

## Abstract

Evolved mechanisms of phenotypic plasticity, which are evolutionary processes in their own right, enable species to respond adaptively to their environments. The Scandinavian countries and, in particular, Norway have for many years scored exceptionally high on lists of life quality, economic indicators, and measures of happiness. We propose that learning prosocial and cooperative behavior, which is central in a particular Norwegian cultural practice, *dugnad*, plays a role in the country's success story. *Dugnad* is a Norwegian term for a type of voluntary work carried out as a community or collective and traditionally involving a social gathering. *Dugnad* has a long history in Norway, and it is a well-established cultural practice that has led to and still maintains significant social benefits. *Dugnad* is arranged in virtually all communities such as kindergartens, neighborhoods, schools, and organizations. Participation in *dugnad* gatherings is generally expected. Children from a young age are involved in *dugnad*. *Dugnad* activities are based on cooperation and can include anything from arranging a spring cleaning in the local community to building a club house for your children's sports club. This paper discusses *dugnad* as a cultural practice that creates an environment that nurtures prosocial and cooperative activities. From a behavior analytic, selectionist perspective, we propose a non-domain-specific learning mechanism for *dugnad*-typical prosocial and cooperative behavior analogous to the phylogenetic evolutionary mechanism of group selection. Contingencies can lead to and maintain *dugnad* activities when extended behavioral patterns are selected as wholes.

*Keywords:* dugnad, prosociality, nurturing environment, Nordic model, patterns of behavior, evolution

*Dugnad*—A Fact and a Narrative of Norwegian Prosocial Behavior

In 2017, Norway was granted the title “The Happiest Place to Live” (Helliwell, Layard, & Sachs, 2017). Norway has, for many years, scored exceptionally high on lists of life quality and economic indicators, such as the United Nations Human Development Index matrices (UN, 2015). How and why have Norwegians achieved this? Scholars (Eklund, 2011; Witoszek & Midttun, 2018) explain Norway’s success with the so-called *Nordic Model*. The Nordic countries, Norway, Sweden, Denmark, Finland, and Iceland are societies with both high economic productivity and an unequalled quality of life. Core elements of the Nordic Model are comprehensive social cooperation, economic governance, public welfare, and organized work. The economy is open with a high per capita income. All five countries have a rather large public sector, high taxes, and an inclusive welfare state with benefits such as free or affordable public services, health care, and education. Also, the Nordic countries have a strongly regulated labor market policy. Despite these similarities, the Nordics have different histories and unique structures (Witoszek & Midttun, 2018). Over the last years, international interest in the Nordic Model has rekindled (Eklund, 2011).

The hallmarks of the Nordic cultures are their consistent and strong advocacy of the ideal of a cooperative, tolerant, and inclusive community, which is regarded as superior to a competitive, hierarchic culture (Witoszek & Midttun, 2018). Norway is one of the richest and most egalitarian democracies in the world. No doubt, the oil resources have played a major role in accumulating wealth, but the reason that the Nordic model generates so much research interest (e.g., Christiansen, 2006; Dølvik, 2013; Greve, 2007; Hilson, 2008; Knutsen, 2017; Kvist, 2012; Midttun et al., 2011; Simon, 2017; Wilson & Hessen, 2018) is the proposition that also high degrees of equality and reciprocity significantly contribute to the success of the Nordic nations.

The question motivating many analyses of the Nordic Model is whether other countries could benefit from an implementation of its characteristics. Cultural and social values are not easily transferable across borders (Eklund, 2011), but behavior analysts may foster such transfer by use of their tools and knowledge allowing them to perform functional analysis on a cultural level (Couto & Sandaker, 2016).

Wilson, Hayes, Biglan, and Embry (2014) argue that evolution must be at the center of any science of change given that the study of evolution is the study of how organisms change in relation to environmental events. Thus, they conclude, in line with the ideas that form the basis of Skinner's (1948) novel *Walden Two*, that we need to become wise managers of evolutionary processes selecting behavior to avoid unmanaged processes taking us where we would prefer not to go. *Walden Two* portrays a world combining the best of both Paleolithic and modern culture (Glenn, 1988). The novel illustrates that the evolutionary processes selecting behavior that we are to be aware of include those occurring at a phylogenetic level, and those we are to manage include those on an ontogenetic and a cultural level. Skinner portrays, in particular, the potential of managing the ubiquitous selection of behavior during ontogeny, which is not to be confused with eugenics, a set of practices attempting to improve the genetic quality of the human population by artificial breeding of—what its proponents regard to be—superior genetic groups (Galton, 1904).

Natural selection is based on relative fitness. Hence, the behavior that maximizes the fitness of individuals, relative to members of their group, is often different from the behavior that maximizes the fitness of the group as a whole. The arising conflict between self-interest and behaving for the good of the group has occupied evolutionary biologists since the 1960s. These evolutionary dynamics of cooperation indicate, on the one hand, an advantage of societies

relying on many groups that successfully manage their common pool resources. On the other hand, they point to the vulnerability of these groups to self-interested defectors. Wilson and Hessen (2014) proposed a solution of this conflict between self-interest and mutual benefits by suggesting that the social dynamics that take place naturally and spontaneously in smaller groups can be scaled up to prevent the ethical transgressions that routinely take place at larger scales.

Wilson and Hessen (2014) summarize their view as follows:

The success of the so-called “Nordic Model” is commonly attributed to factors such as income equality, a high level of trust, and high willingness to pay tax, which is tightly coupled to strong social security (health, education), a blend of governmental regulations and capitalism, and cultural homogeneity. These and other factors are important, but we think that viewing them through an evolutionary lens is likely to shed light on why they are important. Our hypothesis is that Norway functions well as a nation because it has successfully managed to scale up the social control mechanisms that operate spontaneously in village-sized groups. Income equality, trust, and the other factors attributed to Norway’s success emanate from the social control mechanisms [...] The most strongly regulated groups in the world are small groups, thanks to countless generations of genetic and cultural evolution that make us the trusting and cooperative species that we are. The idea that trust requires social control is paradoxical because social control is not trusting. Nevertheless, social control creates an environment in which trust can flourish. When we know that others cannot harm us, thanks to a strong system of social controls, then we can express our positive emotions and actions toward others to their full extent: helping because we want to, not because we are forced to (pp. 125-128).

In the search for the causes of Norwegian well-being, this evolutionary perspective suggests turning the spotlight to the traditions of cooperation, reflected in a particular Norwegian cultural practice—*dugnad* ['du:gnad]—which has been central to the development of the welfare society. In their reflections on Witozsek and Midttun's (2018) edited volume on the Nordic Model, Kildal and Bjerke (2018) write that Nordic

knowledge and thinking have created inbuilt reflexes of cooperation in the Nordic societies. The tradition of cooperation, for instance, reflected in the Norwegian institution *dugnad*, has been central to the creation of the Nordic welfare societies.<sup>1</sup>

Even if Kildal and Bjerke (2018), who do not have a background in a behavioral science, use the term *reflex* technically inappropriately—possibly metaphorically or as an exaggeration—they deserve credit for explicitly drawing attention to the very connection between well-being and cooperation in Norway and the cultural practice of *dugnad*, which we discuss further.

The main dictionary of the Norwegian written language Bokmål, *Bokmålsordboka*, describes the heritage of the Norwegian word *dugnad* as an amalgamation of *duge* and the suffix *nad*. *Duge* means “to be good enough” or “useful,” while *nad* corresponds to the Latin *atus* that is suffixed to a noun to designate passive qualities. The term *dugnad* refers to a sort of voluntary work done as a community or collective. Traditionally, *dugnad* is a way of solving local,<sup>2</sup> common tasks by means of collective efforts from the community.

The cultures of the Scandinavian nations Denmark, Sweden, and Norway are so similar that Scandinavians moving between these countries are not regarded as immigrants to the same

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<sup>1</sup> Online source without page numbers that we edited for grammar.

<sup>2</sup> In the following, we omit italics when referring to the cultural practice of *dugnad*, instead of the term *dugnad*.

extent as immigrants from other countries. Swedish, Norwegian, and Danish are mutually understandable, overlapping in much of their vocabulary. Reference to “different languages” is politically motivated; from a linguistic perspective, they are dialects. However, *dugnad* is a Norwegian word lacking understandability and counterparts in any other language, including Swedish and Danish. In 2004, the Norwegian national broadcasting service (NRK), elected *dugnad* as “Norway’s National word of the year” in their TV series *Typisk norsk* (engl. “Typically Norwegian”). Researchers (e.g., Kraglund & Enjolras, 2017; Lorentzen & Dugstad, 2011) agree on the importance and uniqueness of *dugnad* in Norwegian culture, but there is little documentation of the development of this cultural practice. Sometimes, *dugnad* and voluntary work are used interchangeably, but there are distinctions between the two terms. Traditionally, the core elements of *dugnad* are 1) unpaid work, 2) people meet face-to-face, and 3) they join in tasks with a defined start and end point. Work is followed by 4) a social gathering such as a meal (Lorentzen & Dugstad, 2011). Not all voluntary work is *dugnad*, in the sense that not all voluntary work needs to be face to face or include a social happening (Lorentzen & Dugstad, 2011).

Participants in *dugnads* engage in prosocial behavior, which Biglan (2015) defined as “behaviors that benefit individuals and those around them”<sup>3</sup> (p. 16) and as consisting of “behaviors [...] that have to do with helping others, contributing to the community [ ..., are] associated with greater personal well-being [, and are] beneficial to the group” (Wilson et al., 2014, p. 445). Biglan (2015) and Biglan, Flay, Embry, and Sandler (2012) put forward that promoting and reinforcing prosocial behavior is one of the ways in which interventions make

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<sup>3</sup> We wittingly omit “a constellation of values [and] attitudes” (Biglan, 2015, p.16), which are part of both of Biglan’s definitions, but which we regard to be inseparable from behavior.

environments more nurturing. That is, fostering our successful development and preventing the development of psychological and behavioral problems. Dugnad may be understood as a means of realizing nurturing environments that fuel prosocial behavior in Norway. Systems and policies that have proved to work well might serve as an inspiration for others (Eklund, 2011).

If the tradition of dugnad plays a role in Norway's success, it solicits the questions *How?* and *Why?* If all human behavior is a function of environmental events that have occurred during the history of our species and environmental events we experience during our lifetime, how and why do people who live in a "dugnad society" behave differently from those who do not?

By discussing the Norwegian cultural practice of dugnad, this paper exemplifies how traditions can be understood from a behavior analytic perspective and how such understanding may guide action. Dugnad is a *cultural practice* in the sense that *culture* consists of behavior patterns acquired as a result of group membership (Boyd & Richerson, 1985), and that *practices* are behavioral patterns that are not idiosyncratically acquired by individuals. Thus, these behavioral patterns are available for replication—for example, contrary to Dawkins' (1982) dead-end replicators (Baum, 2000). Skinner (1981) suggested that the unit of culture is a contingency of social reinforcement (i.e., arranged by other people) that is characteristic for a group. In this paper, we attempt to investigate dugnad as a unit of culture by discussing its social context and socially mediated consequences. First, we suggest a historical account of a cultural practice that has led to and maintained significant social benefits. Second, we propose behavioral processes that support the cultural practice of dugnad. Different from the perspective expressed by the biologists Wilson and Hesse (2014) in the quote above, we argue that an outline of the dynamics of prosocial behavior, such as dugnad organization and participation, is not based

exclusively on genetic and cultural evolution, and is incomplete without an outline of the role of the selection of behavior during an individual's lifetime.

Skinner (1981) argued that behavior change might be caused by selection processes at three levels: genetic, operant, and cultural. In this paper, we attempt to fill that gap created by analyses limited to genetic and cultural selection of prosocial behavior. After all, the three levels of selection are interdependent. As Skinner (1981) pointed out, the “operant condition is an evolved process, of which cultural practices are special applications” (p. 502), and operant and cultural selection processes ultimately need to be adaptive from a natural selection point of view. The question about which adaptive function dugnad may perform translates to the questions of what is learned and why this might be useful. To be beneficial, behavioral patterns must make contact with consequences that affect the copying of genes, which we will discuss in Baum's (2012) terminology of Phylogenetically Important Events.

In this present contribution to the special section of *Perspectives on Behavior Science: Cultural and Behavioral Systems Science*, we discuss how operant selection may contribute to bringing about the cultural practice of dugnad. We discuss this interdependence of operant and cultural phenomena by broaching that consequences (Baum's PIEs) may be produced by 1) several people together, which Glenn (2004) termed *cumulative effects* or *aggregate products* (Glenn et al., 2016), 2) temporally extended behavioral patterns correlating with long-term consequences, and 3) short-term social consequences, which are effective due to our long history of living in groups. Because long-term consequences have little effect on behavior, an adaptive practice—that is, a practice that pays in the long run—is strengthened in the short term by social reinforcers delivered by rule-givers. A behavioral analysis focuses on environmental events that are observable and, therefore, susceptible to research. Thus, when we speak of “self-control,”



this refers to such observable adaptive practices, which pay in the long run (Baum, 1995; Rachlin, 2004). This includes what Borba, Tourinho, and Glenn (2014) term *ethical self-control*, denoting situations in which “a person’s behavior produces long-term consequences to many members of the culture [...and where] the delayed effect is central to the definition” (p. 69).

In this paper, we explore how this dynamic of the effects of long-term and short-term consequences on behavior can contribute to the maintenance of and the threat to dugnad-practices. The susceptibility of behavior to all three ways of contacting consequences enables the formation of extended patterns, extended in an individuals’ time or across several individuals, such as when participating in dugnad activities. This paper suggests that these are how operant selection maintains dugnad activities.

In the following, we first provide a primer to the history of dugnad and then outline our understanding of the workings of operant selection in initiating and maintaining dugnad activities by interpreting this cultural practice in the light of a behavioral analysis of prosociality, self-control, and altruism, before concluding with final remarks.

### **The History of Dugnad**

Norway has a long tradition of dugnad in terms of unpaid voluntary work where people gather to accomplish a task often involving manual labor that requires many workers (Beier, 2011; Klepp, 2001). Dugnad is based on egalitarian relationships among the participants. Today, dugnads are scheduled in almost all community contexts such as in kindergartens, neighborhoods, schools, and sports clubs. When you are informed about a dugnad, the other participants generally expect you to participate and to spend time contributing to the common good of the community. Dugnad activities today range from baking a cake for your children’s school band lottery to helping to build a clubhouse for the local sports club. A social gathering

often follows the utilitarian event. For example, a barbeque or waffles and coffee gathering may follow indoor and outdoor spring-cleaning in housing cooperatives.

The origin of dugnad dates back to a broad period from the beginning of Christianity to the 19<sup>th</sup> century (e.g., Lenk, 2011; Lorentzen & Dugstad, 2011). According to the Institute for Social Research in Norway, dugnad activities can be traced back to rural communities of the 14<sup>th</sup> and 15<sup>th</sup> centuries. Voluntary organizations later adopted dugnad as they emerged after the 1850s (Institute for Social Research, 2008).

Likely, special Norwegian conditions such as the spread settlement in a landscape with fjords, forests, and mountains led to the growth of small isolated communities that favored the development of the dugnad tradition. Because they lived in small and detached villages, people depended largely on one another's help. In contrast to Sweden, for example, nobility has been almost nonexistent in Norway. This may have fostered a culture of emphasizing equality and social democracy that has nurtured the dugnad practice. Norway has a long history of relatively small social differences. Long before oil was discovered, the population was relatively poor. With little or no money to share with others, people instead contributed work power. Dugnad activities were often limited to small communities, and in the 19<sup>th</sup> century, dugnad was an important part of farming (Lenk, 2011). Members of the community joined forces to help each other with work they could not accomplish alone. Actions were voluntary and collective. They did not necessarily result in any tangible benefit for the individual apart from a meal served by the host at the end of the dugnad. Farming was based on reciprocity, and non-cooperative farmers could not expect any help in return. Farmers were dependent on each other.

In 1905, after becoming independent of Sweden, Norway was one of Europe's poorest countries. Conflict arose between capitalist and communist forces. Eventually, an agreement of

cooperation between employers and the Labor Party was signed in 1935. This agreement is still the backbone of Norwegian economic life and represents the union of traditional egalitarian individualism and communal values (Haugstad, 2003).

After the Second World War, Norway had a large housing shortage, and the country needed to be rebuilt and modernized. This became a national dugnad initiated by the Labor Party led by Prime Minister Einar Gerhardsen. He was soon nicknamed the “dugnad general.” In the years after 1945, the Parliament reached a consensus that aimed at enabling people to build and own homes. The strategy was based on joint voluntary work, with the state providing affordable bank loans, the municipality providing reasonably priced land, and the private sector working through co-operatives pulling together to overcome the housing crisis. The homeowners contributed by maintaining their buildings together to reduce cost and to sustain social relationships through dugnad. The long-lasting Norwegian tradition of dugnad, which people were familiar with from farming, now flourished in the context of house building.

The more that the welfare state took over the responsibility for people’s well-being, the more dugnad practices entailed civil engagement beyond the sphere of government and the profit-based business community (Lorentzen & Dugstad, 2011). With the emergence of the welfare state and increased regulations and quality requirements for solving tasks in the communities, it became more difficult to rely on the work of amateurs. Through history, dugnad has had diverse forms and has not been limited to small groups such as a sports team or an apartment block. Politicians and other authorities or organizations call for dugnads to mobilize the Norwegian people in one direction or another. Rebuilding the country after the Second World War is one example. Another example is that the Norwegian Food Safety Authority wanted everyone to join forces against the Iberian slug in 2008. All stakeholders in communities, from

politicians to homeowners, were mobilized through an information and media campaign to implement preventive measures—chemical, biological, and mechanical—to reduce the population of the Iberian slug. As this example did not involve a scheduled gathering for common physical work followed by a social event, it shows how modern dugnad is adapting in a changing world.

Despite deep historical roots, dugnad, like any other cultural practice, evolves due to environmental changes. Over the past few decades, modern technology has had a huge impact on civil society. Globalization and new technology make it possible to engage across borders and national conditions, and boundaries between states, markets, and societies are being broken down. Modernization brings along incremental individualization that fundamentally changes the relationships between civil societies and their organizations. Dugnad adapts to modernity and finds new expressions, which we discuss in the section *Status Quo of Dugnad*. First, we propose an explanation of how prosocial behavior, such as dugnad participation, may have evolved.

### **Ontogenetic Selection of Behavior**

Had our behavior changed only by means of natural selection, we would be in trouble as soon as we face an environment that does not match our ancestral environment. Learning, or behavior change during our lifetime, is risky. If behavior is not innate, maladaptive behavior may be acquired. However, when learning is beneficial on average and in the long run, for example, when the environment changes, genes for learning are selected. These genes make our behavior susceptible to events that occur during our lifetime. This means that natural selection has brought about another selection process, a process that allows our behavior to change as a consequence of changes in the environment we contact throughout our lifetime (Skinner, 1981).

### **Phylogenetically Important Events—The Drivers of Ontogenetic Evolution**

Our environment changes all the time, but not all environmental changes influence our behavior. During the history of our species, those individuals whose behavior changed when contacting food, predators, warmth, mates, and so on contributed more to the next generation's gene pool than those whose behavior was less affected by such events. This means that those whose behavior changed as a function of contact with certain events had higher biological fitness. Baum (2012) called these events, which affect safety, nutrition, shelter, and ultimately—and on average—reproductive success, *Phylogenetically Important Events* (PIEs). PIEs acquired the effect they have on behavior today in the course of phylogeny, that is, the history of the species. To put it in Skinner's (1981) terms, the reinforcing or punishing function of certain events is naturally selected. A PIE, such as the occurrence of a predator, is "phylogenetically important" in the sense that it affects fitness. Thus, susceptibility of behavior to such events was passed on as a genetic setup that enables operant learning. Those whose behavior did not change (e.g., from foraging to escaping) when a predator appeared (PIE) were less likely to reproduce and to pass on their ignorance of predators to descendants.

### **Selection by Contingencies**

A contingency between behavior and PIEs selects behavior during ontogeny because the affectability of behavior by such events has been advantageous for fitness in the organism's phylogeny. A contingency between two events, such as behavior and a PIE, exists when the probability of event A depends on event B (Baum, 2012; Rescorla, 1968, 1988). These events may either coincide or occur at different points in time, but for behavior to become susceptible to a probability of events, there need to be several occurrences of the events. This makes accidental contingencies rare, as the accidental conjunction would have to occur at least twice. If the

probability of, say, being praised is the same regardless of performance, then no contingency exists between praise and performance. Thus, praise would not select performance. The temporal relation between the two events influences the susceptibility of behavior to the contingency. Hence, a contingency relates or connects behavioral and environmental events. It links a PIE to an activity and results in an increase or decrease in the activity. Contingencies between activities and PIEs are ubiquitous.

Cross-generational selection of organisms can occur naturally (as in the evolution of wolves), or artificially (as in breeding dogs). Equivalently, selection of behavior during ontogeny occurs naturally, as when searching for mushrooms in certain areas, contrary to other areas, goes along with finding mushrooms. It can also occur artificially, as when we swap the position of the mushrooms and the steak at a buffet to nudge people's filling up their plates with mushrooms before getting to the steak (Mobekk, Karevold, Tran, & Stjernen, 2018).

Some events do not affect fitness directly but tend to co-occur or correlate with events that affect fitness. Money, for example, correlates with resources; smiles correlate with safety or with mating opportunities. Even these proxies of PIEs can affect behavior during our lifetime. As humans have largely evolved living in groups (Diamond, 2012), many of these events are social (Richerson & Boyd, 2005). When people cooperate, their common behavior pattern can produce advantageous PIEs that each individual's behavior could not have produced. Glenn (2003, 2004) termed these *cumulative effects* or *aggregate products*, which enables distinction from PIEs

produced by the behavior of one organism from those produced by several organisms together.<sup>4</sup> Dugnad is a cultural practice characterized by such cooperative behavior.

Together, dugnad participants show a behavioral pattern that correlates with PIEs. Each individual's behavior would not have produced these PIEs alone. For example, a dugnad in a rowing club usually involves maintenance of large boats and their storage space. One person alone cannot move the boats, but a group easily achieves relocation of the boats required for their maintenance. All group members will eventually benefit from well-maintained boats and storage space. Consequences to the group as a whole can select the group's practice (Biglan & Glenn, 2013). Other PIEs such as a lower danger of infection by removing rusty nails from children's play areas or removing other dirt from common areas could, in theory, have been produced by a single individual's more extended work. However, correlations with other PIE-proxies, such as money, would have to be in place to induce someone's spending a week cleaning on their own instead of engaging in a dugnad lasting for one evening and entailing PIE-proxies such as social interactions. Activities compete for an organism's time, and the outcome of this competition is decided by the correlation between the activity and a PIE or PIE-proxy (Baum, 2016). The correlation between clean common areas (in addition to social PIEs) and a few hours of cleaning

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<sup>4</sup> Further vocabulary that Glenn et al. (2016) have specifically developed for describing cultural selection processes includes *metacontingency*, *macrobehavior*, *macrocontingency*, *culturo-behavioral lineage*, *culturant* and *cultural cusp*. Our analyses are compatible with processes that might describe such a cultural level of selection (see Krispin, 2016; 2017, for an application of the metacontingency vocabulary). However, a conceptualization of dugnad as a result of cultural level selection in terms of metacontingencies would here distract from our goal to outline the contribution of natural and operant selection to the cultural practice of dugnad. An analysis in terms of these cultural selection concepts seems inept for our present purposes of 1) discussing the contribution of operant selection of less-extended acts to the maintenance of the cultural practice of dugnad and 2) suggesting that, in dugnad participation, both selection of temporally extended behavior of individuals and that produced by several group members together is likewise selected by PIEs.

may select cleaning and outcompete alternative evening activities. The correlation between a week's lonesome cleaning and a clean common area, however, does not outcompete alternative activities such as paid work or relaxing spare-time activities.

Dugnad goes along with trust, which plays an essential role in the Nordic Model. Behavior that we call *trusting* fosters prosocial collective arrangements (Witozsek & Midttun, 2018). Even if most movements to preserve human freedom aim at limiting punitive means for influencing behavior (Skinner, 1972), social control creates the conditions in which trust can thrive (Wilson & Hessen, 2014). To cooperate often means to invest without being sure that the others will invest too, which can be a prerequisite to ensure that your behavior will lead to PIEs. If you grew up in a society where paying taxes does not correlate strongly with PIEs such as good infrastructure, you are less likely to pay taxes. If you experience that mostly PIEs that are advantageous for your health, child care, or safety correlate with you paying taxes—and evading taxes leads to disadvantageous social PIE-proxies such as disapproval by your friends, you are more likely to pay your taxes than if you have reason to believe that your money will be embezzled (a disadvantageous PIE).

In Norway, trust in the state, businesses, and other people is high (Berggren & Trägårdh, 2011; Edlund, 1999). Smaller class differences generally tend to go along with lower levels of criminality and corruption. The average Norwegian is not likely to have experienced major disappointments as a consequence of trusting, for example, in the government's promises on how taxes will be used. Participation in direct debit, which allows companies to withdraw money you owe them directly from your bank account, is among the highest in Norway (European-Central-Bank, 2015). If you do not have to be afraid of misuse, giving others access to your bank account saves you time that you can spend on other activities. Also, if you have experienced other



community members avoiding dugnad participation and, thus, not doing their fair share of the activity required for bringing about the (shared) PIE, you are also more likely to freeload, especially if this is not followed by withdrawal of social approval or punishment (Rachlin & Locey, 2011). In the following, we put forward an analysis of naturally occurring contingencies between PIEs and dugnad activities, which can guide the design of new contingencies fostering cooperative and prosocial behavior.

### **Contingencies Selecting Participation in Dugnad**

Following Rachlin and Locey's (2011) thesis that altruistic behavior can be ontogenetically selected, we propose that their arguments also apply to cooperative or prosocial behavior of organisms, an example of which is participation in dugnad.<sup>5</sup> The dynamics of dugnad parallel in many ways the so-called *tragedy of the commons* scenarios that come about when individuals overuse a common resource. Whereas the ecologist G. Hardin (1968) phrased tragedy of the common scenarios in terms of individuals' "taking too much," problems with dugnad contributions arise if people are "not giving enough." "Taking too much" and "not giving enough" amount to the same conflict, whose dynamics behavior analyst H. Rachlin has modeled extensively using multi-person prisoner dilemma games (e.g., Rachlin & Locey, 2011). Behavior that creates a tragedy of the commons (such as driving instead of using public transport,) is selected and controlled by the contingencies between an individual's choice (to drive) and PIEs, but it has a cumulative effect (such as traffic jams; Glenn, 2004).

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<sup>5</sup> We regard so-called altruistic behavior and prosocial or cooperative behavior as gradually different in their cost-benefit distribution and in the temporal distance between the cost and the benefit, but not as different in kind. Prosocial and altruistic behavior would be categorically different only if altruistic behavior were defined as non-reinforced behavior—a definition that would defy behavior analysis (Rachlin & Locey, 2011).

Tragedy of the commons scenarios, such as those of over-pollution leading the world into a climate crisis, emerge if people do “the opposite” from what they do in dugnad participation. This underlines the potential impact an increase of dugnad typical prosocial behavior could have. Here, we propose an explanation of how organisms can learn to cooperate and to behave prosocially. This explanation relies neither on a special inherited altruistic tendency, as proposed by Wilson and Sober (1998), nor on an innate sense of fairness, as proposed by Fehr and Fischbacher (2003).<sup>6</sup> Instead, the crucial inherited tendency maintaining participation in dugnad activities is the same that enables the formation of other patterns of self-controlled behavior: the sensitivity of temporally extended patterns of behavior to PIEs (Baum, 2018; Rachlin & Locey, 2011; Simon, 2016; Simon & Hessen, 2019). If potential parts of extended patterns enter into a contingency with relatively immediate social PIEs, this helps to build the pattern that PIEs then can maintain as a whole. Even if an individual prosocial act, say cleaning the bathrooms of your sports club (as part of your dugnad participation) instead of going to the movies (as part of skipping dugnad participation), correlates with disadvantageous PIEs, an advantageous PIE can act on the whole pattern of which this act (cleaning) is a part. The whole dugnad evening or your pattern of regular dugnad participations correlates with access to a well-functioning affordable sports club, positive social interactions, absence of negative social interactions, and with being able wholeheartedly to call yourself a good person. However, to agree to show up to clean the bathrooms (as part of a more extended pattern) may constitute a self-controlled act just like refusing a dessert if you are on a diet (see Rachlin, 1995; Rachlin, 2004; Rachlin & Green, 1972,

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<sup>6</sup> This is not to claim that inheritance of altruistic tendencies is impossible or to deny that babies are more likely to reinforce the behavior of a person they have observed to cooperate (which Biglan, 2015, uses as evidence of “wired-in tendencies” (p. 16)). However, here we would like to spread hope by outlining how prosocial behavior can be learned just as we can learn self-control (Locey, Jones, & Rachlin, 2013).

for a non-mentalistic account of self-control and Borba, Tourinho & Glenn, 2014, 2017 for a behavior analytic approach to ethical self-control). The extended diffuse consequences (say access to an affordable socially pleasant sports club or losing weight, respectively) compete with more immediate and concrete consequences (smell and sight of a disgusting bathroom or the pleasant taste of a dessert) for control of your behavior (Locey et al., 2013). This is why eating a healthier diet, stopping smoking and drinking, and getting people to engage in more prosocial behavior such as participation in dugnad, is not easy—though it is often possible. There are sooner consequences for parts of these behavior patterns (withdrawal symptoms after refusing a drink, having a relaxing evening after refusing to participate in a dugnad versus social approval for refusing a drink or participating in a dugnad) as well as more delayed consequences for the more extended behavioral pattern (good health, a well-functioning inexpensive sport's club versus their absence). These different consequences compete for our time, challenging the development and maintenance of self-controlled, prosocial behavioral patterns. Understanding the power of these sooner and more extended consequences carries the potential to influence choice in a way that prosocial behavior patterns can be built.

Baum (2013, 2016) put forward that activities with different levels of complexity may be selected as wholes. Parallel to Wilson and Sober's (1998) phylogenetic multi-level selection model, the units of selection in Baum's ontogenetic multi-scale model are nested into each other. Despite these similarities, the possibility of phylogenetic group selection, which is widely disputed (Krasnow & Delton, 2016; Krasnow, Delton, Cosmides, & Tooby, 2015; Richerson et al., 2015; West, Griffin, & Gardner, 2007), and selection of behavioral patterns do not depend on each other. Extended behavioral patterns may be selected as wholes even if the possibility of multi-level selection should turn out to be inadequate (Rachlin, 2019). Innate behavior such as

eating, sleeping, or sexual activity is often patterned, and ontogenetic selection can evolve them into new forms (Locey & Rachlin, 2015; Rachlin, 1995; Teitelbaum, 1977). Since the 1960s, researchers have accumulated evidence suggesting that patterns of responses can be selected by PIEs as whole units. Wolff (1968) found that infants do not alter pauses between individual sucks but between bursts of sucks, that is, groups of sucks as wholes. Grunow and Neuringer (2002) and Neuringer (2004) created contingencies that selected sequences of rats' lever presses as wholes. Studies on commitment and self-control with both human and non-human subjects show that organisms increase patterning if increased access to advantageous PIEs is contingent on patterning.

How do the dynamics of selection of behavioral patterns help to illuminate why Norwegians every so often spend their Sunday afternoon freezing, standing next to a skiing track waiting for the end of a children's skiing competition instead of at their cozy fireplace? To understand why someone may choose to engage in an activity that will (proximately) lead to disadvantageous PIEs instead of alternative activities that may (proximately) lead to advantageous PIEs, it is important to consider that every choice occurs within a context. A decision for or against participation in dugnad does not occur in a vacuum. Having grown up in Norway, you are likely to have started to gather experiences with dugnad from early childhood, which you did not do if you moved to Norway at a later age. However, independent of your dugnad-specific experiences, you are likely to have experienced situations with similar dynamics. You may have experienced that you get to work quicker if you are one of the few people driving, whereas everybody else uses public transport, even though everyone goes slower when everyone chooses to drive. You may have heard about emergencies where you are quickest and best equipped if you grab your stuff and elbow your way through the exit, but if everyone

did so, all would get out more slowly. Maybe you have experienced other situations where it was best for you as an individual if you, and (almost) only you, add more to pollution, use more energy, jump queues, break agreements, be the soldier who turns and runs or be the peasant who has more children using overcrowded land. All these experiences build the context for the likelihood of your prosocial behavior in a dugnad context, such as contributing to a children's skiing competition on one of your scarce free Sunday afternoons.

Borba et al. (2014) investigated individuals' choices in concurrent contingencies involving conflicts of consequences for the individual and consequences for the group. Individuals had to choose between options producing advantageous individual consequences and disadvantageous group consequences and vice versa. Participants made their choices either alone or in the presence of other group members, where they could either access each other's choices or not, and where group members could either talk to each other or not. Being able to talk to each other increased unselfish choices (benefitting the group rather than the individual) more than merely seeing what the others chose. Although Borba et al. did not analyze what participants said to each other, they interpreted the increase in unselfish choices when verbal communication was possible to support Skinner's (1953) proposal that verbal behavior can function as an immediate consequence maintaining behavior when other consequences are delayed. Borba et al. assume that other participant's verbal behavior may have reinforced self-controlled choices, that is, choices that are advantageous for the group. Borba et al. also suggest that their participants made more self-controlled choices when talking because verbal communication helps individuals to predict what other people will do (Brown & Rachlin, 1999; Rachlin, 2004). Presumably, the absence of direct communication is one of the contributors to car traffic scenarios.

Applied to dugnad participation, the results of Borba et al. (2014) make it likely that verbal PIE-proxies are sooner consequences that aid in building the more extended self-controlled pattern of participation in dugnad. Partly, the participation is reinforced later by the dugnad's concrete aggregate product. Partly, it is reinforced by the more diffuse tightening of social bonds, a part of which is an increase in the likelihood that the other participants will reciprocate in the future. Having grown up in a dugnad society, you have experienced that social approval, inclusion, explicit reciprocity, and the shared outcome of the dugnad event are advantageous PIEs that are, in the long run, in a contingency with your prosocial behavior, of which dugnad participation is a central part. Accordingly, you have learned that defectors or freeloaders contact disadvantageous PIEs. The driver passing the traffic jam in the bus lane is punished, and the fisherperson who consistently overfishes is shunned by the other fisherpersons. Over time, people learn to recognize situations in which it is advantageous to cooperate because the pattern of cooperation is often selected by advantageous PIEs, even if individual cooperative acts, say, participation in a particular dugnad event, may lead to aversive PIEs. An example of this would be spending a cold and dark Sunday afternoon helping out at your child's skiing race instead of relaxing at the fireplace with your family.

Rachlin and Locey (2011) have proposed another reason why self-controlled behavior, such as participation in dugnads, can develop and be maintained. They put forward that it might not be beneficial in the long run to attempt fine discriminations between situations in which cooperation ultimately leads to advantageous PIEs and those in which it does not. Most of us do not shop-lift or drive past red traffic lights, independent of how small the chance is that we will be caught. In most dugnad contexts, participation is not anonymous but well observed by the other group members. Locey and Rachlin's (2015) results from social discounting tasks show

that people tend to engage in considerably more prosocial behavior (forgo more hypothetical money for the benefit of others) when the receivers know the giver's identity. Today, social media are used to draw even more attention to who contributed to dugnads, ensuring the effectiveness of social control mechanisms.

According to Wilson's group selection supposition (Wilson, 1975, 2015; Wilson & Kniffin, 1999), which is part of his multilevel selection theory, selfish individuals outcompete altruistic or cooperative individuals, but altruistic groups outcompete selfish groups. Altruistic or cooperative dugnad group activities can make for the success of the group, but selfish freeloaders threaten these group activities. Freeloaders who do not participate in the house cooperative's spring-cleaning would still get access to the advantageous PIEs that the group's activities produced. If no contingency that ensures that freeloading is punished by disadvantageous PIEs such as social disapproval, fines, or exclusion from further access to the group benefits is in place, selfish behavior will eventually outcompete cooperative behavior (Wilson, 2015).

Disadvantageous PIEs need to correlate with selfish behavior to maintain cooperation.

Problems arise when dugnad provides advantageous PIEs that are in a contingency with selfish behavior. If people place their washing machines in front of the emergency exit instead of disposing of them properly and rely upon (other's) dugnad activity to remove them, this will lower the likelihood that other community members will participate in future dugnads. If you both have to carry a washing machine and (just like everyone else living in the building) have to pay for the skip in which the washing machine is disposed of, you are unlikely to be fond of participating in future dugnad events—in which your participation is punished twice by others'

selfish behavior.<sup>7</sup> According to group selection theory (Wilson, 1975), cooperative groups outcompete selfish groups. This suggests that society would benefit from minimizing freeloading to ensure that no one takes unfair advantage of the collective efforts of others. To be sure, prosocial behavior may be fostered by a variety of interventions not resembling dugnad, but in Norway, dugnad traditionally provides a significant context in which children grow up learning to engage in prosocial activities.

As mentioned briefly at the beginning of this section, dugnad participation is influenced not only by the behavior of others (say shunning or appreciation by neighbors or other sports club members contingent on your dugnad participation). Dugnad participation is also influenced by our behavior in similar situations. If I have a history of contacting advantageous PIEs contingent on prosocial behavior, I am unlikely to break this pattern even if nothing signals a beneficial cost-benefit relation between my participating in a particular dugnad and PIEs. Now, my dugnad participation is part of a larger pattern of self-controlled behavior just like brushing my teeth twice a day and stopping at red lights even if no cars are coming. It is easier to reflect upon my behavior pattern (“I am a good person”) than to take all choices on an individual basis. Moreover, previous choices in individual situations might have proven disadvantageous, and their negative consequences (being hit by a car) are much more serious than the costs involved in adhering to the established behavior pattern (stopping at all red traffic lights) (Rachlin & Locey, 2011).

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<sup>7</sup> Note that paying your share for the skip is independent of your actual dugnad participation. Carrying the washing machine is part of participation, but both activities are independent of whether it was you who “disposed” of the washing machine by placing it in front of the exit in the first place.



Given dugnads are voluntary per definition, Norwegian law does not enforce dugnad attendance. Organizations and housing cooperatives are not allowed to fine or fee those members who do not participate in dugnad work. Because no one is legally obliged to participate in dugnad, one cannot be legally punished either. Widespread participation is expected, though, and dugnad participation is perceived as a vital part of belonging to neighborhoods, organizations, and workplaces. This expectation is manifested in the availability or non-availability of social PIE-proxies such as gratefulness, welcoming words, or smiles. On a long-term basis, non-participation is socially unacceptable. The shared meal topping off virtually all traditional dugnad events may be an important factor inducing participation. Access to pleasant and convenient shared meals could itself be a social PIE-proxy selecting behavior. Such behavior may include dugnad participation upon which the shared meal—and, thus, the food and pleasant interactions—are contingent.

Jones and Rachlin's (2009) experiments on public good games show that the closer you feel to other people, may they be your relatives or not, the more likely you are to cooperate with them or to choose options not immediately advantageous for you but those that are advantages to the group to which you and the others belong. It is easy to imagine that one feels closer to one's neighbors after a collective spring cleaning topped off with a barbeque evening than when just having passed them in the stairwell. Likely, you have talked to each other during the dugnad, which appears to increase the likelihood of prosocial acts towards each other (as in Borba et al., 2014, described above). In sum, not only the aggregate product of a clean building but also being more familiar with each other after a dugnad may induce future participation in dugnads and, thus, contribute to the maintenance of this cultural practice.

### **Status Quo of Dugnad**

Norway, like the rest of the Western world, is a society in fast transformation. It is evolving from an industrial society to a postmodern society, which leads to changes in relations between civil groups and individuals. Western societies are changing from caring local citizens to global consumers. Along with that, people's willingness to engage in voluntary collective work such as dugnad has declined (Lenk, 2011). The essence of dugnad, reflected in the egalitarian Norwegian culture, is a consensus that everyone, independent of income or heritage, participates. Everybody benefits from dugnad activities, but in the long run, it is disadvantageous for every individual to contribute significantly more than others. According to the Institute for Social Research (2008), there are three trends in modern society that have an impact on participation in dugnad: individualization, the emergence of the social network community, and increasing cultural diversity. The standard of living in Norway has changed dramatically since the post-war period. Norwegians are no longer directly dependent on each other. The matching relation (Baum, 1974; Herrnstein, 1970) would predict that if more activities are competing for an individual's time today, the "payoff" of dugnad participation (the cost-benefit relation of PIE-proxies resulting from dugnad participation) needs to be proportionally more favorable as well. Otherwise, dugnad participation will decrease. Over time, people tend to participate when the cost of contribution is less than the cost of the non-cooperative behavioral pattern. The cost of dugnad contribution is experienced immediately, whereas the cost of non-contribution is more remote and often less concrete. If the selective pressure on groups of acts (dugnad participation in the long run) is more fierce than that on individual acts of dugnad participation, prosocial unselfish participation may increase (cf. Boyd, Gintis, Bowles & Richerson, 2003; Rachlin, 2019; Soltis, Boyd, & Richerson, 1995). When long-term consequences have little effect on

behavior, an adaptive practice such as dugnad participation can be strengthened in the short run by social PIE-proxies provided by other participants. In the absence of data, we can only cite anecdotal evidence from the first author's experience with dugnad organization, which supports that increased emphasis on the possibility to access immediate advantageous PIE-proxies, such as pleasant social interactions, increases dugnad participation. Housing cooperative dugnads announced as invitations to social gatherings with popular food and drinks and in a pleasant setting that involve an explicitly voluntary common clearance of shared space have attracted an increased number of participants, even including former residents of the building.

Given that housing cooperatives are not allowed to fine people for not participating in dugnad, some cooperatives have attempted to encourage dugnad participation by introducing a fee that all owners must pay every month. Those who participate in dugnad will be reimbursed the fee. Whether this has any effect on the attendance in dugnad is unknown. Personal benefits of the non-cooperative behavior may outcompete the disadvantages of paying the fee and being reimbursed may not reinforce dugnad participation. In Norway, many activities in schools and sports clubs are based on dugnad, and often the survival of a sports club is dependent on voluntary work. Often, the same people or parents do the lion's share of the dugnad activities. To reverse this negative trend, some clubs have updated their membership rules to state that it is expected that all members (or their parents) contribute to different organizational activities throughout the year. Instead of merely asking who would like to join in or taking for granted that people will contribute to arranging, for example, a sporting competition, membership is now sometimes contingent on participation in such activities.

The increased number of choices challenges traditional voluntary organizations because the members' activities are also in contingencies with social PIE-proxies that do not require

physically meeting. Examples of such PIE-proxies are “likes” in social media. The emergence of the social network community also contributes to new forms of individual involvement and participation. Crowdsourcing and crowdfunding are modern offspring of dugnad. Wikipedia is an example of dugnad (Sejersted, 2010) that involves neither physical work nor meeting other people face-to-face. The use of the term *dugnad* in Norwegian has, during the last decades, been extended to include digital cooperation, where the physical and social aspects are different from those in community gatherings. Not only is no face-to-face meeting involved, but there is not necessarily a predefined start- or end-point for the activity. Today, the use of the term *dugnad* in such new areas of application coexists with the traditional use (Kagge, 2019). Possibly, voluntary work that does not traditionally meet the criteria of *dugnad* is now often advertised as *dugnad* due to the positive association of the term with Nordic values.

Increasing cultural diversity due to globalization and immigration brings along multiple challenges, including challenges for dugnad and other kinds of voluntary work. Newcomers to Norwegian society who did not grow up with Norwegian values and norms reflected in dugnad may have difficulty understanding why one should participate in this unfamiliar practice.

### **Final Remarks**

Dugnad is often mentioned as a core practice in Norwegian culture, having roots back to early Christianity. Despite this, there has been little research on the topic (Lorentzen & Dugstad, 2011). Almost all Norwegians, including immigrants, have a relationship to dugnad and a spontaneous understanding of what it means, and many people take initiation and participation for granted. This may be one of the reasons for the lack of research on dugnad. Despite changing societal conditions, dugnad is still important in Norwegian culture. Modern society, characterized by globalization and information technology, implies both threats and

opportunities for the dugnad tradition. This development creates major challenges for some of today's organizations, which must adapt to changes in both dugnad participation and form.

Paying attention to ontogenetic processes of behavior selection enables us to recognize the complexity of the dynamic and flexible processes that construct social systems. This approach prevents us from taking one of two extreme positions. First, it circumvents a mere focus on a behavior-environment mismatch (as evident in Buss, 2005, a representative textbook on evolutionary psychology). Focus on the behavior-environment mismatch depicts evolved behavior as rigid in an ontogenetic timeframe. Second, the ontogenetic selection approach presented here prevents viewing individual organisms as creator-like agents who freely cause their own behavior in unpredictable ways (as evident in, e.g., Lindholm, 2012).

Scholars (e.g., Sennett, 2012; Turchin, 2007; Wilson, 2015) have suggested that a lack of cooperation between and amongst societies lies behind many crises of the 21st century. If this is true, further interpretation of structures inducing cooperative behavior in well-working societies is a promising endeavor. Contrary to regarding individual organisms as freely acting initiators of their behavior, the analysis of variables that affect behavior during ontogeny carries the potential of predicting and changing behavior. Dugnad is associated with values of generosity and collective care. Possibly, the dugnad tradition can contribute to the search for tools for nurturing environments. Everyone benefits from a well-cared-for community, and participation in dugnad might strengthen bonds, maintain communities, and nurture a nation. An analysis of these variables may generate hypotheses about what environmental aspects induce cooperation. For example, we hypothesize that access to relatively immediate advantageous PIEs, such as those available at "really tempting" social events, may increase participation in dugnad. It can be tested

empirically whether the increase of prosocial activities requires an increase of access to immediate advantageous PIEs at the outset.

In this paper, we have described dugnad and its origin as an example of a nurturing environment that promotes prosocial behavior. We have concentrated on the identification of functional relations between dugnad activities and PIEs and discussed dugnad in a behavioral analytic perspective.

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