Prosocial: Using an Evolutionary Approach to Modify Cooperation in Small Groups

Steven C. Hayes

University of Nevada

Paul Atkins

Australian National University

David Sloan Wilson

Binghamton University

Citation: Hayes, S. C., Atkins, P., & Wilson, D. S. (in press). Prosocial: Using an evolutionary approach to modify cooperation in small groups. Chapter to appear in R. Houmanfar, M. Fryling, & M. Alavosius (Eds). *Applied behavior science in organizations: Consilience of historical and emerging trends in organizational behavior management*. New York: Springer.

Suppose you are a subsistence farmer who owns a milk cow. You are one of a dozen families in the village, all of them also doing subsistence farming and owning a single cow, and together you all control the only good place locally to graze cattle: a very large grassy field. Everyone uses it to feed their cow. Everyone uses it in common and that's OK because the grass replenishes itself – there is enough for all.

One-day a particular farmer decides to buy a second cow. Not to be outdone, within months you and all of the other village families follow suit, rationally concluding that the additional cow with bring more milk and meat to your family. There is no reason not to do it.

An observer sitting atop Mt. Olympus might know that the field can only sustain 30 cows and after that it will be over-grazed and the grass will collapse. On the ground, what the villagers know is that the field still grows enough grass to feed the now two-dozen cows. As a result, all is well and the village is more prosperous than ever.

The problem comes when you and your neighbors, each seeing your two cows fattening up nicely, make the rational decision to add just one more cow. Now the trap is sprung. Three dozen cows is too much. The field is over grazed and before the grass can grow back, yet another cow is nibbling it down to nothing. The grass cannot sustain itself that way, and it all dies. Soon, so do all the cattle.

This famous parable of "The Tragedy of the Commons" was published by Garrett Hardin in *Science* magazine in 1968. The author concluded that common pool resources such a forests, fields, fisheries, or water systems need to be protected, either by government regulation or private ownership, since "Freedom in a commons brings ruin to all." (Hardin, 1968, p. 1244).

It is a very appealing metaphor for how individual contingencies and selfishness can lead to disaster at the level of collectives and group contingencies. Some of its incredible popularity

and sticking power over more than 60 years might have come because it is a metaphor that appeals to the biases of both the left ("see, we need more top down regulation!") and the right ("see, only private owners can protect on the long term good!"). Both "command and control" and "invisible hand" economists can readily use "the tragedy of commons" story. In either case, however, it offers up a rather skeptical view of human cooperation: we cannot be trusted to work together to protect our common interests.

There is only one problem with this parable: it is not generally how people behave. Real people are well aware of the fragility of common pool resources. Hardly a farmer exists who would know nothing of over grazing, and it does not take a rocket scientist to predict the increased risk of it, at least in broad terms. And real people know a lot about how to work together to achieve common ends.

We should. After all we are neither the fastest, nor the strongest; we have neither sharp claws nor strong bites; many non-human animals can defeat us easily one on one. But put people in groups and give them the tools needed to cooperate and no other life form can compete with human beings. We are the super cooperators. Yes, not always. Yes, not everywhere. But often, and under specifiable conditions.

The late Elinor Ostrom (we will call her Lin, her preferred name of use) won the Nobel Prize in Economics in 2009 for her work in describing those conditions. Working with a variety of common pool resource systems around the world, such as water systems among farmers in Nepal, Lin Ostrom found that people soon bend or break the rules of top down regulation. Often this only makes good sense. After all, the "controller" is not local and may not have the best ideas. In a different way, private property rights sometimes lead owners to exploit the resource as rapidly as possible before moving on. Instead what Lin Ostrom found was that in case after case,

people can do very well, thank you, in controlling their common pool resources for hundreds or even thousands of years without depletion or tragedy, but only if they arranged their interactions in a particular way. She distilled that wisdom into what has become known as the Core Design Principles or "CDPs."

Here are the core design principles that Ostrom derived for common-pool resource groups that enabled them to avoid the tragedy of the commons:

1. Groups that functioned well had *clearly defined boundarie*s, that made it clear they were a group, what the group was about, and who was a member;

2. They had group practices that ensured that members experienced *proportional equivalence between benefits and costs*;

3. There were *collective choice arrangements* in place so that everybody affected by a decision had an opportunity to contribute to making that decision;

4. There was *monitoring*, preferably by members themselves, so that lapses in agreed-upon behaviors could be detected;

5. There were *graduated consequences* applied within the group so that lapses in agreed-upon behaviors were corrected, gently at first but with a capacity to escalate if necessary;

6. There were fast and fair *conflict resolution mechanisms* in place to resolve differences;

7. There was some *minimal recognition of rights to organize*, so that group members had the authority to manage their own affairs without external interference;

8. Finally, when systems became larger there was *polycentric governance*, with groups in multiple layers of nested enterprises, with each subgroup relating to other subgroups using principles 1 through 7.

There is nothing abstract or esoteric about this list – most people might see them as being common sense. Nevertheless, this does not mean that all groups implement the CDPs. Even common-pool resource groups vary in this regard, which is how Lin was able to derive the CDPs in the first place. (Ostrom, 1990).

We can understand some of the reasons for groups failing to implement the CDPs as we appreciate the very reasons for their usefulness: CDPs specify the evolutionary conditions in which cooperative behaviors can be selected and strengthened. As with all adaptations that occur at higher levels of organization, the CDPs tend to be undermined by selfish processes at lower levels of organization – in this case at the level of individual group members. This is the insight that has led us to combine the CDPs with a psychological method drawn from contextual behavioral science (Acceptance and Commitment Training or "ACT"; Hayes, Strosahl, & Wilson, 2012) in order to create a practical program for fostering prosociality in groups that we call "Prosocial" (www.prosocial.world).

In this chapter, we will briefly describe that program, its intellectual basis, and why it might be of use to organization work in applied behavior analysis. A full book-length description is available (Atkins, Wilson, & Hayes, 2019) so we will underemphasize practical matters and theoretical details, in favor of a broad understanding. In this chapter, we will begin by describing the key features of multi-dimensional, multi-level evolutionary science. We will then use that framework to consider the elements of Prosocial, revisiting and refining the CDPs and showing how ACT fits in to that perspective. We argue that Prosocial can be used now inside organizational behavior management.

An Extended Evolutionary Synthesis

The core of evolutionary science is thinking broadly in terms of what Donald T.

Campbell called "variation and selective retention" (1960). Most behavior analysts will recognize that these terms do not apply to genes only. Evolutionary processes apply to all life dimensions at various time scales: Cultures evolve; behavior evolves; symbolic learning evolves; epigenes evolve. Selection and retention operates across variations in all of these dimensions and more, and does so simultaneously. Importantly, selection also operates at multiple levels of organization simultaneously, and it is that fact that allows the CDPs to be understood and put to use in guiding the actions of small groups. Finally, if evolutionary principles are to be applied intentionally, there needs to be an understanding of the contextual features that determine whether or not given variations are successful.

We will begin with the most important feature of applied evolutionary science as focused on small group behavior: selection can operate at different levels simultaneously.

Multilevel Selection Theory

Multi-level selection is a kind of prodigal son of evolutionary science. Originally invoked by Darwin, at the height of the gene-centric era it was virtually cast into an ash heap of disproven ideas, along with Lamarkian evolution and other supposed falsehoods. Even today it is hard to find textbooks that treat it fairly and accurately.

The core idea of multi-level selection (MLS) can be expressed very easily: "Selfishness beats altruism within groups. Altruistic groups beat selfish groups. Everything else is commentary." (Wilson & Wilson, 2007, p.345). When competition is within-groups, selection focuses on how individuals beat out individuals. But when competition is *between* groups, selection pressure can give an advantage to groups that work together effectively. The balance between these two levels of selection can be tipped toward cooperation and between-group selection if the individual can do relatively well as part of a larger organizational unit, but self-

serving actions are restrained.

Consider your own body as an organized group of cells to see how these principles operate. While estimates vary, you have about 37 trillion native cells in your body. If even one begins to reproduce itself without restraint, you have cancer.

Your body continuously protects you against that possibility and must do so or you would soon die. Mutations can occur with every cell division; your body is constantly correcting these errors to avoid pre-cancerous cells from forming. If that is not enough, when mutant cells first begin to reproduce faster than neighboring cells, your body attempts to detect this fact and to restrain or kill the mutants. Scientists are only beginning to understand the arsenal of cancer-preventing mechanisms that operate, but the bottom line is this: you get to succeed as an organism only if your cells do reasonably well overall as part of the collective called "you" but their self-interest is restrained.

These same facts apply to behavior. Behaviors that are for the good of the group often have costs for the individual and thus may not improve the relative fitness of the individual within the group. Even the smallest acts of kindness, such as opening a door for someone, typically require at least a small amount of time, energy, and risk on the part of the prosocial individual. For that reason, natural selection at the smallest scale—among individuals within a single group—can be *disruptive* as far as prosociality is concerned.

Multilevel selection is like a tug-of-war, with within-group selection pulling toward self-serving traits and between-group selection pulling toward group-serving traits. For cooperation to be selected, between-group selection needs to be strong enough to overcome the disruptive effects of within-group selection. This same tension applies to all levels of selection. Eukaryotic cells, for example, are themselves cooperative groups – the mitochondria in nucleated cells is

literally a different life form. Even after most of a billion years to get it right, mitochondria still occasionally tricks plants into producing only females since mitochondria is replicated only within the maternal line (Chase, 2007). The multilevel selection balancing act going on between cells and multicellular organisms is repeated within nucleated cells.

Prosociality and cooperation become central as we scale up into human behavior. Humans are faced with the same choice that we observe in the natural world, between individual self-interest and the interests of the collective. Individual human behavior can foster success at one level at the cost of success at another. What's good for you can be bad for your family. What's good for your family can be bad for your clan. What's good for your clan can be bad for your nation. What's good for your nation can be bad for the world.

The general rule is this: adaptation at any level of a multitier hierarchy requires a process of selection at that level—and it tends to be undermined by selection at lower levels. When selection at lower levels is restrained, selection at higher levels can come to dominate.

Evolution in Multiple Streams

The discovery of genes as a mechanism of heredity was a major breakthrough in evolution science, but genes are hardly the *only* mechanism of inheritance (Jablonka & Lamb, 2006; Wilson, Hayes, Biglan, & Embry, 2014). Parents and offspring typically share the same language, for example, which is not genetically inherited. Another inheritance mechanism involves changes in gene *expression* rather than gene *frequency*. Genes are up and down regulated, in part by epigenetic factors such as methylation of cytosine which make DNA transcription more difficult. Some of these epigenetic patterns can be passed across generations. Learning selects behavior within the lifetime of the individual, but it passes to other generations through social learning, symbolic learning, and cultural practices and it alters the functioning of

genes through epigenetic processes and through niche construction and selection. Ultimately every facet of human experience – the environments in which we live, our behavior, our cultural understandings and norms, our languages – are all continuously evolving using the same basic processes of variation, selection and retention.

Prosocial and Applied Evolutionary Science

Humans evolved in small bands and groups. That altered the evolutionary context to favor cooperation by shifting selection more toward between-group competition and less toward within-group competition. The other characteristic features of human functioning, cognition (Hayes & Sanford, 2014) and culture (Turchin, 2016), arguably followed as direct and indirect extensions of cooperation. If that is true, in some sense the small group is the primary unit of selection in human behavior, but it can be undermined by selection processes at lower levels of organization, namely the individual.

The deep lesson of multilevel selection is that evolution occurs at multiple levels at the same time, and thus behavior change needs to be thought of at multiple levels simultaneously. It is both/and not either/or. That might sound complicated, but we all manage it, all the time.

Balancing our needs with others is the warp and weft of daily life. Will I volunteer to help on someone else's project? Should I pick up my dog's poop? What should we do about refugees wanting to enter our country?

That is the reason we turned to contextual behavioral science and ACT in constructing Prosocial as an intervention. Lin Ostrom was awarded the Nobel for showing that the CDPs accounted for group success, not for work showing how to get people to adopt these principles, nor to apply them in a flexible way. We needed principles of behavior change to accomplish that task, and it seemed to us that we should start with the processes that help explain and address the

behavior of individuals since these would be key in preparing the way for the successful adoption of CDPs within groups.

It takes group actions to create the context in which cooperative behavior can be fostered, but it takes individual actions to create and to support such groups. Only individuals can ultimately decide to stay or leave; to participate or withdraw; to communicate or to remain silent, although they always do so in response to the context of the group. For that reason we will first describe the nature of ACT and psychological flexibility processes in the context of individuals before turning to how we use these processes in Prosocial to foster the CDPs.

Managing Learning Processes

Operant learning principles provide the beginning of a useful theory of behavior that we can use to promote intentional change within and between groups. By operant, we simply mean that in a given *antecedent* context, particular variations in *behavior* produce particular *consequences* that select for that behavior in a particular *motivational* context. Shared understanding of this simple four-part process can be transformative for groups because it can make sense of previously incomprehensible or indefensible behavior.

Operant behavior is inherently purposeful, but in a limited sense of the term. As B. F. Skinner noted in *About Behaviorism*, the organism acts "in order to" produce consequences that have been secured in the past by various forms of action and thus "operant behavior is the very field of purpose and intention" (1974, p. 61). It is not the actual future that controls this kind of learning—it is the "futures" that have been experienced previously. We hardly need to extend the analysis of traditional behavioral principles in the present text, however, given the other chapters and the expected readership.

With the rise of relational learning (Hayes, Barnes-Holmes, & Roche, 2001) a more

generative learning process is established. Even human babies show a two-way street between names and objects by about age 12 months of age (Luciano, Gómez-Becerra, & Rodríguez-Valverde, 2007). As the relational operants needed to demonstrate stimulus equivalence forms, the number of learned relations quickly expands from sameness, to relations of difference, opposition, comparison, time, contingency, self, and so on. Relational framing of that kind can be applied to anything: in principle it is arbitrarily applicable.

Consider any verbal relation and you will note that they have a two-way quality that can then enter into networks. If Sally "is bigger than" Sam, you can derive that it is equally true that Sam "is smaller than" Sally. If you later learned that George was bigger than Sally, you could derive the relative size of all three.

This combinatorial property of relational networks is not only massively generative, it changes how we solve problems, such as how to get along in groups. Verbal problem solving requires a symbolic description of events and their attributes entering into an if/then relationship with imagined outcomes that can be compared: "Given this situation and its properties, if I do this, I will get better outcomes than if I do that." In normal operant learning the future purpose of action has actually been experienced in the past—in symbolic learning the past controls the relational framing of a purpose that may or may not have been experienced.

This new form of purpose (one based on relational framing instead of direct experience for the individual) creates a new contingency stream for evolution—not just contingencies of reinforcement, but also contingencies of meaning. Instead of just relying upon automatic reactions, thanks to the combinatorial property of relational networks people with a proper history can now plan ahead and create purpose symbolically.

Symbolic language is also a double-edged sword—a source of enormous variation but

also enormous rigidity. The same symbolic relations that allow us to *solve* problems also allow us to *create* problems. For example, all animals will avoid not just direct sources of pain but also sources of pain based on classical conditioning. That makes perfect sense, and half a billion years is plenty of time to get good at it. But relational learning allows new forms – for example a person might withdraw from a group to avoid thinking about a painful social rejection. A self-amplifying loop can easily be created in which avoiding possible pain of rejection and loneliness produces self-rules and encourages social behaviors leading to further withdrawal and loneliness.

Relational learning processes can quickly become self-contradictory and self-amplifying. A problem-solving rule like "I have to fix my car or tomorrow will be terrible" is useful. "I have to get rid of my anxiety or tomorrow will be terrible" seems to be the same but is likely to cause harm because imminent terrible events *generate* anxiety, and in effect this rule means that anxiety is now something to be anxious about. Thus it both elicits anxiety and evokes avoidance of anxiety: a toxic combination.

This same double-edged quality applies to cognition in groups. Symbolic rules can be applied in ways that are coercive or that pull for excessive social compliance. Agreements that "this is how we do it here" or narratives about the supposed skill of the group ("We always win") can blind the entire group to healthy alternatives or to changing contexts that require new group practices. Members of a group can hold tightly to symbolic labels about who they are or what their role is in the group, which can induce behavioral rigidity that affects social relations (for example, "My boss did me wrong and I am going to find a way to get back at her"; "Joe is evil"; "I am just an introvert—I'm not good at being a leader").

Multilevel selection (MLS) helps us think about the double-edged sword of human symbolic behavior and how it might be addressed. You can think of the "individual" as

composed of a vast number of entities including a variety of specific behavioral patterns, and so on. We all face selfishness from "groups within" when emotions or cognitions claim an unfair share of time and attention from us.

What psychological flexibility does is provide the skills and perspective needed to rein in internal selfishness that develops from the various thoughts, feelings, sensations, or memories that each of us contains. In effect, we shift from what's in the interests of parts of ourselves, such as our anxiety or suspicion, to what's in the interests of our whole person (Hayes, 2019).

Psychological flexibility consists of six processes:

1. Self: Enhancement of the "deictic I" or perspective-taking sense of self over the storied or conceptualized self;

2. Cognition: Enhancement of cognitive defusion skills that allow the reduction of the automatic domination of verbal rules as opposed to the fused domination of verbal events over action;

3. Emotion: Acceptance skills that allow emotion and sensation to be felt openly and without needless defense as distinct from experiential avoidance – attempting to change the form, frequency, or situational sensitivity of private events even when that creates behavioral harm;

4. Presence: Flexible, fluent, and voluntary attention to internal and external events in the now as opposed to domination by the conceptualized past or future as in rumination and worry;

5. Values: the establishment of chosen qualities of being and doing as reinforcers intrinsic to ongoing action; as opposed to fused, avoidant, or compliant verbal motivation;

6. Committed action: Commitment to the creation of larger and larger patterns of values-based action as opposed to impulsivity, procrastination, and avoidant persistence.

Processes 1 and 4 are awareness processes that are designed to increase contextual sensitivity thereby ensuring more healthy selection of behaviors; Processes 2 and 3 are openness processes that are designed to increase healthy variability; Processes 5 and 6 are active engagement processes designed to foster healthy selection and retention processes.

Much as epigenetic processes alter how genotypes are expressed in the production of phenotypes, openness and awareness function are episymbolic processes that alter how our cognitive networks—our symbotypes, if you will—are expressed in our actions, and how we approach the challenges we face. We can have the thought that we *must* do something (for example, tell off a coworker) and respectfully decline to follow that self rule; we can have the thought that we cannot do something (for example, give an important talk) and do it anyway.

Let's suppose we have a group member who has thoughts like *Oh, I can't do that because I'm not good at it*, or *It makes me too anxious to call volunteers. Find somebody else.* That person could go to her grave declining to participate. But thoughts don't always have to have an automatic behavioral impact. For example, noticing thoughts with dispassionate curiosity dramatically reduces their automatic behavioral impact, such that a person might have the thought *It makes me too anxious to call volunteers* and still agree to do so.

Values-based actions in groups add positive moments to our lives, especially as group development is guided by the core design principles. The flexibility principles help you set up a social context for trust, and if these actions are supported by movement in a values-based direction, a self-amplifying process of effective group participation can ensue.

Although values are a symbolic event, values-based overt action is where the rubber meets the road. The benefit of dealing differently with internal barriers is that values can be put into practice through committed action.

Behavioral retention is fostered by two primary features of action: repetition leading to successful outcomes, and the integration of action into larger and more elaborate patterns that pay off in expressing values. As a shorthand, the prime tool for behavioral retention is practice and the creation of more integrated patterns of values-based action.

Using the Matrix to Foster Psychological Flexibility

The six flexibility processes comprise an integrated skill set. Both individuals and groups can be psychologically flexible. It is a skill set that supports prosocial behavior change and the deployment of the core design principles in part because these skills build key elements that undergird prosocial behavior: trust, a focus on longer-term rather than immediate outcomes, and social value orientation.

In Prosocial the prime method for working on psychological flexibility is called the *Matrix* (Polk, Schoendorff, Webster, & Olaz, 2016). The Matrix is a process for thinking about two key dimensions of experience: moving *toward* consequences you want more versus the tendency to move *away* from consequences you want less, and "outside/inside," which represents the public physical world—what people can see, hear, taste, touch, and smell—versus private events, including thoughts, emotions, imagery, memories, and the like.

In this chapter we will present the Matrix in an upside down version that allows these discriminations to be made very quickly using the metaphor of a person walking. Private events are analogous to what is in our hearts and heads: we have to tell others about these events for them to be known; public events are analogous to our hands and feet – anyone can see these because they are public.

We generally loop through the matrix at least twice in the Prosocial process. First, we look at clarifying individual goals, values, and concerns using the matrix, and then we look at

integrating those interests to craft a stronger sense of shared identity and purpose at the group level. Individuals or groups can complete the matrix, and the process can be focused on one's own interests or the collective interests of the whole group.

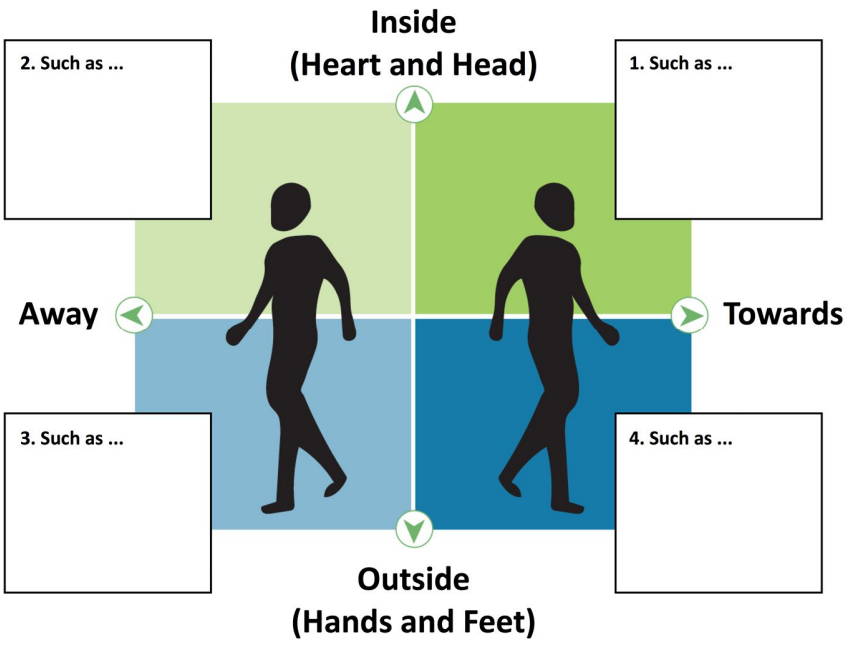

Figure 1. The steps of use of the Matrix, individually and in groups.

The boxes in the figure are numbered. It is common to walk through them in this sequence although it is by no means necessary and adapting to the context is encouraged. An individual might put in words in these four sections such as 1. Authenticity; creativity; effectiveness 2. Fear of being ridiculed; fear of failure 3. Gossip; make jokes; avoid meetings 4. Coming to meeting prepared; speaking up and sharing ideas.

Often in a group context there are privacy issues about the personal Matrix so it is common to use online tools that present individual responses to the matrix in anonymous form. If that approach in not used, the Prosocial facilitator can ask if anybody would like to volunteer what they wrote down on their private map. In this way, group members choose what is most important, and safe, for them to share with the larger group, and a collective map of individual interests can be created.

Once the personal Matrix is done, a group Matrix is created. In this case we are looking at what we as a group want to move toward; what we as a group experience that draws us away; how that moving away looks publicly; and what we would see if we were all moving toward what we wanted this group to be about.

The cross in the middle of the Matrix represents conscious contact with the content of the Matrix itself. Thus, there is a rough correspondence between the Matrix and the six flexibility/inflexibility processes. The right side of the Matrix representing values and committed action; the left side representing the experiential avoidance and fusion; the cross in the middle representing awareness and the now.

What the Matrix process does that is useful for fostering group change will be explored in specific ways in the context of the CDPs to follow, but in general it fosters a personal consideration of values and vulnerabilities that are then shared in a safe context with others, fostering social connection and a feeling of belonging. It is very common for people to be surprised by the overlap of values and vulnerabilities within the group: people who may have felt that they are alone and disconnected frequently realize that others feel much the same way.

The collective matrix fosters a sense of shared identify and group cohesion, and indicates places of disagreement that need to be worked on. In addition, it reveals concrete behavioral

indicators of group functioning, both in a positive and negative direction.

The Core Design Principles

What follows is a discussion of the CDPs and how the group might be able to foster them. You will note that we have tweaked the definitions and labels for the CDPs in some areas in order for them to fit the full range of groups.

CDP 1: Shared Identity and Purpose

A group functions best when its purpose is clearly understood and perceived as worthwhile by its members. There should be a strong shared identity that helps group members to understand who is in or out of the group, and that coordinates behavior through shared norms and values.

In Ostrom's original study groups, the shared purpose was always sustainable management of a common pool resource, which is why her original CDP1 focused on the issue of membership. Most other groups are defined more by their purpose and mere membership is not the issue. The key to this CDP is that members understand and care about the purpose of the group. That choice gives the group a shared sense of identity – creating a sense of belonging and caring for others in the group.

The Matrix is very helpful for CDP1 because it makes clear what group members most care about, both in terms of their stated values or goals, and also their concerns. It is a natural step for the group itself to then consider how they can create a sense of caring, belonging and safety in the group.

When people share a purpose, they are more likely to care for the group and feel a sense of belonging. This makes them more likely to engage in prosocial behaviors, such as sharing

information and helping others. You can see this happen automatically when a community experiences a natural disaster. As shared purpose becomes clear, people are more likely to exert effort to support collective action. Working to create shared purpose *is* the very essence of clarifying and prioritizing the collective interests of the group over individual interests.

When the purposes of individuals within the group do not align with those of the group as a whole, a lot of time and energy is spent attempting to control individualistic behaviors. If a group can bring individual and collective purposes into alignment, a lot of this time and energy can be devoted to finding ways to better cooperate rather than to control individualism.

An example of how this might be emphasized naturally using the Matrix is to begin the group process with questions like "What is *our* shared purpose? Who or what matters to *us*?" instead of the more individualistic question of "What matters most to *me* about the group?"

If your group seems to struggle with the question you can deliberately shift a group's perspective to a future time frame. For example, we might ask this: "Imagine it's five years in the future, the group has been extraordinarily effective. What are we doing? Who are we serving?" and so on. From there it is but a short step to "What would we be most focused on as our common purpose?" It can also be helpful to ask questions that move people backward in time: What has enlivened and excited us in the past? When are we at our best?

It is important not to dive directly into the "how" questions of group functioning until purpose is clear. CDP1 is first and foremost about why we are doing what we are doing. Once the "why" is evident, however, it is helpful to give purpose life by embedding it in the concrete plans for the group. "What matters most in this situation?" or "What are we trying to achieve here?" are questions that put purpose inside group actions and plans.

Evidence for CDP1. There is abundant evidence from a variety of fields of study in support of Core Design Principle 1. In terms of the positive benefits of a strong sense of shared identity and group cohesion (the degree to which the group sticks together and is unified in the pursuit of its goals), Chang and Bordia (2001) showed that group cohesion predicts group performance while Mathieu, Kukenberger, D'Innocenzo, and Reilly (2015) demonstrated that more cohesive groups perform better over time and better performance also enhances cohesiveness. Cohesion also enhances prosociality. De Cremer and Stouten (2003) demonstrated that contributions to a public good are higher when a person experiences the group as part of the self. Cohesive groups are more stable and members are more loyal (Van Vugt & Hart, 2004) while members of more cohesive groups are more likely to trust one another, share important information, and coordinate their actions more effectively (Ashforth & Mael, 1989). There are also impacts at the personal level. Group members feel more personal meaning in life when there is a strong sense of belonging in a group, because it expands their awareness to include a cause larger than themselves (Lambert et al., 2013).

Shared purpose also has a range of positive effects upon group members and groups. Workers whose purpose matches that of their organization produce 72 percent more output than unmatched workers (Carpenter & Gong, 2016) and workers are willing to be paid 44 percent less for the same job once they learned that their prospective employers had a social responsibility mission statemen (Burbano, 2016). At least a part of what is going on here is a focus on approach rather than avoidance. When people are primed to focus on approach rather than avoidance, they are more proactive in contributing effort and ideas to a group, as well as managing their own needs (Kilduff & Galinsky, 2013).

CDP 2: Equitable Distribution of Contributions and Benefits

For groups to function well, the effort and other forms of contribution required of its members, and the benefits of that effort, need to be distributed fairly. Most people have a strong sense of equity that is violated when someone receives benefits disproportionate to their contributions. So perceived fairness—a fair balance between effort or workload and reward—is essential for good group performance. Sometimes, in groups that fall short implementing this principle, perceived unfairness is 'undiscussable'; sometimes, it is discussed endlessly but in ways that do not lead to positive change.

In general, a good way to implement this design principle is to have a discussion with each member of the group and each subgroup of members as to what they most want to get from the group and what they have most to give. If the arrangement seems fair to everyone at the end of the discussion, then both aspects of this design principles will be satisfied. Such an approach can often be more helpful than evoking unhelpful and biased frames of comparison by asking "Are you treated fairly" from the outset. The key outcome is that group members feel valued and rewarded for contributions.

There are two important aspects to fairness: are resources distributed among people fairly (e.g., who gets how much money; who gets promotional opportunities) and are there fair and transparent processes in which people are involved appropriately in decisions that affect them. CDP 2 is focused mainly on the first variety, sometimes referred to as distributive justice (Schäfer, Haun, & Tomasello, 2015); CDP 3 (fair and inclusive decision making) and 6 (fast and fair conflict resolution) are more focused on the second type, often called procedural justice (Bobocel & Gosse, 2015).

The most effective groups usually begin with a recognition that everybody deserves the opportunity to contribute to the fullest extent possible, if they so desire, and that benefits are

fairly linked to contributions. By "contribution" we mean any form of adding to the good of the group though effort, hours, or resources. By "benefits" we mean anything that benefits the individual such as salary, public recognition, learning opportunities, or social engagement. Fairness can involve a sense of equality (e.g., benefits and workload are assigned equally), equity (benefits are linked to performance), or need (benefits are linked to need) or all three in combination. Once the ideas of distributive and procedural fairness, and the differences between equity, equality, and need-based norms of fairness, are introduced to groups, they are usually in a much better position to enrich their discussions of what really matters in relation to CPD 2, and to link issues of fairness to their shared purpose.

If fairness is a problem for a group, opening a conversation focused on fairness can often backfire because it primes self-interest and encourages biased and inaccurate estimates of contributions and benefits. Fairness grows from a group culture that's focused on "us" and how we all benefit, rather than one focused on me comparing my outcomes to your outcomes.

The individual and collective matrices are enormously helpful with this because they help build shared purpose and trust. When people are focused on their bigger and shared "toward" moves, there's less emphasis on the more self-protective "away" moves that are involved in social comparison. A conversation focused on "Are *we* working together effectively to achieve our shared purpose" is more likely to produce fairness as a by-product than a conversation focused directly on "Am *I* getting what I deserve?" This is particularly true when the dominant norm for fairness is equity—that is, benefits relative to contributions.

After reminding the group about their shared purpose, the focus of a fairness discussion might be on such issues as "What matters most to us about this situation?" When that is clear it can be helpful to move to "toward actions" if you think the group would benefit from getting more

concrete about what fairness actually would look like in the group. It can also be helpful to move to the difficult thoughts and emotions that arise in the context of unfairness are more pressing and how they get expressed in action or inaction. Moving to perspective taking, practicing clear communication and focusing more on roles and tasks more than on personalities and individuals can all be helpful in breaking "fairness" log jams.

Evidence for CDP2. Colquitt and Rodell (2015) conducted a meta-analysis of 493 studies in the area. All forms of fairness significantly predicted social exchange quality (trust, perceived organizational support, leader-member exchange and organizational commitment) which in turn significantly predicted task performance, organizational citizenship (prosociality) and negatively predicted counterproductive work behaviors (antisociality). They further showed that distributive, procedural and interactional justice predicted positive and negative affect in expected directions. In other words, not only does justice affect performance and prosociality, it significantly influences wellbeing.

In a meta-analysis of 190 studies with 65,000 participants, all forms of justice predicted organizational commitment, trust and various measures of job and organizational satisfaction. Distributive and procedural justice strongly predicted organizational citizenship (i.e. prosocial) behaviors. Procedural justice was the strongest predictor of trust, job performance and the extent of counterproductive work behaviors (Cohen-Charash & Spector, 2001). A meta-analysis of 166 studies of leadership and justice with 46,034 participants revealed that followers of leaders who were more fair (distributive justice) had significantly higher levels of job satisfaction (Karam et al., 2019).

In general, the vast literature on organizational justice seems to show that procedural justice (see CDP3 next) is more important than equity of outcomes (CDP2) but

the issues are complex and both are clearly important. Viswesvaran and Ones (2002) conducted a meta analysis of 16 studies (N=4,696) showed high correlations between distributive and procedural justice (r=.66). While both forms of justice were predictive of organizational commitment, organizational citizenship, productivity and job satisfaction, procedural justice was more predictive of all but the last of these constructs. One recent study (Cloutier, Vilhuber, Harrisson, & Béland-Ouellette, 2018) showed that violations of procedural justice had more effect upon distress than did violations of distributive justice. They concluded "The results highlight the greater need for workers to be valued and appreciated for who they are (consideration and esteem), rather than for what they do for their organization (distributive justice of rewards)." (Cloutier et al., 2018) (Cloutier et al., 2018) p. 283. This may suggest that the key ingredient of fairness is that it serves as an indicator of respect for the members of the group, rather than as a kind of calculation as to whether benefits match contributions as suggested by earlier equity theory.

CDP 3: Fair and Inclusive Decision Making

In well functioning groups, members need to be involved in making decisions about the issues that affect them, particularly in their agreements about how the group itself runs. Giving people control over their own actions fosters well-being and effective action. Members need to know that their interests and perspectives have been considered fairly and efficiently. CDP 3 can take many different forms provided that individuals who are affected by the decisions have some influence over those decisions.

There are other benefits. Inclusive decision making helps group members to develop crucial skills—not just the technical skills of learning about the issues and approaches to solving

them, but the psychological skills of listening, perspective taking, self-regulating, making room for other points of view, and committing to action even when it's frightening.

Despite all the benefits of empowering group members, strong hierarchies of authority still persist in many groups with decisions being made at the top and "pushed down" to those who are supposed to execute those decisions. Coercive behavior only gets worse when those in charge are threatened. Under time or resource pressures, the degree to which they rely upon their authority and power to enforce decisions only gets more intense.

Why is it like this? Surely if more devolved, inclusive decision making is such an obviously good idea, then it ought to be selected for in the competitive world of organizational life, in community groups, even in day-to-day contexts such as parents engaging with the children that they love.

Hierarchies persist due to promises of more direction, protection, speed, and social order and, in nested groups, the ability of authorities to change leadership easily if that does not occur. The self-interest of leaders also sustains hierarchies. Authority figures are often afraid that they'll lose power if they try more inclusive decision-making. Leaders may believe their value lies in providing solutions, and engaging others in problem solving and decision making may reduce their self-perceived sense of value. The same is true in situations where knowledge is perceived to be power—*If I share my understanding then I lose my power and others gain it.*

Hierarchies are well evolved for stable and relatively simple contexts that a single leader can understand, but they do not work well with the complex relationships, distributed information, and rapid change that are the hallmarks of the societies we now live in. Decisions propagated up through hierarchies take time and become increasingly disconnected from the information needed to make good decisions. If we want to create groups that balance individual

and collective interests in the long term, we need to do the hard work of empowering people to make decisions and learning new ways of making decisions together.

The Matrix can prove useful when there is resistance to creating more inclusive forms of decision making. If a group is to make progress with change, its members must not only talk about what they want to move toward, they must also have a way to talk about the positive and negative reinforcers that are keeping the system stuck. Using the Matrix groups can explore what is important to the group about fair and inclusive decision-making and a variety of alternatives can be considered. Examples include leadership not only seeking out multiple perspectives but encourages group members to take real responsibility for finding workable solutions to group challenges, shifting the power to frame a decision to members of the group, or adopting a consent based voting process (e.g., **Agree:** I agree with this and approve of it moving forward; **Abstain:** I am happy for the group to decide without me; **Disagree:** I think we can probably do better; and **Block:** I have strong objections to this proposal and do not approve of it moving forward) among other options.

The Matrix can also be used to discuss the *content* of particular decisions. Simply start with this question: What is important to us about [decision]? Process issues can be examined by asking about such issues as “How can we make it more rewarding and less challenging for everybody to speak up?” A similar tactic can bring in the views of stakeholders. Sometimes groups have found it useful to use “circle talk,” perhaps at the beginning of a meeting, allowing everyone the opportunity to reflect on how they are and what is important to them about the meeting, or at the end, so everybody gets a chance to comment on what has happened. Circles, even physical circles of seating, can do a lot to level the playing field in a meeting and encourage everyone’s voice.

Evidence for CDP3. In the section on CDP2, we also reviewed the evidence for the benefits of CDP3 interpreted broadly as procedural justice. However, there is specific evidence that inclusion in decision making is also beneficial in groups. In a meta-analytic review of 72 studies (N=32,870) Slemp, Kern, Patrick, and Ryan (2018 & Ryan, 2018)) showed that when leaders give followers choices and support them in executing those choices, they are happier, have less distress, are more productive at work, and are more intrinsically motivated to exert discretionary effort. In support of these findings, Chamberlin, Newton, and LePine (2018 2018)) conducted a meta-analysis of 151 samples (N=53,200) and found that empowering people and giving them voice improves job performance.

In a beautiful experimental study highlighting the specific effects of unilateral power upon cooperation (prosociality), Cronin, Acheson, Hernández, and Sánchez (2015 & Sánchez, 2015) placed participants in hierarchical or non-hierarchical conditions, with or without power. Over nine sequential rounds, participants who had decisions made for them acted less and less cooperatively over time. Low power participants saw that there was little chance of them receiving a fair share of the proceeds, and so they withdrew their effort. Higher-ranked participants then had to work harder and harder to try to reach agreement by making larger and larger contributions, but to no avail. Cooperation simply didn't happen as often in the groups with asymmetrical power as it did in the groups where power was balanced. This study replicates what is found in animal species. The strength of dominance hierarchies in animals varies. Species with strong hierarchies, such as chimpanzees, cooperate less than species with more relaxed, weaker hierarchies, such as cottontop tamarins.

Using a sample of 22,547 participants in the European Social Survey, participatory decision making was shown to be associated with greater job satisfaction (Pacheco & Webber,

2016). Critically, lower than average participation had a larger marginal effect upon job satisfaction than a range of other variables demonstrating the importance of participation in decision making.

In a multi-level review Bashshur and Oc (2015) argued that having process and decision control is generally associated with improved performance, higher perceptions of justice, better job attitudes, improved relational outcomes (trust, liking, leader support, loyalty, etc) and increased intention to stay in the group at the level of the individual. Most of the work at the level of the group appears to have been focused on voice as dissent. Having more minority dissent is associated with greater innovation (as long as people are involved in decision making about implementation). However, it may also be disruptive for groups. At the level of the organization, voice tends to improve turnover, organizational learning and organizational performance while reducing wrongdoing.

CDP 4: Monitoring Behavior

For groups to function well, it's essential to have some way to monitor agreed-upon behaviors. In hierarchical organizations, monitoring agreed behaviors tends to be seen as the job of a manager or other authority. But such top-down monitoring is often coercive and serves the interests of the manager not of the person being monitored. It's also not very transparent, and self-serving behaviors increase when there is a lack of transparency. Ostrom's work suggested that monitoring is often better performed by peers as part of the normal interaction of group members. The point is to enhance the visibility of behaviors of group members to other members.

If a group is to cooperate effectively, members must know what others are doing. If group members don't notice and care about others' behavior, the group cannot appropriately

coordinate its actions, discourage disruptive self-interested behavior, or encourage helpful cooperative behavior. We use the term "monitoring" to describe observing with intent to coordinate behavior. For some people, that word sounds a bit sinister because it's sometimes associated with powerful people attempting to control the behavior of others. But when we use "monitoring," we really just mean transparency of behavior—all members being able to see or notice what others are doing in the group. In this chapter, we'll explore what monitoring is and how you can build it into your group in a way that supports individual self-determination while also taking care of the needs of the collective.

The aim of monitoring is to capitalize on the positive reinforcement arising from cooperation rather than the negative processes of coercion and control. This CDP is about *transparency*, and caring about and noticing the work of others, not introducing a dead hand of control. This is why we emphasize that monitoring ideally include peers knowing what others are doing in the group. In some contexts, this might be as simple as regular meetings to discuss what members of the group are working on. In others, it might involve more formal systems of review, such as after action reviews of team performance, performance appraisal discussions with a manager, or obtaining feedback from a survey of peers and subordinates in something like a 360-degree feedback process.

As with the other principles, this principle works at any scale. A virtual team must be able to see what everyone is doing in order to coordinate and perform, just as global arms control relies upon each nation being able to monitor nuclear testing and distinguish it from earthquakes.

Despite its obvious utility, as with all the principles, monitoring is not necessarily something that all groups do well. In our experience, groups do monitoring badly in three main ways:

- To the wrong extent: Too much or too little relative to the purposes of the group
- Ineffectively: When either not enough information or the wrong information is gathered about behavior
- Coercively: When monitoring is used not to enhance mutual learning but instead to force behavior

There are two key practices to making behavior visible to others in the group. First, groups should share information about what members of the group are doing, either through meetings; online, asynchronous tools, such as project-management software; or other channels. Second, groups need to have processes for managing the performance of all employees that preserve the group's internal cooperation and prosociality.

An obvious way to make behavior more transparent in a group is to share information about progress made toward objectives using collaborative project-management tools, such as Trello or Asana. Many similar tools are available. Putting information online in a readily accessible format can be particularly important when members of the group work remotely and the online shared space is sometimes the main means for getting information about what others in the group are doing. This strategy primarily works to enhance coordination, but it can also tap into the other benefits of monitoring, such as by increasing prosociality, decreasing free-riding, and improving motivation.

To be useful, monitoring needs to be timely; focused on support and not coercive control; and mutual. Systems such as 360-degree feedback, with which staff can notice and comment upon manager behavior in the same way that managers notice and comment upon staff behavior, help to create norms of mutual accountability and shared continuous improvement.

The collective Matrix can be used to generate information about what needs to be

monitored because it specifies valued individual and group behaviors as well as defensive individual and group behaviors that are likely to interfere with effective cooperation. For example, a group member might flag in the personal matrix that they tend to go quiet and not volunteer their opinion when they feel unsure about something. This might work against effective cooperation if important dissenting voices are ignored. Given this information, other members of the group are in a better position to notice when the person might be avoiding speaking up and respond helpfully to include that person in the group discussion.

Evidence for CDP4. Bernstein (2017) conducted a review of evidence for the benefits of monitoring and argued that being more able to see the work of others (transparency as monitoring) resulted in improved performance, communication/sharing of knowledge, learning and more prosocial behaviour through peer effects. He also noted, however, that when monitoring begins to feel like surveillance, it can easily be experienced as an invasion of privacy. Clearly monitoring must be done in a way that supports group members in achieving their purposes without excessive intrusion into their privacy. Negative evidence for this principle also comes from a study showing that when high trust leads to less monitoring, team performance tends to decline (Langfred, 2004).

There is also fascinating evidence that we have evolved to act more prosocially when monitoring is present. In a series of controlled studies, researchers showed that people are more likely to make voluntary donations when there is a picture of a pair of eyes on the wall than when there is not (Bateson, Callow, Holmes, Redmond Roche, & Nettle, 2013; Bateson, Nettle, & Roberts, 2006; Nettle et al., 2013). This basic finding in the lab has been replicated in a variety of contexts: the presence of watching eyes also increases charitable giving, decreases littering, increases the picking up of litter, and increases contributions to

an “honesty box” in which people pay for coffee and other supplies in a shared kitchen.

CDP 5: Graduated Responding to Helpful and Unhelpful Behavior

No one is perfect when it comes to fulfilling the obligations of a group. Even the most capable and well-meaning members can fail, especially given competing demands upon their time and attention. While Ostrom was focused on graduated sanctions for misbehaviors the reinforcers were built in: access to common pool resources. In addition, Ostrom’s groups tended to be stable and leaving was not a ready option. In order to generalize this principle, it needs to extend beyond just group responding meant to discourage unhelpful behavior and include responding meant to encourage helpful behavior. Without such positive reinforcement, there is little incentive to stay with the group and people either disengage or leave. The key issue is responding at an appropriate level of intensity to either encourage or discourage behaviors contributing or detracting from cooperation within the group.

Responding effectively to increase prosocial behaviors and decrease antisocial behaviors is not always easy, as seen in how often we get it wrong. The formal and informal processes put in place to respond to behavior should be focused on creating cooperation to move a group toward its shared purpose. As much as possible, such processes need to honor and preserve the degree to which people feel in control of their choices, their capacity to effect change, and their relationships.

Ostrom emphasized graded sanctions for negative behavior and sanctions that start small are far less likely to elicit strong emotional responses, counterattacks, or withdrawal from the group. By giving violators an easy way out, the sanctions also are likely to seem fairer and less indiscriminate.

In the successful groups that Ostrom studied, if violations persisted, the sanctions escalated. For example, if gossip might be followed by a visit from village elders. Often increased sanctions include guidance about what to do to avoid future sanctions.

If strong sanctions are applied immediately, instead of after a more mild sanction, it can undermine trust and provoke retaliation. Nobody wants to be in a group in which, literally or figuratively, the smallest violation could result in your head being cut off. Graduated sanctions can have the opposite effect, because others see that abusive and costly forms of selfishness will not be tolerated and thus their own cooperative steps are likely to be reciprocated.

The ultimate sanction of being cast out of the group gives gentle warnings part of their punch. We've probably all been in work groups in which we felt a sense of relief or gratitude when a chronically toxic staff member was finally let go.

At the same time, a greater emphasis on positive reinforcement for helpful behavior avoids many of the negative risks of sanctions. It is important to encourage collective "toward" behaviors wherever possible rather than just focusing on individuals and behaviors that are not wanted. Rewards that are integral to the task itself are less likely to land poorly than crude use of external rewards. Within-group competition can be destructive if the gains that result from increased winner motivation are canceled out by losses in motivation on the part of losers. Focusing responding on behaviors and achievements that support shared purpose and identity, equity, and inclusiveness bolster the group against these dangers.

One of the many benefits of the Matrix is that it reveals what members of the group will consider reinforcing. Everybody is different, and we can never assume that a particular behavior will be reinforcing. The Matrix can also be used to explore what is important to us about this CDP; how we might implement it; what hooks might show up and get in the way of

implementing the principle; or what the group might do in light of these hooks and defensive behaviors.

It is usually best to explore responding to helpful and unhelpful behavior separately, because the values and concerns are often quite different. Often groups know what works for responding to unhelpful behavior in a graduated way, such as by first asking the person why they did what they did, followed by things like skills training in responding constructively. Eventually, however, the group hits a sense that they don't know what to do, that the response might escalate conflict, or fear of confrontation and social disapproval. Walking inside these barriers in a values-based way is necessary to see full progress. This might include reorienting to the purpose of consequences, taking the perspective of the other person, defusing from judgments about what happened and creating openness to gathering new data. It is also important to separate out evaluations that are subjective from actual observations.

Evidence for CDP5. There are large bodies of evidence both for graduated sanctions and, obviously in this context, appropriate reinforcement in enhancing prosocial behavior in groups. In terms of graded sanctions, people are more cooperative when opportunities to altruistically punish uncooperative behavior are present than when they're absent (Fehr & Gächter, 2002). Just the threat of sanctions via exclusion for "bad apples" decreases antisocial behaviors (Kerr et al., 2009). Sanctions are not just beneficial at the individual level, at the organizational level, (Gürerk, Irlenbusch, & Rockenbach, 2006) showed that institutions that had sanctions outcompeted institutions without sanctions by attracting members and cooperating more effectively.

That begin said, it has long been known that sudden reductions of positive reinforcement, or sudden presentation of aversive consequences will produce increases in aggression in humans

and non-human animals alike (e.g., Frederiksen, & Peterson, 1977).Meta-analyses show for example that social use of intense negative consequences (e.g., parental corporal punishment) increases compliance short term – but it also increases aggression longer term (Gershoff, 2002),

Interactions between sanctions and trust are complicated. On the one hand, sanctions appear to be particularly important in environments where there is lower generalized trust (Yamagishi, 1988). On the other hand, in a meta-analysis of 83 studies involving 7,361 participants across 18 societies (Balliet & Van Lange, 2013), levels of trust and the enforcement of social norms were reciprocally related such that each increased the other. Sanctions work more effectively when there's trust. For example, in high-trust societies such as Denmark and China, the prospect of punishment for failing to contribute to shared public goods promotes cooperation more effectively than in low-trust societies.

CDP 6: Fast and Fair Conflict Resolution

Any group that involves committed individuals acting authentically will inevitably encounter conflict as people have different interests and information. It is best to plan for conflicts and their resolution from the beginning. Successful groups have ways of reaching timely resolution or accommodation of differences in ways that honor individual differences in values and perspectives.

Conflict is normal and inevitable in any high-performing group. Group members perceive situations differently—noticing different "facts" and putting them together in different, sometimes self-serving ways. This network of beliefs and evaluations is simply our symbolic relational repertoire in action. We create and derive networks of meaning to understand and predict the behaviors of others. But our networks of meaning can easily become rigid when we

see them as the only possible truth rather than a perspective. The sense we make of situations tend to be self-serving—we seek out and process information in ways that will confirm our existing views.

If a group is to find a way through conflicts, it needs to ensure it has effective capability at three levels:

1. Interpersonal skills such as listening well and speaking assertively not aggressively
2. Personal skills such as emotion regulation and perspective taking
3. Group-level agreements and processes for managing conflict efficiently and effectively.

Healthy conflict tends to be focused on tasks and includes legitimate differences of opinion, values, perspectives, or expectations. Unhealthy conflict tends to be more focused on labelling or judging individuals. It often involves people competing for scarce resources or power, conflicts between individual and collective goals, and poor communication patterns.

Healthy task conflict can be seen as a sign of a thriving, autonomy-supportive environment where people are encouraged to think for themselves and voice their opinions. Task conflict might arise because members perceive value issues differently, or because they bring different types of expertise to a task, leading them to see different solutions. Healthy disagreement can contribute to creativity, learning, and better solutions overall. Groups that experience no conflict, not even task conflict, are usually composed of highly avoidant members who are deferential to the leader.

Relationship conflict tends to be much more emotional, and it involves tension, annoyance, and animosity between people. Negative and rigid evaluations and judgments of

others fuel relationship conflict. Whereas task conflict tends to produce more effective group decisions, relationship conflict is usually associated with poorer group decisions. Furthermore, relationship conflict usually creates disconnections between people as they avoid one another, leading to failures to transmit information and coordinate activity. The second author of this chapter once worked with a surgical team, the members of which were locked in relational conflict to the extent that they weren't passing on information about the treatment and current condition of patients at the handover between shifts, creating extreme risk for patients. Relational conflict also consumes a huge amount of emotional energy, distracting people from the task and causing them to waste time gossiping and disagreeing.

To the extent that a safe and trusting environment exists within a group, there is a lower likelihood of people hearing disagreement as criticism, as well as an increased willingness to speak up knowing that disagreement will be less likely to blow up into emotionally charged relational conflict.

The overwhelming strategy most people use to manage the difficult feelings and thoughts associated with conflict is to simply avoid having it. Work teams learn what is "undiscussable," whether it be the manager's behavior, a team member's free-riding on the efforts of the rest of the team, or the lack of feasibility of a poorly thought through strategic plan.

If conflict is not dealt with effectively, it can undermine all the other principles. Conflict resolution includes (Fisher, Ury, & Patton, 2011):

1. Separating the people from the problem.
2. Focusing on the shared interests of both parties.
3. Developing many options that can be used to solve the problem.
4. Evaluating the options using objective criteria.

The matrix provides an effective tool for implementing these four recommendations and creating more integrative solutions. Mapping out the values and overarching goals espoused by each participant, and having recognized that they had much in common, sets an effective stage for exploring the fears and concerns. When making specific recommendations for action conflict, it's possible to think more abstractly about shared values to see if there's a way to come up with a specific action that will meet the needs of both sides.

When your group members seem to be stuck in conflicting positions, the matrix can help identify the underlying interests through questions such as these:

- What is most important to you about getting X
- What matters most to you here?
- What would you like to accomplish by getting X?
- What is it about this that really matters to you in the longer term?
- If you got what you are asking for, what interests and needs would that satisfy

Focusing on interests tends to shift the focus from the unchangeable past or present to what we want for the future, which is the only place where changes can be made. Flexibility skills such as learning to take the perspective of others, empathize with them, and tolerate the pain of conflict helps transform the meaning of conflict from something to be avoided into something to be used for learning and growth.

A more helpful stance is to objectify the problem rather than the person, and to assume that everyone in the relationship has understandable intentions, at least from their own point of view. From this perspective, we can stand side by side instead of being squared off against one another, and thus work on solving the problem together.

Aside from developing personal and interpersonal skills to manage conflict effectively,

having agreed-upon principles and processes that everyone can trust can greatly help the process of conflict resolution.

It is important that conflict management occurs in a timely manner. Typically, effective conflict resolution begins as an informal conversation between the parties involved. If participants have learned some of the skills of emotional self-regulation, perspective taking, listening effectively, speaking assertively not aggressively, and holding a conversation to a clear purpose, it's often possible for them to simply work through differences in open conversation. Beyond that initial conversation, it's quite common to encounter conflict-escalation processes that move through stages as required, from one-on-one conversation to a mediated conversation to some kind of informal arbitration process to an external arbitration process, for example. If groups successfully manage task conflict so that it doesn't become relational, they can improve not only the level of cooperation within the group, but also the levels of creativity and performance.

Evidence for CDP6. Relational and process-related conflict is generally unproductive while task-related conflict is productive as long as group members feel psychological safe (Bradley, Postlethwaite, Klotz, Hamdani, & Brown, 2012). A meta-analysis of 116 studies examining 8,800 teams showed relationship and process related conflict was associated with poor group outcomes. Unlike earlier studies, this analysis did not show a negative relationship between task conflict and group outcomes (de Wit, Greer, & Jehn, 2012 2012). Teams with high task conflict and low relationship and process conflict are more effective at resolving conflict and perform more effectively (O'Neill, McLarnon, Hoffart, Woodley, & Allen, 2018 Woodley, & Allen, 2018).

One example of the ways that poorly managed conflict can undermine all the other

principles is the effects of conflict upon teams that are structured for equitable (CDP2) and inclusive decision making (CDP3). Self-managed teams restructure themselves in response to unmanaged conflict. Over time, people share less information with one another, were less trusting of giving others autonomy to make decisions, and avoided others with whom they were supposed to be cooperating, all of which eventually undermined many of the benefits of giving a group authority to manage itself (Langfred, 2007). But the effects can run the other way as well. More group cohesion (CDP1) moderates he effects of conflict upon team performance (Nesterkin, 2016) and having more voice in organisational dispute resolution (CDP3) results in more effective conflict resolution which in turn results in lower turnover intentions (Van Gramberg, Teicher, Bamber, & Cooper, 2017).

CDP 7: Authority to Self-Govern

The seventh design principle shifts the focus away from the internal social organization of the group and toward external relations. Every group is embedded in a larger society that can limit its ability to govern its own affairs. These constraints can interfere with the objectives of the group and the implementation of CDPs 1-6. For example, state educational policy might impose limitations on how classes can be taught or a military group might be forced to get permission from a chain of command before they can act in an emergency situation. To create really high performing groups, it is essential to provide an environment that does not excessively interfere with their capacity to implement principles 1 through 6.

In a sense, this principle is the same as CDP 3 (fair and inclusive decision making), but at the group rather than individual level. Both CDP 3 and CDP 7 involve rights and responsibilities associated with autonomy—the right to have a voice and the responsibility to put forward one's perspective and expertise.

Energy and creativity can be unleashed when larger-scale entities, such as governments, corporations, and even the military, make it easier rather than harder for groups to form and manage their own affairs, and in a way that also contributes to the welfare of the larger-scale entity. The collective matrix can be used work with a group to explore options for increasing authority to self-govern.

However hard it might be for a group to become more autonomous, the results are likely to speak for themselves. If you're fighting for autonomy, try to get your "superiors" to let you try self-governance on a pilot basis.

Evidence for CDP7. As currently framed, it is somewhat complex to assemble evidence specifically for this principle. As we use Prosocial, we are increasingly conceiving this principle as an absence of interference from outside the group in CDP's 1-6. Put simply, if a team is unable to implement principles 1-6 effectively because of a hostile or even benevolently controlling environment, they will be unlikely to succeed for all the reasons given in the previous sections.

But there is more specific evidence for this principle from studies that compare teams that are relatively autonomous (self-managing) with those that exist within more traditional hierarchies. As just one example, Kirkman and Rosen (1999) showed that 'empowered' teams were "more productive and proactive than less empowered teams and had higher levels of customer service, job satisfaction, and organizational and team commitment." Another empirical study of government departments showed that self-management contributed to job satisfaction and resource attainment but it was less important than just having effective teamwork (i.e. principles 1-6) (Yang & Guy, 2011).

CDP 8: Collaborative Relations with Other Groups

This principle can be seen as a kind of meta-principle that allows all the other principles to be scaled to groups of groups. It concerns the way a group relates to the others with which it is in contact. If we are to build systems of cooperation, a group needs not only to practice principles 1-7 itself but also relate to other groups using principles 1-7. This can go wrong in two ways: a) other groups may not cooperate with you (e.g. they don't include your group in important decisions, behave in ways that can't be monitored, and so on), or b) your group may not cooperate well with other groups. In this fashion, the same design principles are relevant at all levels of a multi-tier hierarchy of social units. What is key is that group relations throughout systems of interest embody principles 1-7. In that context it is important to determine whether groups have purposeful, equitable, inclusive, transparent, responsive, harmonious and autonomy-supportive relations with other groups.

Multilevel selection theory casts the necessity of managing between-group interactions in particularly sharp relief. The general rule of multilevel selection is that adaptation at any given level requires a process of selection *at that level* and tends to be *undermined* by selection at lower levels. Many social pathologies are examples of lower-scale cooperation that's disruptive for higher-scale social units. For example, cooperation among relatives can become nepotism. Cooperation among friends can become cronyism. Policies based on "my nation first" can be toxic for the planet. CDP 8 leads us to a necessary conclusion: a full-scale evolutionary approach inevitably leads to global concerns and considerations.

Selection at the upper levels of a multitier hierarchy of groups might seem inherently more difficult than that at lower levels. Perhaps, but consider that each of us, as multicellular organisms, are already groups of groups of groups—in fact, we are multispecies ecosystems

when you take our microbiomes into account!

The concept of polycentric governance has the same quality of common sense as do the CDPs 1 – 7 for single groups. Yet, polycentric governance does not spontaneously evolve—it must be mindfully constructed, similar to relations among individuals within single groups.

A central insight for polycentric governance done right is that the core design principles are *scale independent*. Polycentric governance offers a fractal view of groups as organisms in their own right, allowing conversations to shift to how those entities might implement principles 1 through 7 in their relationships with one another. Groups of groups also need their own shared sense of identity and purpose (CDP 1); they must distribute contributions and benefits fairly among their member groups (CDP 2); all groups should take part in decision making (CDP 3); agreed-upon behaviors should be monitored (CDP 4); there should be praise for good behavior and graduated sanctions for deviant behavior (CDP 5); there should be ways to resolve conflicts among groups that are fast and fair (CDP 6); and the group of groups should have the authority to manage its own affairs (CDP 7). The same can be said of groups of groups of groups—created appropriate relations at still larger scales, potentially to the scale of the entire earth. In this sense, CDP 8 is less a separate principle and more about the applicability of principles 1 through 7 at any level of organization.

There are several practical implications of CDP 8. First, when a single group grows in size, it must differentiate its members as groups of groups in order to function well. Think about how many groups compose a school system, a corporation, a hospital, or a government agency. In these cases, there's a lot of scope for implementing polycentric governance for the whole organization.

Second, if your group or multigroup organization has become prosocial enough to

function as a corporate unit, then you can work with like-minded groups to form prosocial consortia that thrive in competition with less-organized groups. A number of enlightened business corporations are taking impressive steps in this direction, as we will describe.

Third, the more this false and destructive narrative can be replaced by a more scientifically validated narrative based on multilevel selection theory, then the more the CDPs will "make sense" at all scales.

Evidence for CDP8. Once again, it is not a trivial matter to assemble evidence for this principle. A central tenant of multi-level selection theory is that between group competition can enhance within-group cooperation (see for e.g. Majolo and Maréchal (2017) for an example in children} over time. But this does not mean that we must always be condemned to living within constantly warring small groups. The genius of Ostrom's principles lies in their capacity to be enacted at any scale. The Prosocial model framing of CDP8 is that principles 1-7 will also work at group, and systemic levels. That is, to work effectively, groups of groups must also have shared purpose, equity, inclusive decision making, transparency, effective feedback, effective conflict management and appropriate autonomy from broader systemic forces in order to cooperate effectively. One could argue that science as a whole is a prime example of a polycentric system. It is highly values centric- drive by ideals such as objectivity and replicability. There is no centralized governing body, no global leader of science. But there are massive and highly effective global networks of cooperation (Aligica & Tarko, 2011).

What is really needed is solid evidence that each of the principles 1-7 apply equally to between group relations as they do to within-group relations. Such evidence is available for some of the principles. For example, superordinate goals (CDP1) reduce intergroup

conflict (Sherif, 1958) although superordinate identities may not be optimally effective. There is value in retaining and celebrating subgroup autonomy and distinctiveness (CDP7) (Hogg, 2015). Similarly, studies have shown that between-group equity (Vincente & Carolina, 2017) and between group monitoring (i.e. transparency, CDP4) (Bernstein, 2017) are key to system health. But this is an area that needs more research.

Goal Setting for Action

It is essential that setting concrete goals for action follow the discussions of the CDPs. It is here that Prosocial begins to flow seamlessly into organizational behavior management. If you've used the collective matrix to explore the different CDPs, then you will have derived concrete goals from the various matrices you've conducted. If you have simply discussed how to enhance the implementation of each of the CDPs, that process will have also given you a raw set of concrete goals. Either way, you'll need a process for compiling and prioritizing the goals of the group over the short and medium term. You will need an action plan.

Goals are important for groups because they help them to coordinate action in a shared direction, and because they motivate people to initiate and sustain effort, even when the going gets tough. But, done well, goals can also serve another critical purpose: they can help people to learn and adapt over time.

Goals that are difficult and challenging on the one hand but attainable with effort on the other are more likely to lead to improved performance than goals that are either too easy or impossibly hard. By definition, improved performance requires group members to change behavior. If they can accomplish the goal too easily with minimal or even no change in behavior, then goal setting is beside the point. Conversely, members will think it unlikely that they can

reach goals that are too difficult. If even major changes in behavior would leave them far from a goal, then it's unlikely that the motivational impact of possible goal achievement would take hold.

Goals needs to be relevant to individual and group learning and performance: people need to see that the goal fits within their domain of responsibility, and that it matters. For goals to work they need to be meaningful to group members and, ideally, inspiring. If goals are not consistent with collective and personal values, then groups are less likely to achieve them. When setting goals, members need to take into account the individual strengths of members rather than implement the goal in a "one size fits all" fashion. Relevant goals are worthwhile, and timely; they fit with the other efforts of the group and with the current environment, and the right people and resources are present to accomplish the goal with effort.

The well-known acronym SMART (Locke & Latham, 1990; 2002; 2006) summarizes goals that take into consideration the important issues. A SMART goal is:

- *S*pecific
- *M*easurable
- *A*ttainable with effort
- *R*elevant
- *T*ime-bound<end bullet list>

SMART goals emerge naturally from Prosocial. We've had good results with the following approach, sometimes called "brain writing": After the facilitator shares the topic and ideas from the matrix with the team, each member writes down ideas individually and then shares them with the facilitator and the group. This reduces the bias toward early ideas and gives everyone a voice, essentially allowing ideas to be generated in a broad way across the whole

group before discussion.

Once a set of ideas has been generated, the group can discuss each and begin to refine and prioritize them, fitting them into SMART form wherever possible and examining their costs and benefits, and whether the group has the necessary capability and resources. To act as guides for immediate action, goals should be consistent with the group's longer-term vision but be something that can be attained in the next quarter to year.

Once goals are prioritized they should be allocated to people, with parameters for accountability. While it is certainly possible for a small group to have accountability for completing a goal, it's often useful to hold just one person accountable for ensuring that the goal moves forward. Shared accountability can sometimes lead to nobody feeling any particular pressure to complete the goal. For that reason, it's usually best to assign the responsibility for making sure goals are completed to people or small groups before ending the Prosocial session.

Groups that have created SMART goals using the Prosocial process usually find value in continuing to use the matrix, and in reviewing the steps to implement the CDPs as members pursue the tasks required to meet their goals.

Evidence for Prosocial

Throughout this article we have provided extensive evidence for each of the individual principles. But it is of course important to consider the evidence for the ACT relevant components of Prosocial, as well as Prosocial as a whole. Focusing on evidence for the ACT relevant aspects, we can easily find studies demonstrating, for example, the positive effects of psychological flexibility upon emotional exhaustion (Biron & van Veldhoven, 2012) and the seminal work of Bond and his colleagues demonstrating positive effects of ACT interventions upon workplace health and effectiveness (Bond & Bunce, 2003; Bond, Flaxman, & Bunce, 2008;

Bond, Flaxman, Van Veldhoven, & Biron, 2010; Donaldson-Feilder & Bond, 2004; Flaxman & Bond, 2010).

But while this work is excellent, the effects of ACT training that is solely focused upon psychological flexibility may not be optimized for the contexts and purposes of group cooperation. Just as applying ACT to depression involves behavioral activation and ACT for anxiety involves exposure, ACT interventions may need to be explicitly tailored toward consideration of the components of cooperation in order to maximally influence behavior change. We believe that the Core Design Principles are just these components of cooperation. In small groups you need to also focus upon training specific skills related to functions such as resolving conflict, giving feedback and making decisions, in order to foster trust and cooperation.

To date there have not been any randomized controlled trials of the effects of Prosocial upon groups and this is certainly a situation we are working to rectify. However, we do have emerging evidence for the effectiveness of Prosocial. In a naturalistic setting, (Styles, 2016) was able to compare a government department that received a combination of Prosocial and strategic visioning training with the rest of the entire Australian Public service between 2014 and 2015 on a series of measures of morale, job satisfaction and leadership. He found that, while the Australian public service trended downwards across the year on all these measures, the department with which he worked generally improved. In another study (Wilson, Philip, & Atkins, in preparation) showed that work groups on average scored lower on implementation of the CDPs than non-work groups, and that the CDP's were highly correlated with group outcomes such as group satisfaction, commitment and trust. While this evidence is consistent with the extensive evidence reviewed earlier for all the elements of Prosocial, further research is obviously required to test the efficacy of Prosocial in a variety of contexts.

Conclusion

The integration of psychological flexibility principles and the core design principles allows a new approach to enhancing human cooperation. Prosocial is a coherent set of methods that can be used to improve the cooperation of small groups.

Study Questions

1. Describe the tragedy of the commons in your own words.
2. What is the "skeptical view" of human cooperation that the authors describe?
3. Describe two of the core design principles listed in the chapter.
4. What is the "most important feature of applied evolutionary science…" as it pertains to small groups?
5. Explain the quote by Wilson and Wilson (2007) and its implications for groups.
6. What is the "primary unit of selection in human behavior" and what can undermine it?
7. What are the two key dimensions of experience in The Matrix?
8. What are some of the benefits of creating a shared purpose?
9. How is inclusive decision making beneficial to groups?
10. How do the authors use the word *monitoring* and why is this important?
11. Distinguish between healthy and unhealthy conflict.
12. Explain the benefits of successfully managing conflicts in groups.
13. What does Prosocial meet Organizational Behavior Management?
14. Why are goals important for groups?

References

Aligica, P. D., & Tarko, V. (2011). Polycentricity: From Polanyi to Ostrom, and Beyond. Governance, 25(2), 237-262. doi:10.1111/j.1468-0491.2011.01550.x

Ashforth, B. E., & Mael, F. (1989). Social Identity Theory And The Organization. Academy of Management Review, 14(Jan), 20-39.

Atkins, P., Wilson, D. S., & Hayes, S. C. (2019). *Prosocial: Using evolutionary science to build productive, equitable, and collaborative groups.* Oakland, CA: Context Press / New Harbinger Publications.

Balliet, D., & Van Lange, P. A. M. (2013). Trust, Punishment, and Cooperation Across 18 Societies: A Meta-Analysis. Perspectives on Psychological Science, 8(4), 363-379. doi:10.1177/1745691613488533

Bashshur, M. R., & Oc, B. (2015). When Voice Matters. Journal of Management, 41(5), 1530-1554. doi:10.1177/0149206314558302

Bateson, M., Callow, L., Holmes, J. R., Redmond Roche, M. L., & Nettle, D. (2013). Do Images of 'Watching Eyes' Induce Behaviour That Is More Pro-Social or More Normative? A Field Experiment on Littering. PLOS ONE, 8(12), e82055. doi:10.1371/journal.pone.0082055

Bateson, M., Nettle, D., & Roberts, G. (2006). Cues of being watched enhance cooperation in a real-world setting. Biology Letters, 2(3), 412-414. doi:10.1098/rsbl.2006.0509

Bernstein, E. S. (2017). Making Transparency Transparent: The Evolution of Observation in Management Theory. Academy of Management Annals, 11(1), 217. Retrieved from http://annals.aom.org/content/11/1/217.abstract

Biron, M., & van Veldhoven, M. (2012). Emotional labour in service work: Psychological

flexibility and emotion regulation. Human Relations, 65(10), 1259-1282. doi:10.1177/0018726712447832

Bobocel, D. R., & Gosse, L. (2015). Procedural justice: A historical review and critical analysis. In R. S. Cropanzano & M. L. Ambrose (Eds.), *The Oxford handbook of justice in the workplace* (Vol. 1, pp. 51-87: Cary: Oxford University Press.

Bond, F. W., & Bunce, D. (2003). The Role of Acceptance and Job Control in Mental Health, Job Satisfaction, and Work Performance. Journal of Applied Psychology, 88(6), 1057-1067.

Bond, F. W., Flaxman, P. E., & Bunce, D. (2008). The influence of psychological flexibility on work redesign: Mediated moderation of a work reorganization intervention. Journal of Applied Psychology, 93(3), 645-654. doi:10.1037/0021-9010.93.3.645

Bond, F. W., Flaxman, P. E., Van Veldhoven, M. J. P. M., & Biron, M. (2010). The impact of psychological flexibility and Acceptance and Commitment Therapy (ACT) on health and productivity at work. In J. Houdmont & S. Leka (Eds.), Contemporary Occupational Health Psychology: Global perspectives on research and practice (Vol. 1): Wiley-Blackwell.

Bradley, B. H., Postlethwaite, B. E., Klotz, A. C., Hamdani, M. R., & Brown, K. G. (2012). Reaping the benefits of task conflict in teams: the critical role of team psychological safety climate. J Appl Psychol, 97(1), 151-158. doi:10.1037/a0024200

Burbano, V. C. (2016). Social Responsibility Messages and Worker Wage Requirements: Field Experimental Evidence from Online Labor Marketplaces. Organization Science, 27(4), 1010-1028. doi:10.1287/orsc.2016.1066

Campbell, T. D. (1960). Blind variation and selective retention in creative thought and other knowledge processes. *Psychological Review, 67,* 380-400

Carpenter, J., & Gong, E. (2016). Motivating Agents: How Much Does the Mission Matter? Journal of Labor Economics, 34(1), 211-236. doi:10.1086/682345

Chamberlin, M., Newton, D. W., & LePine, J. A. (2018). A meta-analysis of empowerment and voice as transmitters of high-performance managerial practices to job performance. Journal of Organizational Behavior, 39(10), 1296-1313. doi:10.1002/job.2295

Chang, A., & Bordia, P. (2001). A Multidimensional Approach to the Group Cohesion-Group Performance Relationship. 32(4), 379-405. doi:10.1177/104649640103200401

Chase, C. D. (2007). Cytoplasmic male sterility: a window to the world of plant mitochondrial–nuclear interactions. *Trends in Genetics*, *23*(2), 81-90. Doi: 10.1016/j.tig.2006.12.004.

Cloutier, J., Vilhuber, L., Harrisson, D., & Béland-Ouellette, V. (2018). Understanding the effect of procedural justice on psychological distress. International Journal of Stress Management, 25(3), 283-300. doi:10.1037/str0000065

Cohen-Charash, Y., & Spector, P. E. (2001). The Role of Justice in Organizations: A Meta-Analysis. Organizational Behavior and Human Decision Processes, 86(2), 278-321. doi:https://doi.org/10.1006/obhd.2001.2958

Colquitt, J. A., & Rodell, J. B. (2015). Measuring justice and fairness. In R. Cropanzano & M. L. Ambrose (Eds.), The Oxford handbook of justice in the workplace (Vol. 1, pp. 187): Cary: Oxford University Press.

Cronin, K. A., Acheson, D. J., Hernández, P., & Sánchez, A. (2015). Hierarchy is Detrimental for Human Cooperation. Scientific Reports, 5, 18634. doi:10.1038/srep18634

http://www.nature.com/articles/srep18634#supplementary-information

De Cremer, D., & Stouten, J. (2003). When Do People Find Cooperation Most Justified? The Effect of Trust and Self–Other Merging in Social Dilemmas. Social Justice Research, 16(1), 41-52. doi:10.1023/A:1022974027023

de Wit, F. R., Greer, L. L., & Jehn, K. A. (2012). The paradox of intragroup conflict: a meta-analysis. Journal of Applied Psychology, 97(2), 360-390. doi:10.1037/a0024844

Donaldson-Feilder, E. J., & Bond, F. W. (2004). The relative importance of psychological acceptance and emotional intelligence to workplace well-being. British Journal of Guidance & Counselling, 32(2), 187-203.

Fehr, E., & Gächter, S. (2002). Altruistic punishment in humans. Nature, 415, 137. doi:10.1038/415137a

Fisher, R., Ury, W., & Patton, B. (2011). *Getting to yes: Negotiating agreement without giving in (Rev. ed).* New York, NY: Penguin Books.

Flaxman, P. E., & Bond, F. W. (2010). Acceptance and commitment training: Promoting psychological flexibility in the workplace. In R. A. Baer (Ed.), Assessing mindfulness and acceptance processes in clients: Illuminating the theory and practice of change (pp. 282-306). Oakland, CA: Context Press/New Harbinger Publications; US.

Frederiksen, L. W. & Peterson, G. L. (1977). Schedule-induced aggression in humans and animals: Comparative parametric review. *Aggressive Behavior, 3*(1), 57-75 DOI: 10.1002/1098-2337

Gershoff, E. T. (2002). Corporal punishment by parents and associated child behaviors and experiences: A meta-analytic and theoretical review. *Psychological Bulletin, 128*(4), 539-579 DOI: 10.1037//0033-2909.128.4.539

Gürerk, Ö., Irlenbusch, B., & Rockenbach, B. (2006). The Competitive Advantage of

Sanctioning Institutions. Science, 312(5770), 108. doi:10.1126/science.1123633

Hardin, G. (1968). The tragedy of the commons. *Science*, *162* (3859), 1243-1248. Doi: 10.1126/science.162.3859.1243

Hayes, S. C. (2019). *A liberated mind: How to pivot toward what matters*. New York, NY: Avery.

Hayes, S. C., Barnes-Holmes, D., & Roche, B. (2001). *Relational Frame Theory: A Post-Skinnerian account of human language and cognition*. New York, NY: Plenum Press.

Hayes, S. C. & Sanford, B. (2014). Cooperation came first: Evolution and human cognition. *Journal of the Experimental Analysis of Behavior, 101,* 112-129. doi: 10.1002/jeab.64

Hayes, S. C., Strosahl, K., & Wilson, K. G. (2012). *Acceptance and Commitment Therapy: The process and practice of mindful change* (2nd edition). New York, NY: Guilford Press.

Hogg, M. A. (2015). Constructive Leadership across Groups: How Leaders Can Combat Prejudice and Conflict between Subgroups. In Advances in Group Processes (Vol. 32, pp. 177-207): Emerald Group Publishing Limited.

Jablonka, E., & Lamb, M. J. (2006). *Evolution in four dimensions: genetic, epigenetic, behavioral, and symbolic variation in the history of life*. Cambridge, MA: MIT Press.

Karam, E. P., Hu, J., Davison, R. B., Juravich, M., Nahrgang, J. D., Humphrey, S. E., & Scott DeRue, D. (2019). Illuminating the 'Face' of Justice: A Meta-Analytic Examination of Leadership and Organizational Justice. Journal of Management Studies, 56(1), 134-171. doi:10.1111/joms.12402

Kerr, N. L., Rumble, A. C., Park, E. S., Ouwerkerk, J. W., Parks, C. D., Gallucci, M., & van Lange, P. A. M. (2009). "How many bad apples does it take to spoil the whole barrel?": Social exclusion and toleration for bad apples. Journal of Experimental Social

Psychology, 45(4), 603-613. doi:http://dx.doi.org/10.1016/j.jesp.2009.02.017

Kilduff, G. J., & Galinsky, A. D. (2013). From the ephemeral to the enduring: How approach-oriented mindsets lead to greater status. Journal of Personality and Social Psychology, 105(5), 816-831. doi:10.1037/a0033667

Kirkman, B. L., & Rosen, B. (1999). Beyond Self-Management: Antecedents and Consequences of Team Empowerment. The Academy of Management Journal, 42(1), 58-74. Retrieved from http://www.jstor.org/stable/256874

Lambert, N. M., Stillman, T. F., Hicks, J. A., Kamble, S., Baumeister, R. F., & Fincham, F. D. (2013). To Belong Is to Matter:Sense of Belonging Enhances Meaning in Life. Personality and Social Psychology Bulletin, 39(11), 1418-1427. doi:10.1177/0146167213499186

Langfred, C. W. (2004). Too Much of a Good Thing? Negative Effects of High Trust and Individual Autonomy in Self-Managing Teams. Academy of Management Journal, 47(3), 385-399. doi:10.2307/20159588

Langfred, C. W. (2007). The Downside of Self-Management: A Longitudinal Study of the Effects tf Conflict on Trust, Autonomy, and Task Interdependence in Self-Managing Teams. Academy of Management Journal, 50(4), 885-900. doi:10.5465/amj.2007.26279196

Locke, E. A. & Latham, G. P. (1990). *A theory of goal setting and task performance.* Englewood Cliffs, NJ: Prentice Hall.

Locke, E. A. & Latham, G. P. (2002). Building a practical useful theory of goal setting and task motivation. *American Psychologist, 57,* 705-717.

Locke, E. A. & Latham, G. P. (2006). New Directions in Goal-Setting Theory. *Current Directions in Psychological Science, 15(5)*, 265-268.

Luciano, C., Gómez-Becerra, I. & Rodríguez-Valverde, M. (2007). The role of multiple-exemplar training and naming in establishing derived equivalence in an infant. Journal of Experimental Analysis of Behavior, 87, 349-365.

Majolo, B., & Maréchal, L. (2017). Between-group competition elicits within-group cooperation in children. Scientific Reports, 7(1), 43277. doi:10.1038/srep43277

Mathieu, J. E., Kukenberger, M. R., D'Innocenzo, L., & Reilly, G. (2015). Modeling Reciprocal Team Cohesion-Performance Relationships, as Impacted by Shared Leadership and Members' Competence. Journal of Applied Psychology, 100(3), 713-734. doi:10.1037/a0038898

Nesterkin, D. (2016). Conflict management and performance of information technology development teams. Team Performance Management, 22(5/6), 242-256. doi:10.1108/TPM-05-2016-0018

Nettle, D., Harper, Z., Kidson, A., Stone, R., Penton-Voak, I. S., & Bateson, M. (2013). The watching eyes effect in the Dictator Game: it's not how much you give, it's being seen to give something. Evolution and human behavior, 34(1), 35-40. doi:10.1016/j.evolhumbehav.2012.08.004

Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge, UK: Cambridge University Press.

O'Neill, T. A., McLarnon, M. J. W., Hoffart, G. C., Woodley, H. J. R., & Allen, N. J. (2018). The Structure and Function of Team Conflict State Profiles. Journal of Management, 44(2), 811-836. doi:10.1177/0149206315581662

Pacheco, G., & Webber, D. (2016). Job satisfaction: how crucial is participative decision making? Personnel Review, 45(1), 183-200. doi:10.1108/pr-04-2014-0088

Polk, K. L., Schoendorff, B., Webster, M. & Olaz, F. O. (2016). *The essential guide to the ACT Matrix: A step-by-step approach to using the ACT matrix model in clinical practice.* Oakland, CA: New Harbinger Publications / Context Press.

Schäfer, M., Haun, D. B., & Tomasello, M. (2015). Fair is not fair everywhere. *Psychological Science*, *26,* 1252–1260. Doi: 10.1177/0956797615586188.

Sherif, M. (1958). Superordinate Goals in the Reduction of Intergroup Conflict. American Journal of Sociology, 63(4), 349-356. Retrieved from http://www.jstor.org/stable/2774135

Slemp, G. R., Kern, M. L., Patrick, K. J., & Ryan, R. M. (2018). Leader autonomy support in the workplace: A meta-analytic review. Motivation and Emotion, 42(5), 706-724. doi:10.1007/s11031-018-9698-y

Styles, R. (2016). Outstanding evidence for PROSOCIAL in a government agency setting. Retrieved from http://magazine.prosocialgroups.org/outstanding-evidence-for-prosocial-in-a-government-agency-setting/

Turchin, P. (2016). *Ultrasociety*: *How 10,000 years of war made humans the greatest cooperators on earth.* Storrs, CT: Beresta Books.

Van Gramberg, B., Teicher, J., Bamber, G. J., & Cooper, B. (2017). A changing world of workplace conflict resolution and employee voice: An Australian perspective. Paper presented at the Conflict and its Resolution in the Changing World of Work: A Conference and Special Issue Honoring David B. Lipsky, Ithaca, NY.

Van Vugt, M., & Hart, C. M. (2004). Social Identity as Social Glue: The Origins of Group

Loyalty. Journal of Personality and Social Psychology, 86(4), 585-598. doi:10.1037/0022-3514.86.4.585

Vincente, M.-T., & Carolina, M. (2017). Justice in Teams. In: Oxford University Press.

Viswesvaran, C., & Ones, D. S. (2002). Examining the Construct of Organizational Justice: A Meta-Analytic Evaluation of Relations with Work Attitudes and Behaviors. Journal of Business Ethics, 38(3), 193-203. Retrieved from http://www.jstor.org/stable/25074792

Wilson, D. S., Hayes, S. C., Biglan, T., & Embry, D. (2014). Evolving the future: Toward a science of intentional change. *Behavioural and Brain Sciences, 34,* 395-416. doi:10.1017/S0140525X13001593

Wilson, D. S., & Wilson, E. O. (2007). Rethinking the theoretical foundation of sociobiology. *Quarterly Review of Biology, 82*, 327-348.

Wilson, D. S., Philip, M., & Atkins, P. W. B. (in preparation). What All Business Groups Need.

Yamagishi, T. (1988). The Provision of a Sanctioning System in the United States and Japan. 51(3), 265. doi:10.2307/2786924

Yang, S.-B., & Guy, M. E. (2011). The Effectiveness of Self-Managed Work Teams in Government Organizations. Journal of Business and Psychology, 26(4), 531-541. doi:10.1007/s10869-010-9205-2