. Motivation and emergent states:

a. Manifestation: subjective accomplishments that are experienced through the intragroup relationship.

b. Dependence: individuals feel they can contribute their strengths and depend on the strengths of other group members.

c. Trust: Coleman's (1990) definition of trust:

1. Placement of trust allows an action on the part of the trustee that is not possible otherwise.

2. If the trustee is trustworthy, the person who places trust is better off than if trust were not placed, whereas if the trustee is not trustworthy, the trustor is worse off than if trust were not placed.

3. An action that involves the voluntary placement of resources at the disposal of the trustee with no real commitment from the trustee.

4. A time lag exists between the action of trust and the future action on the part of the trustee.

The paradigmatic shift suggested by the SODOS model is both illustrated and reinforced by three unique models that challenge the prevailing hierarchical structure:

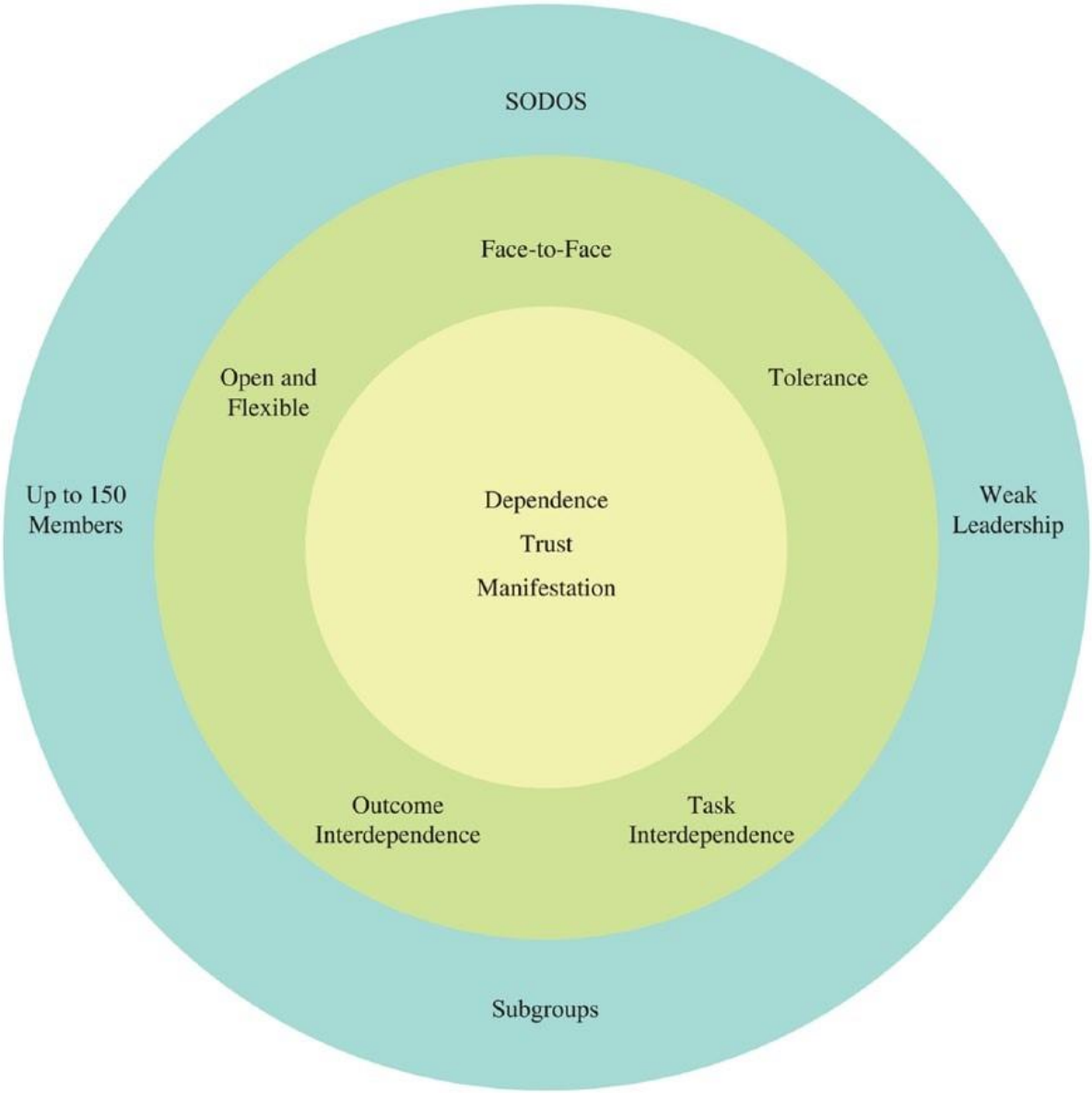

Figure 1. The conditions of the SODOS model.

hunter-gatherer societies, open source projects, and transition action initiatives. A detailed discussion of this consonance is presented after a short clarification of the relevance of the examples to the SODOS model.

Hunter-gatherers lived in small groups that practiced cooperative behavior (Lee & Daly, 1999). Such hunter-gatherer societies could be considered irrelevant to the question of large-scale cooperation (cooperation in groups of 150 members suggested under the SODOS model), mainly due to the obvious difference in group size. Although face-to-face interaction could indeed explain their robust cooperation, evidence of hunter-gatherers' unique, decentralized organization structures provides some insight into a possible correlation between such structures and level of cooperation. As Lee and Daly (1999) summarize, as opposed to what was earlier viewed by Thomas Hobbes as an existence that was "all against all" and "nasty brutish and short," contemporary scholarship indicates that hunter-gatherers "lived together surprisingly well, solving their problems among themselves largely without recourse to authority figures and without a particular propensity for violence" (p. 1). Moreover, Boehm's prominent hypothesis (Boehm, 1993) that early decentralized structures emerged from an innate drive for autonomy provides an important perspective undermining the assumption of a natural human tendency toward hierarchy, supporting discussion on the viability of decentralized structures.

Wikipedia

Open source software was a major phenomenon 20 years ago, when the first free operation system, known as GNU/ Linux, was created and launched with the help of developer volunteers from all over the world. Open source software (OSS) development is characterized by significant voluntary contributions, self-selection of tasks among developers and self-control, community-style organization, and strong ethical considerations. One of the most studied examples of a decentralized open source model is Wikipedia, where contributions lead to efficient outcomes equivalent to those created through proprietary models (e.g., Benkler, 2002; Ghosh, 1998; Raymond, 1998).

The TT movement is an international organization of communal social initiatives (Seyfang & Smith, 2007) that also provides a useful model to examine grassroots innovation in the arena natural resources. The TT movement (Hopkins, 2008) originally focused on addressing climate change by lowering fossil fuel dependency through efforts to foster civil society actions. Begun in 2006, in Totnes, Devon, UK, the campaign has now spread internationally (Hopkins, 2011). TTs work locally by founding community-owned renewable energy businesses, promoting energy conservation and a low carbon lifestyle, teaching cooking and gardening and supporting locally grown food, and solidifying these efforts by creating supportive communities to sustain these actions (Bamberg et al., 2015; Hopkins, 2008). TT continually tries to refine their model by incorporating experience gained. Over time, the movement has created a set

of 12 steps, based on the first transition initiative in Totnes, that serve as guidelines, along with supportive material and training to help communities implement transition initiatives of their own. The TT model chiefly promulgates a decentralized structure, offering early clues as to the extent such structural requirements might support group success in collective action.

Although all SODOS variables are mutually dependent and their successful interplay is essential, the following section will analyze each of the conditions prescribed above through the lens of each of the three models, followed by a synthesis of the models discussed.

Decentralized Structure

As noted earlier, the heart of the SODOS model lies in the motivation engendered by benefits for the individual resulting from the group interpersonal dynamic. Accordingly, a structural restriction of 150 members was indicated as the functional limit on groups' interaction and effective coordination under the SODOS model (Dunbar, 1993, 2016; Hill & Dunbar, 2003). This number was traced to hunter-gatherer societies and is posited as the maximum number for social networks in contemporary societies as well as for on-line social networking (Dunbar, 1993, 2016; Hill & Dunbar, 2003).

Although this size of social network is prevalent, decentralized structures are rarely found in modern society. Therefore, it could be a challenge to translate this concept into a useful image and, to a larger extent, accept how this paradigm could become a substantial framework for current lifestyles. The following section will illustrate various types of decentralized structures through the three case studies, illuminating the necessity of the subconditions prescribed in this framework.

Hunter-gatherers. Evolutionary scholarship generally views the agriculture subsistence system, which began about 10,000 years ago, as the crucial point in human history when hierarchical structure became dominant in contemporary societies. It is argued that this significant shift laid the economic basis for revolutionary changes, including the institutional change (Richerson et al., 2003) that manifested cooperation in anonymous large systems. Existing prior to the agricultural system, the structure of hunter-gatherer societies as described by Boehm (1993) was egalitarian, in contrast to the central polities of contemporary societies where the power of decision-making is delegated to a relatively steady, institutionalized leadership (see also Lee & Daly, 1999; Witt & Schwesinger, 2013). Boehm's (1993) evolutionary theory suggests that in hunter-gatherer societies individuals had substantial autonomy, a considerable voice in community affairs, and could enforce fair, responsive behavior in their leaders (Boehm, 1993; Richerson et al., 2003).

Boehm (1993) suggests that monitoring was mainly directed at maintaining an egalitarian structure that lacked strong dominance tendencies. He suggests that in small, flat societies, less dominant individuals ("potential victims") formed coalitions to manage

their assertive peers, despite their ambivalence and individual preference for submission. Likewise, the more assertive group members would override their own individual tendencies to dominate and submit to their groups, even as they led them (Boehm, 1993). This consensus-orientation and circumscribed leadership in hunter-gatherer societies allowed the group to easily subdivide and also cooperate. The division into subgroups fostered cooperation, as united subgroups could still experience face-to-face interaction and ensure that leaders could be limited or sanctioned by most or all group members (Boehm, 1993). Boehm further emphasizes the need to consider group structure as a motivational factor—in this case, a lack of cooperation would undermine the group's decentralized structure, which in turn might threaten an individual's freedom from being dominated.

We see that as opposed to the theory positing decentralized structure in ancient societies as a necessary vehicle to obtain the goal of efficient resource usage, Boehm proposes that decentralized structures emerged instead from an innate drive for autonomy. According to Boehm, the occurrence of small, subdividing groups may be a predictable side effect of behavior that aimed to limit the control of the leader, rather than a response to resource challenges. He suggests that in such groups, all or most members could unite against leaders and, by threat of disapproval or active sanctioning, circumscribe their role.

Wikipedia. The decentralized structure of Wikipedia is prominent in respect to both its content-related decision-making processes and the frameworks that regulate user behavior (Forte, Larco, & Bruckman, 2009). In Wikipedia's early days, the community was small and contained. As the number of registered users grew, contributors began organizing themselves into smaller groups so they could maintain the original small-group work styles and procedures. They self-selected into formal and informal subgroups along ideological, functional, and content-related lines. Stable content-related subgroups rose from coalitions of editors with common interests (such as women's history) or expertise; these have proliferated widely as "WikiProjects" (see https:// en.wikipedia.org/ wiki/Wikipedia: WikiProject; Forte et al., 2009).

There are two distinct parameters directed at keeping the organization flat. One is the governing license, known as the copyleft license (the opposite of a copyright license), which serves to assure that intellectual property will not be centralized. The second lies in social norms that maintain the decentralized structure, thereby preventing excessive power from falling into the hands of leaders, and instead allowing flexible leadership based on self-interest motivations such as field of interest, expertise, and knowledge.

As Forte et al. (2009) report, in the case of WikiProjects, administrators are both selected by the community and constantly monitored by it. If community standards are violated, the onus first falls on fellow editors in the community to intervene; administrator or steward actions only follow if the actor persists in defying the acceptable norms of conduct. If the conflict persists and is perceived as highly sensitive or disruptive, a dispute committee, whose members are either appointed by Wikipedia founder Jimmy Wales or elected by the community, may step in to arbitrate, but their actions

are still subject to community approval. In this sense, policymaking and enforcement are highly and consistently decentralized. A long process of deliberation within the community and community practices themselves dictate which policy will be codified by leaders.

Within the context of hierarchical structures, described above, the Wikipedia model provides a contemporary example that illustrates decentralized structures as promulgated and practiced in some of today's OSS. Another example lies in TT models, discussed next.

TT initiatives, as opposed to hunter-gatherer societies or Wikipedia, cannot automatically be classified as decentralized, as a hierarchal component is also present in their framework. However, empirical evidence found a high correlation between the adoption of the TT organization's formal guidelines and the success of a project (Feola & Nunes, 2014). Thus, the TT model, which chiefly promulgates a decentralized structure, could offer early clues as to the extent such structural requirements might support group success in collective action.

Researchers Feola and Nunes conducted a survey of 276 TT initiatives, attempting to identify the subjective and objective elements of those that were successful. Although the sample was self-selected and statistically nonrepresentative of the greater population of transition initiatives, it provided important insights into the diverse domain of social innovation. The objective measures of success included the number of participants in the transition initiative, its duration, and how much progress was made in the 12 steps to transition. The researchers suggest that the Transition Movement is able to mine unique, local community experiences for wisdom that can be generalized into organizational guidelines that can then be applied effectively to other unique, local communities. In this way, the TT movement can serve as a "guiding light" that is capable of orienting its members and ensuring its own future success (Brown, Kraftl, Pickerill, & Upton, 2012).

The transition model offers a uniquely structured self-organizing social group. TT emphasizes that decision-making should be reached without delegating decisions to one leader or leadership entity. It promulgates the principle that decisions will be made, or suggestions will be presented, by persons in the group who are most knowledgeable about the topic at hand. Respectively, when the group is large, the formation of a topic-specific subgroup is similar in process to the creation of WikiProjects (see, for example, The Decision Making guide:

https://transitionnetwork.org/resources/decision-making/).

It should be emphasized that the SODOS model acknowledges the importance of charismatic, respectable, knowledgeable individuals that can lead other group members. However, underpinned by Boehm's theory, as seen in both examples of TT and Wikipedia, decentralized structures promote ad hoc, "temporary–expert" leaders, as opposed to the established, stable leadership of a hierarchal structure. Although the first leadership style is inclusive, fluid, flexible, and spontaneous, reflecting the unknown environment, the second is concrete, absolute, and predictable, reflecting a known out-

come. An apt analogy would be the guidance required to spark the subtle interplay of an impromptu jazz session versus the absolute authority of a conductor commanding a symphony orchestra.

This section took on the challenge of laying out a more perceptible image of what a decentralized structure looks like, as they are still rather rare in society. The rest of the article will turn to the challenge of showing why decentralized structures and division into subgroups are necessary constructs toward effecting a genuine shift in human motivation.

Member Interaction

Marks, Mathieu, and Zaccaro (2001) suggest that team process is a salient factor of team interaction influencing the cognitive, motivational and affective states of a team (i.e., emergent states), and vice versa, in a cyclical, constantly evolving collection of simultaneously occurring and recurring processes and emergent states that unfold over time (Courtright, Thurgood, Stewart, & Pierotti, 2015). It is suggested that to enable a successful team process, interpersonal dynamics, which reflect relationshipfocused behaviors and interactions among members, should include effective conflict management showing mutual respect and willingness to compromise (Marks et al., 2001), which are referred by the more general terms as

"tolerance" and "open and flexible."

It should be noted that the researcher describes other conditions that enable successful team process, such as developing norms that promote cooperation and harmony and activities that develop and maintain members' motivation and confidence with regard to the team accomplishing its goals and objectives. These conditions will be discussed in the next section in the context of the paradigmatic shift presented in this article toward process-oriented motivation rather than goal-oriented motivation.

The literature examining team effectiveness discusses in length the factor of group size, generally on the spectrum of three to 12 members, and with respect to different parameters, such as type of management, reward system, and interpersonal dynamics. With respect to the last parameter, it was generally suggested that the interpersonal dynamic is more important in smaller teams than in larger groups that faced coordination problems (LePine, Piccolo, Jackson, Mathieu, & Saul, 2008), supporting the practice of division into subgroups. Regarding the specific SODOS model suggested in this article, the exact number of members has yet to be studied.

Beyond group size, the structures of team tasks and outcomes were studied as possible facilitators of group functioning that influenced team processes and emergent states. It was found that the degree to which a team's tasks and outcomes are structured to be interdependent is critical to team performance (Courtright et al., 2015; Wageman, 1999). Recently, Courtright et al. (2015) offered an integrative definition of these terms, aiming to synthesize their varied uses in organizational research. They

suggested that task interdependence is the degree to which task work is designed so that members depend upon one another for access to critical resources and create workflows that require coordinated action. Outcome interdependence, on other hand, is defined as the degree to which the outcomes of task work are measured, rewarded, and communicated at the group level so as to emphasize collective outputs rather than individual contributions.

The researchers suggest that these factors have an independent effect on team performance through different aspects of team functioning. They propose that task interdependence encourages a greater level of interaction between team members: Individuals operating in teams with high task interdependence experience more frequent and repeated exposure to one another, resulting in greater familiarity, which has been shown to support a higher level of information sharing, coordination, and joint decision making. Therefore, teams with a higher level of task interdependence should exhibit more interaction directed toward planning and orchestrating task work. The researchers suggest that team members' confidence is also increased when the team can successfully accomplish its task work objective.

Task interdependence does not, however, independently create a strong incentive for team members to engage in relationship-focused action. Courtright et al. (2015) propose that interdependent outcomes foster prosocial motives by focusing team members' attention on behavior that improves their collective well-being; the relationship among team members becomes paramount when the individual outcome depends on the cooperative efforts of team members.

With this background in mind, the three case studies will illustrate these conditions with respect to the suggested SODOS model.

Hunter-gatherers. The activity of hunting demonstrated interdependence in both task and outcome. It required group communication, both before the event in the sharing of information about recent game sightings, and coordination during the event itself. As food gathering is often a collective activity, it is also interdependent: gatherers also must coordinate their efforts in determining where and how to forage, pooling their information. Cooperation is also essential in the preparation and sharing of food and caring for children left behind in camp (Whiten & Erdal, 2012).

It is suggested that to resolve conflict and reach consensual decisions, these societies were proficient in communication skills and readily able to use negotiation and persuasiveness (Witt & Schwesinger, 2013). And, given that the activities of hunting and gathering required a relatively low investment of hours per day (Lee, 1968), a surplus of time would have been available for involved discussion and nuanced communication. These conditions could create fertile ground for the spontaneous development of a coordination mechanism that facilitated group agreements and consensus (Witt & Schwesinger, 2013).

Plentiful evidence suggests that typical hunter-gatherer societies were complexly constructed, possessing more intricate relational organization than simple face-to-face small tribal structures. Most hunter-gatherers lived in complex structures that involved

several different levels of grouping (Dunbar, 1993). It is theorized that a large number of families maintained relatively cordial relations with one another within the group, and that they could extend this behavior to ethnically similar strangers as well, engaging with them in cooperative activities. Under the right conditions, these groups could form large alliances that worked for collective purposes (Richerson et al., 2003).

Although the evidence from hunter-gatherer societies leaves us with an overall image and a basic description of the mechanisms that served to facilitate cooperation, the model of Wikipedia and TT provide ample evidence of fluidly current, complex, and even computer-mediated communication (CMC) frameworks, which bring their own attributes and challenges, to be discussed next.

In *Wikipedia's* early days, when the number of participants was small, the organization engaged in a type of cooperation very similar to the deliberative process of hunter-gatherer societies. Wikipedia policy- making was not part of a planned system of governance; it tended to echo community practices rather than prescribe them (Forte et al., 2009). As the number of registered users grew, policy became much more stable and less dynamic; therefore, as mentioned above, participants organized themselves into smaller, selfselected units to allow for some deliberation to maintain original work practices (Forte et al., 2009).

The editing process at Wikipedia is CMC within virtual groups and is typically constructive and harmonious. Occasionally, however, controversial subjects provoke extreme disagreement among editors, who then override one another, provoking what are known as "edit wars" (Iñiguez, Török, Yasseri, Kaski, & Kertész, 2014).

In most cases, the editorial process requires little direct interaction between individuals, but it is observed that in instances of conflict, intensified communications in the form of voice as opposed to text, or specific "talk pages" serve to increase cooperation in online groups (Iñiguez et al., 2014).

Talk pages are nonmandatory open forums where editors freely express opinions and suggest improvements. These pages can contain substantive debate, and talk page length is significantly correlated with the occurrence of edit wars, where conflict over the content of an article is reflected in the respective talk pages (Iñiguez et al., 2014).

As opposed to the model of Wikipedia, where most individuals act separately and little communication is required to combine individual efforts into a greater whole, in both hunter-gatherer societies and TT initiatives (which will be discussed next), task and outcome interdependence is inherent and a, respectively, high level of communication is required, at least in setting goals and agreeing on how to pursue them. As discussed, as the editorial process at Wikipedia generally requires little direct interaction between individuals, the cooperation observed involves minimal conflict and generally limited communication.

The Wikipedia model suggests, therefore, that a decentralized structure is not inherently interdependent, though it may still result in efficient outcomes, as evidenced in how Wikipedia mainly fosters "individual-level" motivation, which will be discussed in the next section (see Table 1).

A still unanswered question in the era of social networking is whether CMC could replace much of our face-to-face interaction, and scholars in the field of group psychology vary in their views. For example, Weinberg (2014) generally views CMC positively, arguing that the Internet can offer positive social support to counterbalance the negative effects of modern challenges such as isolation, alienation, immigration, and relocation.

Nitsun (2014) takes a rather darker view of online group communication, singling out two main drawbacks. The first is the online realm's negative effect on interpersonal relationship and communication, which presents a direct challenge to Weinberg's vision of greater connection and support. Instead, Nitsun points to how time spent online can supplant face-to-face, embodied communication and intimacy, allowing users to "hide from the demands of others" to pursue wider and less risky connection. The second downside is an uncontrolled and destructive online group dynamic. Nitsun points to the propensity of Internet groups and forums to indulge negative behaviors, for instance, marginalizing outsiders, idealizing certain figures, engaging in voyeurism, and so on. Nitsun's issue is not with these behaviors themselves, but the fact that they are often unacknowledged and unmediated by the group structure.

Drawing on the lived experience of multiple group initiatives, the TT model may shed light on this controversy, elucidating insights into what may be lost through the exclusive use of CMC.

The TT guiding documents on decision-making emphasize that key elements of consensus building include a clear understanding of the issue being discussed; in-depth discussion with open participation, active listening, and healthy debate; and the joint development of a solution that all participants feel they "can live with." The ability of the process to unite groups, allow the expression of various views, and produce a solution that is shared and consequently, more likely to be followed through upon is noted as its strength. Drawbacks of such consensus building, as acknowledged in the TT guidelines, include the amount of time that must be invested, the potential for weak decisions that result from numerous compromises, and its difficulty if participants feel unable to express their opinions or feel uncomfortable with the group process.

Table 1. Different Types of Motivation to Cooperate.

Motivation to co-operate	Definition	Examples of external cost/reward	Examples of internal cost/reward
Individual level	Motivation derived from benefits for the individual that are expected to result from individual's behavior	Economic benefits (Olson, 1971)	
Noneconomic benefits such as reputation building, learning (Lakhani & Wolf, 2005)			
Benefits or losses from enforcement of norms (Ostrom, 1990)			
Participative efficacy[a] (Van Zomeren, Saguy & Schellhaas, 2013)	Benefits or losses resulting from internalization of group norms via social identity (Akerlof & Kranton, 2005)		
Joy (Lakhani & Wolf, 2005)			
Positive self-identity resulting from social internalization of collective/pro-social values (Shamir, 1990)			
Benefits or losses from social preference (Sobel, 2005)			
Collective level	Motivation derived from benefits for the individual that are expected to result from collective action	Collective efficacy (Shamir 1990)	
Participative efficacy[a] (Van Zomeren et al., 2013)	Social identity (Tajfel & Turner, 1979)		
Group empowerment (Kirkman & Rosen, 1999)			

Note. SODOS = self-organizing decentralized open systems.

[a] Participative efficacy is a hybrid of both individual- and collective-level motivation; accordingly, it has been placed in both segments.

Feola and Nunes (2014) report that

> The vastly predominant strategy for conflict resolution was based on discussion, mediation and consensus-building, which either followed a formal or a more spontaneous protocol, but in several cases (10 transition initiatives) one or more persons left the group after the conflict (p. 239).

In line with Marks' description of efficient process, the TT guidelines elaborate on behavior that helps or hinders decision-making, encouraging initiators of a project to learn effective cooperation practices: https://transitionnetwork. org/resources/ decision-making/.

Unlike Wikipedia, data show that the TT model requires face-to-face communication to facilitate efficient cooperation. Along the same lines, the work of Seyfang, Park, and Smith (2013), reveals that networking plays a positive role in achieving success in this case, with "offline networking"—face-to-face communication beyond social networks and online tools—identified as an especially useful element.

We see that interdependence is required in the SODOS mode to facilitate information sharing, coordination, and joint decision-making (Courtright et al., 2015), all of which create fertile ground for interpersonal dynamics. To enable a successful team process, interpersonal dynamics should include tolerance, flexibility and openness, as defined above (Marks et al., 2001).

Although CMC may encompass the bulk of much social interaction in modern life and may be offered as major communication tool in the group process, preliminary evidence, presented above, suggests the importance of face-to-face communication, especially as the SODOS model focuses on process-oriented motivation-raising for achieving fruitful interpersonal dynamics, as discussed next, rather than the prevailing "individual level" and "collective level" motivation (see Table 1).

Motivation

As noted, the SODOS model manifests a conceptual shift that focuses on process-oriented motivation. Although the process could be described as costly and tedious, the reward may be experienced in the very effort itself. Thus, the focus of SODOS is not on the expected outcome and social identity, as generally suggested by collective action and team action scholarship, as discussed earlier in the theoretical background. Rather, it lies in an immanent process that stems from the significant interdependent, face-to-face communication of group members, where the practice of tolerance, openness, and flexibility is intertwined in all phases of team process. The three cases studied shed light on this conceptual shift. Although the weakness of the hunter-gatherer case study

is exhibited in the significant shift of modern societies away from this model, a fact that renders it somewhat irrelevant, the weaknesses of Wikipedia and TT lie in their inescapable interconnection with the prevailing hierarchal structure.

Hunter-gatherers. Scholars put forth different speculative theories for the motivation for cooperation in hunter-gatherer societies. For example, Whiten and Erdal (2012) suggest that cooperation and egalitarianism naturally reinforce each other. They explain that foragers are more likely to cooperate in their work if they have an expectation of receiving an equitable share of gathered resources.

With growing academic support for what was at first an extremely controversial thesis, Boehm's theory suggests that the motivation to collaborate emerged from a need to frustrate the ability of individuals to dominate and to enforce rules against dominant behavior (Boehm, 1993). It is speculated that hunter-gatherer societies intentionally chose weak leadership, which resulted in nonhierarchical, unstratified societies, rather than external factors determining group structure. Boehm (1993) claims that humans possess both the tendency to control and the tendency to prefer freedom, in the sense that humans "prefer not to be dominated, unless compensated by significant rewards, such as protection from aggression or economic risk" (p. 246). He bridges what seem to be contradictory characteristics, arguing that "reverse hierarchy" prevails, so long as the group can keep individual aggressiveness firmly under control.

A reverse dominance hierarchy is present only when the strongest individuals in a group are denied power by assertive collective action on a continual basis. Thus, Boehm's theory further emphasizes the need to consider group structure beyond the perspective that decentralized cooperation is always required to reach the desired outcome. Rather, fear that a lack of cooperation will undermine the decentralized structure and possibly threaten individuals' sense of autonomy constitutes an additional primary motivation here.

Boehm (1999) suggests that such a decentralized structure supports norms of trust and cooperation within the group. Witt and Schwesinger (2013) stress the necessity of such decentralized group structures in motivating cooperation, recognizing that a prosocial attitude and a higher identification with the group are important outcomes of such frameworks. The researchers posit that these factors both increase group member commitment when a task is assigned (especially when assigned by consensus, and facilitate the development of an attitude for which accomplishing the assigned tasks is a major element of reward. Ambivalence toward behavior traits tied to self-interest motives can still disrupt this process by degrading the motivational mechanism that enables such decentralized structures (Witt and Schwesinger, 2013).

Wikipedia. The vast literature on open source (for a review, see von Krogh, Haefliger, Spaeth, & Wallin, 2012) is consistently puzzled by the question raised by Lerner and Tirole (2002): Why would thousands of top-notch software developers contribute for free to the creation of a public good? Through extensive research conducted in this field, scholars have identified the dominant role of self-interest motivation as determining contributions to OSS. Such motivations fall across a broad spectrum: At one end,

we can find contributors motivated by ideology and altruism, (for detailed discussion on the definition of altruism, see Marcus, 2016). At the opposite end, we can find the standard motivations of career enhancement. And, falling in between these extremes are various motivations including joy (the pleasure of solving an open source programming problem), reputation, own use, learning, kinship, and reciprocity (Lakhani & Wolf, 2005; see Table 1, for concise summary.)

Open source scholarship emphasizes the role of certain structures in influencing motivation. For example, some open source license schemes do not require reciprocity and allow commercialization for private gains, which directly forestalls some of the motivations mentioned above, such as own use, ideology, or altruism. Thus, as programmers may not be able to enjoy the benefits of code contributions made by others, they also might not be able to harness innovations to shape the project for the community's need, and the derivative work is likely to exist in a version that is incompatible with the initial open source design. It was identified, however, that such projects could still provide motivation for contributors if they satisfied other self-interest motivations such as fun or career enhancement (see *individual-level* motivation—Table 1).

This does not mean that developers of open source software are entirely motivated by such narrow self-interest motivations. The conceptualization of Simon and

Klandermans (2001) on social identity, suggesting that in the process of identification with the social movement, the movement's norms, interests and goals become self-defining, resulting in an inner obligation to become actively involved, seem to be applicable to some open source projects (von Krogh et al., 2012). von Krogh et al. (2012) put forth a much broader theoretical framework for understanding the motivation to contribute to open source software. It is suggested that individuals do not necessarily act to achieve some immediate reward because they want to maximize use-value or gain favors. Instead, they strive to reach or maintain consistency in their actions throughout life—an ambition that values personal development and contextual events and points beyond the attainment of specific and immediate rewards, what von Krogh et al. termed "unity of life," as follows: "Individuals are motivated because through participatory exposure to social practices, they learn what it makes sense to do; and, vice versa, by reflecting on the *unity of life* they shape social practices" (p. 32).

According to this view, motivation is then intimately linked with a developer's experience of being a member of the social practice of OSS: ". . .it is not the immediate and isolated outcome that matters (the carrot), but how the individual subjectively holds outcomes and actions to be consistent over time (the journey toward the end of the rainbow)" (von Krogh et al., 2012, p. 32).

TT. The work of Bamberg et al. (2015) suggested that when approached for the first time to join TT, a person's decision to participate may be chiefly driven by his or her assessment of personal costs and benefits, which is not dependent on group constructs. Along the same lines, Feola and Smith proposed that the persuasion techniques of the TT movement should focus more on fun and activities that appeal to

selfinterest motivation. Similarly, Seyfang and Haxeltine (2012) found that widespread public engagement is more achievable through community-based activities that offer immediate benefits, such as cost savings, pleasure, sociability, sense of achievement, community, and self-expression.

Consistent with Bamberg et al., Feola and Smith's data did not provide empirical evidence for the direct influence of group-based anger or outrage on the collective action motive and suggested the greater effectiveness of employing the persuasion technique mentioned above, rather than centering on lectures and movies designed to encourage negative emotions regarding the government's inaction or the economy's exacerbation of climate change.

As Bamberg et al. suggested, more frequent contacts and group activities over time should increase an individual's identification with the group. As a consequence, his or her decision to stay in the group and participate in further collective actions may be determined by internalized group norms and participative efficacy (Van Zomeren et al., 2013). Transition guidelines address both the need for self-interest at the entry stage as well as for social identity and participative efficacy down the road.

In line with the theoretical framework discussed earlier, suggested by von Krogh et al. (2012), as well as Mead's social behaviorism (Mead, 1934), the heart of the SODOS model lies in *individual–group level* motivation, engendered by benefits for the individual resulting from the group interpersonal dynamic (see Table 1). The conceptualization offered here as the manifestation of an individual in a group act suggests that some aspect of one's self can only be developed and experienced through a social web of interdependent relationship (see *individual–group level* in Table 1).

In this process, dependence, manifestation, and trust are cyclically triggering one another over time, and are derived from the other SODOS conditions, as follows: Group members experience the manifestation of interdependence, and they are consequently able to depend on one another in their efforts and for information and resources. Gradually members understand that they can expect that other team members will reciprocate, and trusting behavior is established.

Stability

Hunter-gatherers. The Egalitarian, decentralized structure of hunter-gatherers' societies was eventually replaced by the formation of states and and hierarchal structure. Scholarship generally views the agriculture subsistence system as the crucial point in human history when hierarchical structure became dominant, however, some new theories suggest that the sprouts of a more hierarchal structure were present much earlier (Graeber & Wengrow, 2018). In line with Boehm's theory, it is suggested that the transition toward hierarchal structure was not inexorable and that social equality also endured in large cities and even regional confederacies (Graeber & Wengrow, 2018). Such speculation regarding cities that were organized along self-consciously egalitar-

ian lines with sophisticated civic infrastructure could open a new direction of inquiry regarding institutions that can support the SODOS model.

Yet, ultimately, egalitarian structures did not endure, and scholars offer different theories on the establishment of centralized states. A prominent example is Carneiro's (1977) anthropological circumscription theory, which suggests that the formation of the state and hierarchal structure was coerced due to environmental or social circumscription that did not allow relinquished communities to disperse to distant territory. Thus, it is argued that force rather than enlightened self-interest led autonomous villages into codified states. Power over the conquered territory was, therefore, given to individuals appointed to political office and assigned the task of implementing the administration, thereby creating hierarchical structures.

In the same vein, Witt and Schwesinger (2013) suggest that the genetic preference for egalitarianism must have still been present in those who were now possibly unwilling subordinates, which could explain the propensity to violent revolt against hierarchical leaders and the ensuing severe punishment of those who revolted, designed to discourage such behavior. The researchers suggest that a subtler enforcement of the hierarchical structure came from the labeling of domination and submission as the "natural" and "God-given" form of social organization. In this manner, inculcation of belief could prevent subordinate members from even thinking of contesting the status quo.

Wikipedia. Not all open source initiatives are stable; many examples of open source community projects initiated by noncommercial organizations exist that subsequently "died," or were supplanted by proprietary products. Wikipedia remains a stable project largely because both its communal method of creation and its governing license are efficient, due to a few key characteristics. First, the content is modular in the sense that each contribution is not significant by itself, and, as a whole, the product's value is greater than the sum of its parts. Modularity is often claimed to be one of the key characteristics of successful open source ventures, as the structure is able to utilize and accommodate the many small contributions that characterize the communal method of creation. Following similar logic, the primacy of small contributions might suggest that tasks should not be too complicated, enabling them to be executed within the contributors' limited time frame. Second, Wikipedia generates robust incentives to contribute, such as self-satisfaction and ego gratification, as discussed. Third, its type of license assures that the work will not be hijacked by commercial firms, exploited for commercial uses, or misappropriated.

We see that the public good can still be supported even if the individuals who contribute to it are motivated by standard self-interest preferences such as reputation-building and self-satisfaction (Lerner & Tirole, 2002). In the case of open source, these contributions could lead to efficient outcomes in some open source projects that could even surpass the efficiencies of projects created through organized production (e.g., Benkler, 2002; Ghosh, 1998; Raymond, 1998). Yet as the basic distinction between the public good and the common good demonstrates, this mechanism might not be

applicable to the example of some natural resources discussed here (see Marcus, 2016) or other tasks involving interdependence, which will be discussed next. For example, the intrinsic-rivalry-influenced nature of these resources leaves them susceptible to overuse, requiring a different type of cooperation and motivation (for detailed discussion, see Marcus, 2016).

TT. Not all transition initiatives mature enough to facilitate real action. The transition movement establishes a process that is designed to guide groups in establishing a transition initiative that is both active and stable. Groups that are interested in establishing a transition initiative are encouraged to follow the suggested guidelines, supported by complementary written resources, training, and consulting services. As noted earlier, groups that want to be recognized as official members of the transition network must meet certain criteria. Those that fail to meet the criteria but are nevertheless inspired by the transition movement are still noted and listed as "Muller."

Aiming to uncover general patterns of success and failure within transition initiatives, Feola and Nunes (2014) conducted a survey that was sent to a range of transition initiatives—active, nonactive, and Muller. They found that the formal structure of the Transition Network seems to play a significant role in at least two ways: First, it generates the grand narrative of transition and second, it delivers the training that equips local groups for action.

All SODOS variables are mutually dependent and their successful interplay essentially comprises SODOS. This model enables members to develop and practice the cultivation of unity and security. There is nothing in a specific SODOS group that segregates its members. It allows individuals to fluidly change groups and belong to different groups that practice similar processes. The SODOS model is expected to result in intragroup cooperation, intergroup cooperation, and collective action, as Figure 1 illustrates.

Discussion

The article builds on the literature on hunter-gatherer societies, suggesting that the human love of autonomy and decentralized organization were frustrated by hierarchal structures. Accordingly, love of autonomy, intrinsically intertwined with decentralized structure, as discussed above, was ultimately replaced by groups and teams that are mostly motivated by *individual-level* or *group-level* motivation (see Table 1). As we see from the model of Wikipedia, *individuallevel* motivation (Table 1) is sufficient to allow efficient production of public good. In such a case, trust and interdependence among participants is neither a preliminary condition for cooperation nor an expected outcome. In other cases, as seen in TT, the motivation to cooperate could result from participative efficacy and/or standard small group enforcement mechanisms such as social sanctions, which are insufficient for the sustainable collective action required for the preservation of natural resources such as oceans, forests, the atmosphere, and so on (Marcus, 2016).

As noted above, in terms of efficiency, hierarchy is an easily accessible way of thinking and low effort (Van Berkel et al., 2015). Taking a broader look at hierarchal structure, through the lens of efficiency, however, we discover the fallacy: hierarchal structures furnished *individual-level* and *group-level* motivation types that failed to establish the grass root collective action necessary to address myriad social dilemmas, where natural resource preservation is but one example.

The following two examples illustrate the drawbacks of common models of collective action motivation. They will later be used to illustrate the motivational shift incurred under a SODOS model.

Think of a community garden that was initially allocated by and is currently overseen by the city municipality, but still requires the participation of neighborhood residents to succeed. In this example, motivation at the *individual level*, such as a desire for a relaxing activity, socializing, and healthy leisure time, could be sufficient to induce neighbors' participation, as long as the benefits of such activities were greater than the time, effort, and other costs associated with these activities. The cooperation of the neighbors in the community garden achieves a prosocial result. This is an example of rather low interdependence, especially if the municipality provides the equipment and plants: Each neighbor could contribute her work independently, and yet the isolated efforts of all members would still create a beautiful garden for the neighborhood. A community garden organized by a city municipality may demonstrate a stable collective action, similar to the development of open source software. In this scenario, similar

to the Wikipedia model, neighbors could be motivated by *individual-level* rewards and other inducements at the *collective level* as well (see Table 1).

A different scenario occurs when there is a slightly polluted, litter-strewn public lot, and a few neighbors who are interested in gardening assemble to speculate on what could be done with the land. This kind of task scenario requires more interdependence than the first described: the neighbors must decide together what to do with the lot (grow vegetables, build a playground for children, create a park, etc.), and administrative procedures involving the city municipality might be required. The neighbors have to decide how to treat the pollution and actually work to clear the lot, etc. Such projects can be initiated when neighborhood leaders have other aspirations that provide a source of motivation. For example, a leader might want to sell a property next to the lot, which was previously challenging due to the unsavory quality of the adjacent land. A leader could also have political aspirations, or she might own a new gardening equipment start-up and desires a highly visible test case to troubleshoot and publicize the company's new home gardening technology. A leader could also have social preferences and could be exhibiting prosocial motivation (Sobel, 2005). In this case, other neighbors might then join due to *collective-level motivation*, whether *internal* or *external* (see Table 1).

The vacant lot scenario may be less stable, however, similar to some TT initiatives. First, some of the leaders' motivations discussed above may not endure. In addition, there is a risk that a dominant leader might interfere with neighbors' motivation at an individual level. The vacant lot scenario may still come through under *collective-level motivation, external* or *internal* (see Table 1). However, as discussed in the literature review, these constructs are fragile and depend on social identity and on participants' belief that the outcome is achievable and is determined by their contribution (Van Zomeren et al., 2013). Moreover, as discussed in the literature review, the root of social identity lies in separation by inter-group distinctiveness, forestalling cooperation beyond the scope of the close group, thus thwarting the wider cooperation required to address many social and environmental dilemmas. Even social movements that build on the goals and values of the movement rather than social identity largely depend on collective efficacy or participative efficacy motivation, which are only marginally satisfied in environmental social dilemmas.

In the example of the litter-strewn public lot, the focus of the SODOS is not on the expected outcome and identification with the group. Rather, the process itself is the focal point, a team venture that coalesces through meaningful, interdependent, face-to-face communication suffused and supported by flexibility, tolerance, openness among the participants. For the neighbors participating in improving the litter-strewn public lot under a SODOS model, the significant investment in communication, unlike that of current models, becomes the source of benefits. The motivation to cooperate is derived from the process of the social act (see *individual–group level* in Table 1) under the decentralized structure of the SODOS model.

Thus, the heart of the SODOS model lies in the motivation engendered by benefits for the individual resulting from the group interpersonal dynamic. This builds upon the concept of *manifestation*, presented earlier in the article, the subjective accomplishments that are experienced through the intragroup relationship exhibited in the interpersonal dynamic among group members.

To further extend, this concept of motivation with an especially tangible illustration, we can examine a long-term relationship between two individuals. Many human relationships, whether casual or structured, find an easy analogy in the contemporary cooperation derived from *individual-* or *grouplevel* motivation: one could simply enjoy fishing or jogging with a friend, or perhaps expect some concrete benefit from a friendship such as a wider circle of connections, etc. A relationship involving a long-term commitment in romantic or other types of partnerships, however, sheds light on the deeper dynamics involved in the SODOS model. Over the years, long deliberations arising from various decision-making processes with a spouse or a partner become necessary. Although elements of the process could be tedious, each individual would have the opportunity to experience subjective accomplishment (i.e., manifestation) from the active engagement. For instance, one partner could overcome their tendency to anger while the other could overcome their tendency to control. Trust and some level of interdependence are both necessary for and are also the expected result of a successful long-term relationship, where practices of tolerance, openness and flexibility become intertwined. In such relationships, it might be easier to imagine how it is possible that the very process and the effort itself become the source of motivation to maintain the relational commitment despite its challenges.

In contemporary society, where the chase after *individual-* or *group-level* motivation is ubiquitous, the cooperative decision-making process of long deliberation can seem costly or tedious. The SODOS model manifests a conceptual shift that focuses on process-oriented motivation where the reward may be experienced in the very effort itself. For collective action participants working within an SODOS model, the significant communication efforts undertaken become the source of benefits. The motivation to cooperate is derived from the process of the social act, and the interdependence and face-to-face engagement of group members sustained by tolerance, openness, and flexibility, creates a powerful dynamic that ultimately becomes self-sustaining.

The SODOS structure is therefore a necessary mechanism to help establish meaningful motivational shifts in modern society. As long as the social act occurs under the same hierarchical structures, people will lack the opportunity to build the crucial skills (i.e., tolerance, openness, and flexibility) so necessary for an effective decentralized decision-making process, and accordingly they will also miss the experience of reciprocity via interdependence and trust that transcend social identity.

SODOS, however, are likely to remain a negligible phenomenon in modern societies, as the formation of such organizations requires complex group dynamics that few individuals are trained to facilitate currently. It is suggested that such training is valuable and should be offered in schools and universities, fulfilling a crucial function

by offering students an opportunity to engage in and practice in a group process that is not subject to external outcomes.

Within prevailing educational structures, student teamwork, which can be interdependent both in task and outcome, still fosters cooperation that is mostly *individual level* or *group level* (Table 1). For example, choosing cooperation over free riding could be explained by the belief of a student that his contribution was required to a get better grade for the team (i.e., participative efficacy). A student could cooperate due to the standard small group enforcement mechanisms of social sanctions: Noncooperative behaviors could result in the labeling of the student as "lazy" and jeopardize his future possible collaboration with other students in his class. Conversely, cooperative behavior could result in a good reputation and open possibilities for future collaboration. However, as discussed, such motivation does not lead to sustainable collective action.

It is therefore necessary to incorporate the SODOS model as a more comprehensive and ultimately transformative tool for building the foundational skills that support committed engagement. General guidelines for incorporating the suggested model in higher education training are outlined here, as a detailed analysis and recommendation is beyond the scope of this article. First, it is important to schedule extensive teamwork throughout the college years where students are randomly assigned to teams and cannot choose who they work with. The tasks should be interdependent in execution and outcome. A student would be guided to practice and improve their skills in the team process discussed here over the course of their college education. Emphasis should be on openness, flexibility and tolerance, and the tools of peer review could facilitate improvement without influencing the academic grade of the student, with an emphasis on projects that allow students to experience the *individual–group level* internal rewards that can only flourish in a group setting (see *individual–group level* in Table 1). Such an immersive, ongoing experience could be valuable in facilitating the duplication of such models in other social environments as well, as the student would carry the experience forward into the rest of her life and future work.

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