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**TOO MANY COOKS SPOIL THE BROTH:
HOW THE TRAGEDY OF THE ANTICOMMONS EMERGES IN ORGANIZATIONS***

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Abstract

In organizations, conflict often revolves around commons resources because they are critical for influence, performance, and organizational survival. Research on property rights, territoriality, and social dilemmas suggests that to reduce such conflict, organizations should facilitate the (psychological) privatization of commons resources. We complement these three literatures by drawing from the legal, organizational, and social psychology literatures to model how psychologically privatizing organizational commons resources – to prevent a tragedy of the commons (an overuse problem) – can lead to the emergence of equivalently problematic tragedy in organizations: the tragedy of the anticommons (an underuse problem). Our model contributes to these literatures by conceptualizing a bottom-up behavioral process (in contrast to institutional allocation) of property distribution that leads to the emergence of the tragedy of the anticommons. The implications of this bottom-up behavioral process for property rights theory, territoriality theory, and the social dilemma paradigm are discussed.

Keywords: anticommons resource, commons resource, egocentrism, fairness, property rights, psychological ownership, territoriality, tragedy of the commons, tragedy of the anticommons

Many conflicts in organizational life revolve around a commons resource. A *commons* is a shared resource for which access to users is not restricted, and use of the resource subtracts from the other users' benefit (Feeny, Berkes, McCay, & Acheson, 1990). As first observed by Hardin (1968) in his seminal article "The tragedy of the commons", when many people have the privilege to use a commons resource and no one user has the right to exclude another, not only is conflict likely, but tragedies of resource inefficiency and exhaustion emerge. Considering that a primary goal of any organization is to use resources effectively and efficiently to achieve its goals (Katz & Kahn, 1978), conflict involving commons resources can pose a significant threat to an organization's performance (Bluedorn & Waller, 2006; Gupta & Govindarajan, 1986). To illustrate an organizational commons, at a small university, a campus-wide intranet for donor information was created. In the database, each department's advancement administrators could retrieve particular donor contact information to then approach and request support. However, each department's contact of a donor typically makes that donor less (or un-) able to contribute to other departments, thereby reducing the intranets benefit to the other departments. Thus it is in each department's interest to contact as many donors as possible. The result: a financially exhausted (and perhaps annoyed) pool of donors reluctant to give in the future (see also Aquino & Reed, 1998; Ingram & Inman, 1996; Kim & Mahoney, 2002; King, Lenox, & Barnett, 2002; Kramer, 1991, for additional organizational examples).¹

To resolve (and even avoid) the tragedy of the commons, a variety of solutions have been proposed (see Kollock, 1998; Kopelman, Weber, & Messick, 2002, for reviews). One popular solution, suggested by the property rights, territoriality, and social dilemmas literatures is privatizing the commons resources (e.g., Brown, Lawrence, & Robinson, 2005; Smith, 1981; van Dijk & Wilke, 1997). Broadly speaking, *privatization* involves transferring some or all of the

ownership and/or control of a public resource to private parties – such as individuals, teams, or departments (Zahra, Ireland, Gutierrez, & Hitt, 2000).

Privatizing a commons is theorized to encourage efficient and effective management of the commons because, economically, the user incurs not only the benefits of the costs of its management (e.g., Smith, 1981) and, psychologically, the user has an increased social responsibility toward their portion of the commons (e.g., van Dijk & Wilke, 1997). Such privatization occurs through territorial marking and defending behaviors such as policies, procedures, job descriptions, signs, locks, and passwords (D’Amico & Block, 2007; Kärholm, 2007). Privatizing behaviors can occur formally by some centralized authority granting legal ownership or informally through psychological ownership (Brown et al., 2005; Pierce, Kostova, & Dirks, 2001). The current paper focuses on *psychological ownership* or “a feeling of possessiveness and of being psychologically tied to an object” (Pierce et al., 2001: 299). This focus is made because, as suggested by Nobel Laureate Douglass North’s (1990) seminal work on property, even when a “leviathan” (or central authority) arbitrates disputes of ownership (Hobbes, 1907 [1651]), psychological ownership may remain and motivate individuals to follow informal “rules of the game” about governing the commons that diverge from formal rules.

In maintaining that psychological ownership as an effective solution to the management of commons resources, the property rights, territoriality, and social dilemma literatures assume that there is shared understanding among users about governing the commons resource. That is, users are assumed to agree on who should have the authority to restrict access to and use of the commons resource. Often however, disagreement arises over who should control what in organizations (Brown & Robinson, 2011). Even Nobel Laureate Elinor Ostrom’s (1990: 12-13) seminal work on commons governance suggests that characteristics of the resource and its users

can make privatization, whether formal or informal, challenging to form and sustain. What happens when users, left to negotiate the privatization of a commons resource, do not share the same perceptions about how it should be governed? We maintain that attempting to privatize a commons resource can lead to the “tragedy of the anticommons” (Heller, 1998).

This paper takes a bottom-up approach and explores how excessive territorial behavior in organizations transforms a commons resource into an anticommons resource. An *anticommons* (Heller, 1998) is a non-substitutable resource over which multiple actors claim rights to restrict access to the resource and no one has an effective privilege of use. We maintain that individual actors – be they persons, groups, or departments – with overlapping (psychological) claims to a commons resource may unintentionally facilitate the emergence of an anticommons resource. Consequently, overlapping psychological claims obstruct efforts to deploy anticommons resources in ways valuable to the organization, thereby impairing organizational effectiveness. Specifically, we propose that (1) resources that are difficult to divide, provide an unequal distribution of benefits, and have limited carrying capacity along with groups that are large and differentiated create environments where users experience an egocentric view of fairness and reactive egoism, (2) an egocentric view of fairness and reactive egoism results in over-marking and over-defending, territorial behavior, (3) over-marking and over-defending behaviors result in a commons resource becoming an anticommons resource, and (4) the carrying capacity of the commons resource moderates the effect territorial behavior has on the likelihood of the emergence of an anticommons resource.

Our introduction of the tragedy of the anticommons to organization science makes three main contributions to theory on property rights, territoriality, and social dilemmas. First, a bottom-up approach to anticommons emergence highlights the role of perceptions when

attempting to form and enforce property rights, thereby exploring how social dynamics can impact property rights formation (Eggertsson, 1999). Second, whereas previous territoriality research focuses on individual outcome variables (Brown et al., 2005; Brown & Robinson, 2011), we examine a potential, social outcome of marking and defending: gridlock of a shared resource (Heller, 2008). Third, we complement legal scholars and experiment economists top-down approach to the tragedy of the anticommons by examining the psychological foundations of how anticommons resources emerge in organizations. In doing so, we answer Ostrom's (1990: 183) call to "further theoretical development ... to explain and predict when ... [users of a shared resource] are more likely to self-organize and effectively govern ... and when they are more likely to fail".

MANAGING COMMONS RESOURCES IN ORGANIZATIONS:

A BRIEF REVIEW AND INTEGRATION

In this section we, first, discuss how various characteristics of shared resources and its users create complications when attempting resource management. Second, we highlight integrate findings from the property rights, territoriality, and social dilemma literatures to introduce the tragedy of the anticommons to organization science.

Characteristics of Resources and Users that Complicate Resource Management

Two general factors are considered when studying a shared resource: resource complexity and group (or user) complexity (Ostrom, 1990). Both factors can increase uncertainty surrounding the use of a shared resource, although in different ways. Resource complexity creates uncertainty surrounding the fairness of distributing and using the shared resource, while group complexity fosters uncertainty about a user's willingness to sustain (or exploit) the shared

resource. Here we review three dimensions of resource complexity and two dimensions of user-group complexity (henceforth group complexity).

Resource complexity. Shared resources vary in *divisibility* or the ease of separating the resource's benefits among users (Burger, Ostrom, Norsgaard, Policansky, & Goldstein, 2001). Specifically, some shared resources are difficult to divide or "lumpy" (Taylor & Ward, 1982); e.g., a commons resource may provide significant benefits to a user only when that individual utilizes a certain amount of it. Using any amount below this critical mass yields no or very little benefit. A department may need to tap into a certain number of donors from a shared intranet before it can justify fundraising events (e.g., gala events) that involve a fixed cost or require minimum participation. Similarly, a portion of a shared research laboratory may be of little value to any science team unless their portion contains two microscopes and six computers. When shared resources are easily divisible, it is easier for individuals to use social heuristics to divide it and meet their needs (de Kwaadsteniet, van Dijk, Wit, & de Cremer, 2006). For instance, if a commons resource can be divided easily among six users, then an equal-division rule is often employed with each individual getting one-sixth (Allison & Messick, 1990). Yet, when shared resources are not easily divisible, uncertainty arises as to what constitutes an appropriate (Weber, Kopelman, & Messick, 2004), fair division (Messick, 1993).

A second structural characteristic is the *value distribution* to users. Often the distribution of benefits of a resource is not uniform to organizational members. Some individuals value the resource more (or get more value out of the resource) than others (Northcraft, Neale, Tenbrunsel, & Thomas, 1996). Consider a group of doctoral students viewed as a shared pool of labor (Rutte, 1990). Even assuming there is a one-to-one ratio of doctoral students to faculty (the shared resource is easily divisible), some faculty mesh better with some doctoral students compared to

others, and some faculty have greater overlap in research interests with some students compared to others. With such asymmetry, distributing this resource's benefits is challenging. Asymmetric distributions of benefits are more common than symmetric (Murnighan & King, 1992; van Dijk & Wilke, 1993), and important because they create increased uncertainty (and subsequent conflict) about what constitutes appropriate, fair distributions of the resource (Bazerman, Curhan, Moore, & Valley, 2000; Wade-Benzoni, Tenbrunsel, & Bazerman, 1996).

Third, shared resources vary in *carrying capacity* (Kollock, 1998). When it becomes scarce, a shared resource can be used only so much before it is exhausted (Kramer, 1989; Schiff, 1995). Consider Rutte's (1990) case study of a pharmaceutical laboratory where research scientists (each seeking to complete independent projects) shared a commons resource pool of drug analysts. These analysts have a certain number of hours in a day that they may run analyses on drugs. If the total number of priority requests made by the scientists surpass the analysts' available time, productivity as a whole suffers. As this commons resource reaches its carrying capacity, uncertainty over whether others will exercise self-restraint increases (Kramer, 1989). Individuals who perceive a shared resource as becoming stressed (the carrying capacity is being reached) aggressively attempt to secure a portion of that resource for themselves (Samuelson & Messick, 1986).

Group complexity. Users of a shared resource can also vary in complexity. First consider the *group size* or number of users. As the number of users increases so does the likelihood of the shared resource being abused (Hamburger, Guyer, & Fox, 1975; Kollock, 1998). The reasons for this include (1) there are more users equating to greater total use and faster depletion of the resource and (2) more potential users increases fear that the resource will not last long (Kramer, 1989). Consequently, individuals may begin using a shared resource up defensively in

anticipation that others will offensively exhaust it (Ostrom, Burger, Field, Norgaard, & Policansky, 1999).

A second characteristic is *group differentiation* or the “number of distinct subgroups or decision-making units within a group” (Kramer, 1989: 161). Brewer’s (1979) seminal work on the minimal intergroup paradigm reminds us that those similar to us are often perceived as more trustworthy, friendly, and reliable than those perceived as different (see also Brewer & Silver, 1978). In relation to shared resources, Kramer and Brewer (1984) found that when subgroups are made more salient, in-group favoritism and out-group suspicion strengthens, thereby leading subgroup members to consume the commons resource faster, fearful that out-group members will do the same.

In both cases, group size and differentiation enhance an individual’s uncertainty about others’ behavior about using a shared resource. As uncertainty about others’ behavior increases, an individual’s tendency to behave self-interestedly (even at another’s expense) increases (Luo, 2007; McCarter, Rockmann, & Northcraft, 2010).

Governing Shared Resources through de Facto Privatization

When individuals consider altering the control over shared property, two methods are often employed. The first method, advocated originally by Hobbes (1907 [1651]) and later by Hardin (1968), is using a centralized authority to dictate and enforce the use of the resource. However, as observed by Crowe (1969) and later by Ostrom (1990), there are various reasons for why a central authority would be either impractical or impossible: e.g., incomplete information may only be available to the authority, the authority may be unable to effectively monitor and sanction users, and high transaction costs of administration may impede the authority from operating effectively.

Alternatively, a second popular remedy, and the focus of the current paper, is privatization. Ostrom's (1990) research on commons resource governance observes that allowing individuals to negotiate rights of ownership *can* lead to mutual self-enforcing agreements that circumvent conflict (see also Ostrom, Walker, & Gardner, 1992). Complementing Ostrom's observation, three independently developed literatures submit privatizing commons resources either formally or informally as an efficient solution to the commons resource problem.

Property rights. Property rights are a mechanism for organizing and reducing uncertainty about what belongs to who and who is responsible for what (Etzioni, 1991; Langlois, 2002). The economics, organizational economics, and political science domains view *property rights* as “social institutions that define or delimit the range of privileges granted to individuals to specific resources” (Kim & Mahoney, 2002: 226). Social institutions refer to rules used by a collective and can be developed formally or *de facto* (Alchian, 1977; Knight, 1998; Ostrom, 1986). Germane to our discussion, *de facto property rights* are informal rights that “originate among resource users” and are socially reinforced – rather than developed and enforced by an administrator or the state (Schlager & Ostrom, 1992: 254). For instance, users of an intranet commons may create informal rules (a *de facto* property rights regime) about the intranet's use, independent of administrators' wishes or legislation.

The property rights literature focuses on how privatization affects incentives (Demsetz, 1967; Gordon, 1954) and how individuals interact with each other (in a *proper* way [the root of property]) in relation to an object (Stake, 2004). Privatizing a commons resource – e.g., subdividing a commons office area into private offices – internalizes the costs of using the resource through the right of exclusion and is intended to motivate individuals to effectively manage *their* portion of the commons (De Alessi, 2003; Welch, 1983). Cass and Edney (1978),

for example, found that overusing a commons was less likely under a “private property system” compared to a “commons property system”. They maintained this was because transforming a commons resource into a “system of [private] territories” increased an individual’s perceived responsibility over the resource.

Two insights from property rights theory are germane to our present discussion. First, de facto property rights regimes may be unilaterally attempted when one party believes that other parties will validate a rule (de Jasay, 2008). For instance, an individual may attempt to use the “first possession rule” or “first come, first serve” (Libecap, 2007) to communicate possession of a resource to others (see also Lliveld, van Dijk, & van Beest, 2008). As illustrated here, conflict will be avoided assuming there is a shared understanding or socially accepted norm of “first come, first serve”. Second, property rights can be partitioned: individuals can hold rights over different aspects of the same resource (Alchian, 1977). Schlager and Ostrom (1992) observed that property rights may be “bundled” such that, for instance, one individual can access a commons resource but may not have the right to use (withdraw from) that resource, another can have withdrawal rights but not the ability to alter how others use the resource, and yet another individual may have authority to transfer their rights to another but cannot access or withdraw from the resource. To better understand the significance of bundling property rights, we turn to the territoriality literature.

Territoriality. Drawing from geography (e.g., Sack, 1986), human ecology (e.g., McCay & Acheson, 1990), and environmental psychology (Gifford, 1997), organizational behavior scholars studying territoriality submit that marking and defending resources “creates socially agreed upon territories” (Brown et al., 2005: 587) and, these behaviors reduce conflict and avoid exploiting an organization’s resources (Acheson, 1975). Even though initial conflict may arise

over what belongs to whom, territoriality theory maintains that marking and defending territories creates a shared understanding that eventually extinguishes conflict (Brown et al., 2005). Congruent to the property rights literature, the territoriality literature submits that individuals can attempt to unilaterally control resources (through marking and defending), and conflict may occur when there is disagreement about what allocation rules are acceptable.

Two forms of territorial behavior relevant to our current discussion are control-oriented marking and anticipatory defending. *Control-oriented marking* communicates to others an individual's claim over a resource; e.g., this is mine and not yours (Brown et al., 2005). Lobster fishermen marking buoys with colors to signify their fleet's "turf" illustrates control-oriented marking when negotiating the use of a commons lobster bed (Acheson, 1975). *Anticipatory defending* involves an individual making it difficult for others to access (or, more generally, use) a resource in the future (Brown et al., 2005). An individual password protecting a public computer in an office commons would be an example of anticipatory defending (Brown & Lawrence, 2011). Both forms of territorial behavior involve one individual attempting to restrict others' access and use to a resource.

Two implications from the territoriality literature are relevant to the current paper. First, individuals mark or defend resources without having actual (legal) ownership of them. An individual – through using, associating, or investing (time, energy, other private resources) in a resource – can develop psychological ownership of that resource (Pierce et al., 2001). Consequentially, an individual expresses ownership and control over that resource through marking and defending: they do not actually own the resource but act as if they do (Brown & Robinson, 2007).² A second insight is that several individuals can perceive that they psychologically own the same (portion of a) resource. When multiple people perceive they own a

resource, conflict can occur as these individuals seek to (re-)gain control from intruders (Brown & Robinson, 2011). Because different individuals may perceive they own a (portion of a) resource, they may attempt to unilaterally mark and defend, forming de facto property rights, over the same portions of a commons resource.

Social dilemmas. The social dilemma literature, from social psychology and game theory, views commons resource management as a take-some dilemma (Dawes, 1980). The take-some dilemma is that, while it is in each individual's self-interest to take as much of the commons resource as possible in the short term, if enough choose this strategy, then the commons becomes overused and everyone is worse off in the long term (Messick & Brewer, 1983). Thus the dilemma is that an individual can and maximize self-interest by not cooperating (regardless of what others do) but everyone receives a lower payoff if all are non-cooperative compared to if they were cooperative (Dawes, 1980). Individual rationality leads to group irrationality in commons resource dilemmas (Dawes & Messick, 2000).

Different from property rights theory, social dilemma theorists maintain that, independent of altering the payoffs associated with using the commons, altering how its users perceive the resource context can also lead to effective resource management (e.g., Messick, 1999). Altering how a situation is perceived (such as how a resource is labeled) changes what rules individuals deem appropriate when using a resource and, consequentially, can affect commons resource usage (March, 1994; Weber et al., 2004). van Dijk and Wilke (1997) found that merely changing the label of a commons resource from "collective property" to "partitioned (private) property" increased an individual's perceived social responsibility which then decreased their tendency to overuse the resource (see Liberman, Samuels, & Ross, 2004, for a similar finding).

Recently brought to fore in the social dilemma literature is that individuals can perceive the same situation – such as governing a commons resource – differently (Tenbrunsel & Northcraft, 2010). Kelley and Thibaut's (1978) seminal work on interdependent decision making reminds us that how incentives and behavior are perceived and how they are structured and related can diverge dramatically. As suggested by recent work on decision frames in social dilemmas (Northcraft & Tenbrunsel, 2011), non-aligned perceptions about how a resource *should* be used create negative effects on commons resource usage. For instance, an individual may use a commons resource – and believe they do so – quite responsibly, while others see their behavior as abusive. Connecting social dilemma and territoriality literatures, when an individual perceives others' use of a commons resource as inappropriate, that individual may take steps to preserve their own use of it through marking and defending behavior. The result: escalating conflict and further stress on the commons resource.

Literature Integration and a Social Dilemma New to Organization Science

Integrating these literatures (property rights, territoriality, and social dilemmas) results in several insights and an emerging gap. From territoriality research, individuals mark and defend resources even when they do not technically own (or hold legal property rights over) those resource (e.g., Brown et al., 2005). From the property rights literature, rights governing a commons resource can be partitioned: different people can have control over different elements of the same resource (e.g., Ostrom & Schlager, 1996). The territoriality and property rights literatures assume there must exist shared understanding among users over how a resource will be used or who controls access to avoid conflict (Eggertsson, 2003; Greenberg, Rohe, & Williams, 1982). Relaxing this assumption, social dilemma research suggests that conflict over

commons resources is a manifestation of mis-aligned perceptions about what is appropriate use of the commons resource (e.g., Tenbrunsel & Northcraft, 2010).

With these insights in mind, we introduce a social dilemma to the management discipline: *Individuals psychologically owning overlapping portions of a commons resource may mark and defend those overlapping portions of the commons in attempt to avoid overusing it. However, if enough individuals mark and defend overlapping portions of a commons resource, the resource ceases being vulnerable to overuse and becomes subject to underuse. This is because multiple individuals have means and the motivation to restrict each other from using the resource.* Underused, the resource may no longer provide its full benefit to its users, creating opportunity costs that negatively affect an organization's functioning (Porter & van der Linde, 1995).

Such *anticommons resources* (Heller, 1998), are presumed to exist ex-ante due to ill-conceived allocation of legal rights, and the existing research on this social dilemma supports this presumption (Buchanan & Yoon, 2000; van Hiel, Vanneste, & de Cremer, 2008; Ziedonis, 2004). The property rights, territoriality, and social dilemmas literatures, nor organization science for that matter, consider the psychological antecedents to anticommons formation. The question remains of how anticommons resources emerge in organizations the first place. To address this gap we turn to the law and social psychology literatures.

THE EMERGENCE OF THE TRAGEDY OF THE ANTICOMMONS THROUGH SELF-SERVING BIASES AND TERRITORIAL BEHAVIOR

This section accomplishes two things. First, we ground the reader in the tragedy of the anticommons. Second, we integrate this metaphor, based in the law domain, with the social psychology literature on self-serving biases and the effects of ambiguity to decision making

understand the psychological foundations of why anticommons resources may emerge through territorial behavior.

The Tragedy of the Anticommons

Introduced by Heller (1998), the “tragedy of the anticommons” describes a situation where resources are prone to inefficient underuse because too many owners hold rights (or the ability) of exclusion. Anticommons resources are, conceptually, mirror images of commons resources (Heller, 2008). Commons resources face the tragedy of overuse from users not being able to restrict access (Hardin, 1968), whereas anticommons resources face the tragedy of underuse from users being able to restrict access (Heller, 1998). Based in the law domain, Heller (1999, 2008) submits that the way property rights regimes (by a central authority) are designed and imposed leads to tragic underuse of resources. In the current paper we extend Heller’s conception of the anticommons by proposing that within organizations, individuals attempt to create de facto property rights by marking and defending commons resources they psychologically own. Through this alternative mechanism, anticommons resources emerge in organizations without the participation of a central authority.

Heller offers two examples of anticommons resources: Russian storefronts and pharmaceuticals. During the Soviet Union’s transition from a socialist to a market economy, rights were made alienable in the hope that individual owners would trade them to more productive use. The problem, however, was that the government distributed rights over resources to too many people. An example involved upscale stores in Moscow (Heller, 1998), which ended up in the hands of multiple owners. While one person may have been initially endowed with the right to sell in a single store, another was endowed with the right to receive sale revenue, and yet others had the right to lease, to receive lease revenue, to occupy, and determine use. Nobody

received a standard bundle of rights and the many rights-owners excluded each other from using a given storefront, which led to both individual and collective inefficiencies. Thus, in post-transition Russia, over-fragmentation of property rights led merchants to sell the influx of merchandise from the West in flimsy metal kiosks on the sidewalks. Both merchants and customers shivered through the harsh Moscow winters, when several feet behind them stores that could provide heat and security lay empty (Heller, 1998). Similarly, over-fragmentation of intellectual property rights has led to inefficiencies in the U.S. biomedical industry, with detrimental consequences for the provision of healthcare. Because U.S. patent policy grants multiple owners rights in fragments of a single gene, each fragment owner can block other fragment owners from acquiring a coherent bundle of rights in the full-length gene, which is often necessary for producing the drugs that actually save lives (Heller & Eisenberg, 1998).

As suggested by these examples, Heller (1999) maintains that if individual's block enough of a shared resource it may become unusable. This is similar to social dilemma and territoriality theories that predict if enough individuals act self-interestedly in having a resource meet their needs in the short term that the resource can cease giving any benefits or meeting anyone's needs in the long term (Brown et al., 2005; Taylor & Ward, 1982). Extending this idea, we submit that if enough individuals mark and defend (portions of) a commons resource to meet their needs in the short term that an anticommons resource may emerge being underused in the long term. Returning to the donor intranet database example, the university sought to navigate the overuse of the donor commons by allowing advancement administrators to mark particular donors as "taken" or not approachable for later use. This was done by either making notes by the donor's name or limiting the contact and personal information about the donor. Conflicts arose

when several departments viewed a donor as “theirs” and these departments restricted each other’s access to the donor’s information. The intranet to this day is frozen and left unused.

Top-down and bottom-up approaches. Heller’s (1998, 1999, 2008, 2011) work primarily takes a top-down approach to anticommons resources emergence and uses examples where central authorities (e.g., the government) arrange formal property rights in such a way that (perhaps unintentionally) creates anticommons resources. This top-down approach offers one explanation for anticommons emergence: the structure of formal property rights by a central authority creates excessive information (or transaction) costs (Williamson, 1979) associated with coordinating usage of a shared resource, resulting in that resource being underutilized (Heller, 1998; Heller & Eisenberg, 1998). Maurer’s (2006) study of the failed attempt to create a worldwide human mutations database supports this top-down explanation: the number of organizations involved and uncertainty surrounding the costs and benefits of the database created excessive information costs “deadlocking” negotiations over the database’s creation.

We take a bottom-up approach to anticommons emergence. Heller speculates that anticommons resources can be exacerbated by individuals falling victim to psychological biases (e.g. over-valuing a fragment of property they [perceive to] own), leading them to actions (over-pricing or hold-ups) that unintentionally continue to lock-up a resource (e.g., Heller & Eisenberg, 1998). However, the psychological and behavioral antecedents of the anticommons resources is hitherto unexplored academic territory. Integrating the three literatures on (psychological) privatization with the social psychology literature on self-serving biases assists in understanding how and why anticommons resources behaviorally emerge from the bottom up.

Self-serving Biases

Notions of fairness are central to conflicts about resource distribution (Deutsch, 1975). We view fairness as involving an individual comparing how much of a resource they control

relative to others. This comparison influences an individual's satisfaction with the outcome (Messick & Sentis, 1983). Fairness is at the heart of conflict over commons resources (Baland & Platteau, 1999). Property rights and the social dilemma literatures identify fairness of outcomes (or *distributive justice*) as a mechanism explaining how much of a commons resource an individual may unilaterally attempt to take or leave to another (Fahr & Irlenbusch, 2000; Hoffman & Spitzer, 1985). Although suggested to explain how resources are marked and protected, fairness has received less attention among territoriality scholars (Murphy, 1990). Integrating concepts of territoriality to fairness judgments, individuals may mark and defend portions of a commons resource as a function of what they perceive is their "fair share" of that resource.

Fairness is a perception prone to self-serving biases (Messick & Sentis, 1979) and suspicion (Messick & Sentis, 1983). It is easier for an individual to recall, access, and process their own needs, contributions, preferences, and interests compared to doing the same for others' (Babcock & Loewenstein, 1997). After an individual retrieves information, information favoring one's own interests is found to be given greater weight compared to others' (Babcock, Loewenstein, Issacharoff, & Camerer, 1995). Because information access, retrieval, and processing are skewed to favor oneself, it is easier to justify resources being allocated in one's favor. Consequently, individuals often make fairness judgments through an *egocentric view of fairness*: fairness judgments that favor one's self as compared to others (Paese & Yonker, 2001). Indeed self-serving recall, access, and processing of information explain why individuals often experience conflict and subsequent impasse when negotiating the distributing limited resources (Thompson & Loewenstein, 1992).

In addition to making fairness judgments egocentrically, we often believe we are fairer and more cooperative than others (Krueger & Acevedo, 2007; Messick, Bloom, Boldizar, & Samuelson, 1985). As a result, while considering others' needs, contributions, preferences and interests when allocating resources, we become suspicious that others will be unfair to (and take advantage of) us (Epley, Caruso, & Bazerman, 2006). Reactively, we take steps to protect ourselves from others' opportunism (Rockmann & Northcraft, 2008). This "self-serving behavior in reaction to the [perceived] egoistic behavior of others" is termed *reactive egoism* and explains why individuals overharvest a commons resource when they think about what others will do (Epley et al., 2006: 873). Thus, whereas an egocentric view of fairness is an offensive bias, reactive egocentrism is a defensive bias.

Considering that previous research on commons resources finds that egocentric views of fairness affect harvesting (or take) behavior (resource-use), we submit that such views can also affect territorial marking and defending behavior. An individual, perceiving to own a (portion of a) commons resource, may mark that portion to communicate control. Further, being suspicious about others attempting to breach the territory and use that portion, that individual may defensively engage in anticipatory defending. However, because of the tendency to make fairness judgments egocentrically, *individuals may territorially mark and defend more of a commons resource than is perceived as fair by others*. Indeed, individuals are motivated to avoid accepting outcomes imposed by others that they perceive as being unfair (Loewenstein, Thompson, & Bazerman, 1989). Reactively, users observing perceived unfair (or over) marking and defending (portions) of a commons resource may also begin to (over) mark and defend portions of the commons resource, creating an anticommons resource.

The Role of Ambiguity in Self-serving Biases

Self-serving biases are fueled by uncertainty (Blader, 2007; Smith, 1987). As the criteria to a decision become more objective (or more certain), it becomes increasingly challenging for an individual to favor some pieces of information while discounting others (Felson, 1981). A situational characteristic that is the linchpin of self-serving biases is *ambiguity* or, in relation to our discussion, uncertainty about what constitutes a fair distribution of a commons resource and how others will behave (Wade-Benzoni et al., 1996).

Messick (1993) submits that any social heuristic – for instance equity (or equality) judgments – is selected and used by an individual as a function of the ambiguity of the situation. Experimental research on negotiation (Thompson & Loewenstein, 1992) and social dilemmas (Wade-Benzoni et al., 1996) find that egocentric views of fairness abound in the presence of ambiguity and result in outcomes that are in no party's interest: individuals attempt to consume more of a resource than what is perceived by others as fair. We submit that any factor increasing ambiguity about what constitutes the fair (psychological) privatization of a commons resource can lead to offensive, non-cooperative behavior in the form of control-oriented marking.

Ambiguity has a similar affect on reactive egoism. Epley and Caruso's (2009) review of perspective taking suggests that when there is uncertainty about others intentions and behavior in interdependent decision making tasks (such as commons resource governance) that individuals become less cooperative compared to when uncertainty is low. Caruso, Epley, and Bazerman (2007) found that when individuals preface their own decision with focusing on the uncertainty surrounding their partner's likelihood of cooperating in a prisoners' dilemma they are less likely to cooperate. Thus, factors that increase (or even highlight the) ambiguity surrounding what others will do can lead to defensive, non-cooperative behavior. Here we examine the territorial

behavior of anticipatory defending as a non-cooperative behavior that leads to anticommons resource emergence. In the next section we draw from group decision making and negotiation literatures to propose two factors that increase ambiguity.

A MODEL OF ANTICOMMONS RESOURCE EMERGENCE

This section presents a model about how anticommons resources emerge when individuals rationally seek to psychologically privatize a commons resource. We maintain that certain characteristics of the commons resource, as well as the group, lead to ambiguity surrounding what constitutes a fair resource distribution. This ambiguity increases the likelihood that individuals will be susceptible to viewing the distribution of the resource through the self-serving biases of egocentric interpretation of fairness and reactive egoism. Viewing the governance of the commons resource egocentrically, individuals will be inclined to over-mark and over-defend their psychologically owned portion of the commons. As more of the commons resource becomes marked and defended, an anticommons resource is more likely to emerge. The carrying capacity of the commons resource moderates the relationship between territorial behavior and anticommons resource emergence. These relationships are outlined in Figure 1.

INSERT FIGURE 1 ABOUT HERE

Several assumptions are necessary before proceeding. We assume the individuals involved psychologically own (portions) of the commons resource. Psychological ownership can emerge through an individual using a resource, associating (or identifying) with a resource, or investing private resources into the development or maintenance of that resource (Pierce et al., 2001). Second, we assume that individuals do not share perceptions about what constitutes the

appropriate form of commons governance (Weber et al., 2004). Lastly, we assume that the organizational authority (which most organizations have) will not step in to adjust and enforce property rights involving the commons. This last assumption can be for a variety of reasons, as reviewed by Ostrom (1990: 8-12).

Resource Complexity and Egocentric Views of Fairness

The complexity of the commons resource impacts the degree of egocentric view of fairness experienced by individuals. In particular as a shared resource becomes more difficult to subdivide, ambiguity arises as to what constitutes its fair distribution (Budescu, Rapoport, & Suleiman, 1990; Messick, 1993). Lumpy resources – such as an office commons with one computer and three users – cannot be easily parceled: some are left with more than others (Taylor & Ward, 1982). Such cases increase ambiguity regarding which decision rule is appropriate (Weber et al., 2004); e.g., should computer access be a function of employee tenure, workload, or skill? Without clarity of appropriateness, individuals are susceptible to egocentric views of fairness (de Kwaadsteniet, van Dijk, Wit, de Cremer, & de Rooij, 2007) as an individual finds it cognitively easier to access, retrieve, and process positive information about the situation that favors self-interests (Babcock & Loewenstein, 1997). Thus,

***Proposition 1a:** Individuals will experience egocentric view of fairness when the difficulty in dividing the resource is high compared to when it is low.*

***Proposition 1b:** Individuals will experience egocentric view of fairness when the distribution of benefits across potential resource users is unequal compared to when it is equal.*

Group Structure and Reactive Egoism

The structure of the group using the commons resource influences the tendency for an individual to react egocentrically to other users. As the number of users of a commons resource increases, so does the uncertainty about what those users will do with that resource (Messick &

Rutte, 1992). Indeed, social dilemma research in political science (Marinoff, 1999) and organization science (McCarter, Rockmann, & Northcraft, 2010) suggests that as group size increases, individuals become more concerned with what others will do. Similarly, groups that are fractured into subgroups experience greater competition among subgroups over using a commons resource (Kramer & Brewer, 1984). This is because in-group members (those perceiving to belong to one subgroup) favor their own members while being uncertain about the intentions of out-group members (Brewer & Silver, 1978) and possibly become more competitive with those groups (Bornstein & Ben-Yossef, 1994). Thus,

***Proposition 2a:** Individuals will experience reactive egoism when the number of potential users of a commons resource is large compared to when it is small.*

***Proposition 2b:** Individuals will experience reactive egoism when group differentiation is high compared to when it is low.*

Self-serving Biases and Territorial Behavior

The self-serving biases, egocentric views of fairness and reactive egoism, lead to over-marking and over-defending of portions of a commons resource. When individuals psychologically own an object, and when there is uncertainty surrounding what *should* “belong” to whom, they express that ownership through control-oriented marking (Brown et al., 2005). However, if it becomes difficult to determine a fair distribution of a resource, it becomes easier for individuals to access, retrieve and process information that supports their own interests and needs compared to attempting to do the same for others (Messick & Sentis, 1983). Merging these ideas from egocentrism and territoriality, when there is uncertainty about what constitutes a fair distribution of a commons resource, individuals, psychologically owning that resource, will interpret its distribution egocentrically and over-mark. Furthermore, if they anticipate that others will not be as cooperative and fair as they perceive themselves to be in respecting their marked

territory (Messick et al., 1985), then individuals may over-defend a territory through anticipatory defenses. Thus, based on these proposed relationships, we offer the following three propositions:

Proposition 3a: *Egocentric views of fairness will be positively related to over-marking, territorial behaviors.*

Proposition 3b: *Reactive egoism will be positively related to over-defending, territorial behaviors.*

Proposition 3c: *Egocentric views of fairness and reactive egoism will mediate the relationship between resource complexity and group structure and territorial behavior.*

Territorial Behavior and Anticommons Emergence

Furthermore, we maintain that over-marking and over-defending behaviors transform a commons resource into an anticommons resource. Property rights theory and territoriality theory reminds us that individuals can perceive to own the same (or overlapping) portions of the same resource (Alchian, 1977; Brown et al., 2005). The more individuals mark and defend portions of a commons resource, the more challenging it becomes for others to access and use the resource. This marking and defending can be exacerbated because individuals may perceive they either deserve to control more the resource or fear that others will be greedy when marking and defending a territory. As a result, access to the commons resource is excessively limited, becoming an anticommons resource. Thus,

Proposition 4: *As over-marking and over-defending behavior increases, the likelihood of an anticommons resource emerging increases.*

The Moderating Effect of Carrying Capacity

The carrying capacity of the commons resource will moderate the impact over-marking and over-defending behaviors have on anticommons resource emergence. If the commons resource is scarce, it may take little marking and defending portions of the commons resource before it becomes no longer useable. In contrast, where there is a bounty of a commons resource

available, even individuals marking and defending, what is perceived as, more than their fair share will be less likely to lock up the resource. Thus,

***Proposition 5:** The carrying capacity of the commons resource will moderate the relationship between territorial marking and the emergence of an anticommons resource such that the likelihood of territorial behavior leading to anticommons resource emergence will be greater when the carrying capacity of the commons resource is low compared to when it is high.*

DISCUSSION AND CONCLUSION

The current paper integrates three independently developed literatures of privatization – i.e., property rights, territoriality, and social dilemma literatures – with law and social psychology literatures on anticommons resources and self-serving biases to introduce a social dilemma of privatization to organization science: Individuals may come to psychologically own overlapping portions of a commons resource, mark and defend those overlapping portions, and transform a commons resource into an anticommons resource. In doing so, the resource ceases being vulnerable to overuse and becomes subject to underuse. This is because multiple individuals have means and motive to restrict each other from using the resource. We proposed that resource complexity and group structure can create ambiguity about commons resource governance. This ambiguity makes individuals susceptible to the self-serving biases of egocentric views of fairness and reactive egoism, resulting in over-marking and over-defending a commons resource to the point of it becoming an anticommons resource.

A bottom-up approach to anticommons emergence pushes our understanding of ownership in several ways. First, consider the social dilemma of privatization while navigating the tragedy of the commons. Individuals, seeking to manage a shared resource and avoid overuse (an inefficient outcome), may take action leading to its underuse – still an inefficient outcome (Mukhija, 2005). This social dilemma has particular importance to managers who may encourage subordinates to psychologically own their work, in hope increase work morale, output, and

accountability (e.g., Vandewalle, Van Dyne, & Kostova, 1995). If the perceive-to-be owned resource is shared then what is rational for the individual can become irrational for the organization.

Theorizing how territorial behaviors lead to an emergence of anticommons resources highlights the importance of interdependence when multiple individuals perceive they own (portions of) the same resource. Our model focuses on how one individual's territorial behavior not only impacts how they use a commons resource, but also how others use it. In discussing the consequences of territoriality in organizations, Brown's research on territoriality primarily focus on individual outcomes – such as individual commitment, desire to be isolated from others, and preoccupation (Brown et al., 2005; Brown & Robinson, 2011). The current paper complements Brown et al.'s (2005: 587) theorizing by looking closer into what can happen when “territorial behavior ... [does not] create socially agreed upon territories”: the interdependence experienced among users of a commons resource creates an environment where one's territorial behavior results in a resource being underutilized by others.

Interdependence also plays a role in how an individual perceives another's territorial behavior. Tenbrunsel and Northcraft's (2010) research on perceptions in social dilemmas suggests that individuals may *intentionally* mark and defend a territory to be a wise steward over what is (perceived as) theirs while *unintentionally* coming across to others as non-cooperative. The result of this unintentional cooperation is encouragement of others to also be non-cooperative when using the commons. Ironically, while we tend to consider privatization as means of independence, the current paper shows how privatization can strengthen interdependence (McWilliams, 2011). However, whether those unintentionally creating the anticommons are aware of their interdependence is a different question. Individuals will sacrifice

personal welfare to avoid a social burden when they believe that they are (even partially) the cause of the crisis compared to when they are not (Kahneman, Ritov, Jacowitz, & Grant, 1993). Future research may benefit from examining whether the creation of the anticommons can be averted as a function of whether (or not) the creators of it are aware of their shared fate.

Eggertsson (1999) observed that little weight is given to the social processes influencing property rights formation. The current paper shows how “psychological property rights” (van den Bergh, 2007) can emerge over a commons resource and, because of self-serving biases – i.e., reactive egoism and egocentric views of fairness – these psychological, de facto property rights regimes can turn a commons resource into an anticommons resource. Whereas previous property rights research focuses on how incentives lead to property right formation (e.g., Alchian, 1977; Demsetz, 1967; Hart & Moore, 1990), the current paper brings the role of perceptions into the five decade-long discussion of property rights scholarship. This refocus on perceptions encourages property rights theorists to consider how incentives to (psychologically) privatize not only alter the payoffs of a decision but also how the decision maker’s behavior is perceived and responded to by other decision makers. Individuals may be merely responding rationally to incentives to mark and defend portions of a commons resource that they perceive as theirs, while being perceived by others as being irrational and inappropriate.

The current paper also complements existing social dilemma research. Previous work assumes the only action available to individuals using commons resources is harvesting (Dawes, 1980; Kopelman et al., 2002). We extend this thinking by discussing how territorial behavior over a commons resource can keep others from harvesting. However, doing so creates a second-order social dilemma. To avoid the tragedy of the commons, it is in each individual’s self-interest to mark and defend portions of the commons resource that they psychologically own.

However if too much of the resource is psychologically privatized, the outcome is in no one's interests: a tragedy of the anticommons emerges. Thus whereas previous research maintains that perceiving to be an owner over portions of a commons resource improves the collective's well-being (e.g., Cass & Edney, 1978; van Dijk & Wilke, 1995), we observe that perceived ownership may backfire when we arm users with the ability to restrict (or at least impede) access.

Further, we extend the burgeoning work on the anticommons by explicating how the suspected "psychological biases" lead to anticommons emergence (Heller, 1998, 2008). Whereas the majority of the literature assumes the anticommons' existence *ex ante* (e.g., Buchanan & Yoon, 2000; van Hiel et al., 2008; Ziedonis, 2004), the current paper shifts focus to how this troubling resource comes into being. A bottom-up approach pushes the discussion of anticommons – predominantly among legal scholars – from market situations where formal authorities (e.g., the state) create anticommons resources using *de jure* property rights regimes, to organizational situations where individuals use *de facto* property regimes to create an anticommons resource out of a commons resource.

In discussing how psychological biases enhance the likelihood of anticommons emergence, our approach suggests an alternative for how to navigate anticommons resource dilemmas. Whereas Heller (2008) would advocate legislation to alter the incentives and structure of property rights, our model suggests that creating shared logics (Messick, 1999) about appropriate commons governance could avoid an anticommons resource from emerging. This latter strategy may be particularly attractive for organizations that value decentralized control and a meditative approach to resolving employee disputes (Feldman & Khademian, 2000).

An English proverb states that "too many cooks can spoil the broth", implying that too many people involved in the same task (resource) reduces the chances of that task (resource)

being achieved (Ammer, 2006: 446). We theorize how too many territories can spoil a commons resource by transforming it into an anticommons resource. Privatizing a commons resource can be an effective way to navigate a tragedy of overuse but only when either there is a “leviathan” to dictate and enforce rules (Hobbes, 1907 [1651]) or an agreed upon set of appropriate rules (March, 1994). Absent of the former, and individuals may seek to manage a commons resource through territorial behavior. Absent of the latter, and individual territorial behavior leads to an outcome unfortunate for everyone: a tragedy of the anticommons.

Footnotes

¹ This donor intranet vignette, which will be elaborated upon throughout the current paper, actually occurred at several of the authors’ institutions.

² Territoriality theory complements property rights theory when it comes to ownership. The property rights literature assumes that ownership *cannot* exist with there being a socially agreed upon regime of rules defining relationships among people who use things (e.g., ideas, land, objects). Ownership does not occur until individuals agree on user rights associated with property (e.g., Stake, 2004). In organization science, territoriality theory rests on the concept of psychological ownership, a perception and feeling of ownership that translates to an individual behavior *as if that person does own something*, but really does not (e.g., Brown et al., 2005). Thus, the territoriality theorist does not presume social agreement for to talk about ownership, unlike the property rights theorist. Considering we are focusing on psychological ownership, we shall use the word ownership as a territoriality theorist would.

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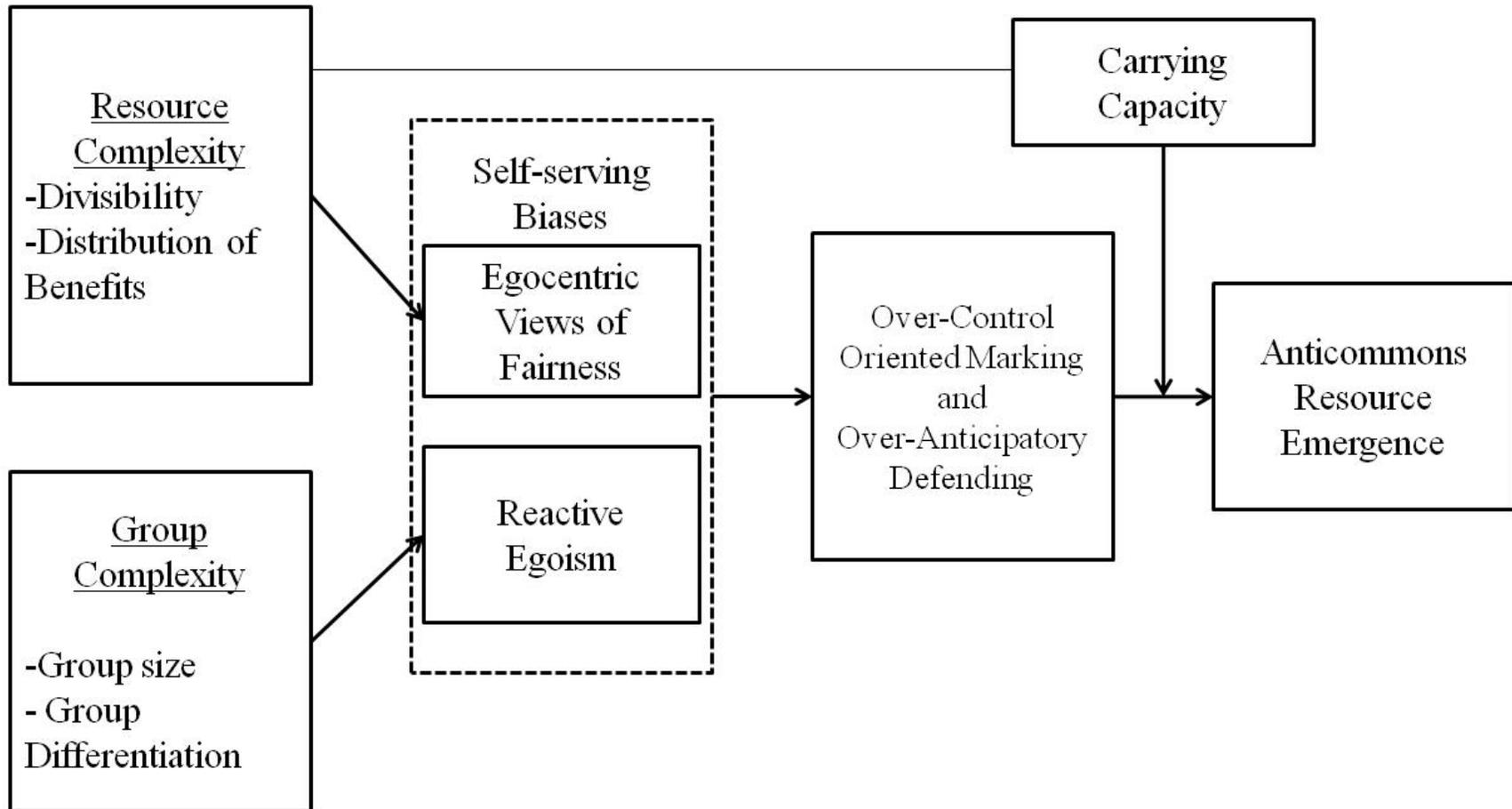
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FIGURE 1

A BOTTOM-UP MODEL OF HOW THE TRAGEDY OF THE ANTICOMMONS EMERGES IN ORGANIZATIONS



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