

Cooperation in Context

Public Goods Games and Post-Soviet Collectives in Kamchatka, Russia

by Drew Gerkey

Economic game experiments have become a prominent method among social scientists developing and testing theories of cooperation. These games provide a valuable opportunity to generate measures of cooperation that can be compared from one place to the next, yet challenges remain in how to interpret cross-cultural differences in these experiments and connect them to cooperation in naturally occurring contexts. I address these challenges by examining framing effects in public goods games (PGGs) with salmon fishers and reindeer herders in Kamchatka, Russia. Combining standard versions of the game with versions that refer to post-Soviet institutions coordinating fishing and herding, I show that (1) average contributions in the PGG in Kamchatka are substantially higher than reported elsewhere and (2) framing the PGG alters the relationship between contributions and expectations, shifting strategies away from unconditional generosity and toward conditional cooperation. My analysis, by synthesizing quantitative analysis of PGG data with long-term qualitative ethnography, including extensive postgame interviews with participants, supports the notion that cooperation in economic games increases along with cultural norms, values, and institutions that emerge from economic interdependence. Framing effects suggest that researchers should devote more attention to investigating the relationship between contributions and expectations.

Understanding the factors influencing the emergence and stability of cooperation is a problem with considerable importance. Whether negotiating partnerships among individuals, developing effective institutions, or organizing social movements, people face the recurring challenge of reconciling individual and common interests. While humans appear uniquely adept at cooperation (Richerson and Boyd 2005), our failures often loom just as large, stimulating widespread interest among researchers who continue to debate the strengths of competing theories in the natural and social sciences (Cronk and Leech 2013; Gintis et al. 2005; Hammerstein 2003; Nowak 2006; Ostrom 1990, 2005).

Increasingly these debates unfold across disciplinary boundaries. Scholars from anthropology, biology, economics, political science, psychology, and sociology (among others) have begun to collaborate with and adopt research methods from one another. Experiments with economic games are one method that has become a focal point of interdisciplinary scholarship on cooperation. While ethnographers rarely utilize experiments in their research, combining economic games with more traditional ethnographic methods provides unique opportunities for comparative research as well as novel insights on the particulars of people and place. Yet, economic games also pose methodological and theoretical challenges.

Many of these challenges concern the ways that ethnographers trace connections between patterns of cooperation in the games and patterns of cooperation in everyday life. These connections are crucial to understanding how data from economic games apply to theories of cooperation, so ethnographers are uniquely poised to make valuable contributions to interdisciplinary scholarship in the social and natural sciences.

Here, I combine data from field experiments with long-term ethnographic research on cooperation and collective institutions among salmon fishers and reindeer herders living on the Kamchatka peninsula in the Russian Far East. Fishing and herding are traditional subsistence strategies for indigenous peoples in Kamchatka, including Koryaks, Chukchis, Evens, and Itelmens. The ecological conditions of fishing and herding compel individuals to work together to harvest from common-pool resources. However, the practices underlying these subsistence strategies—and the cultural norms and values that inform them—have undergone dramatic transformations, first through Soviet-era collectivization and cultural construction, then later in response to post-Soviet privatization and perestroika. These transformations have been explicitly motivated, in part, by attempts to reconcile existing forms of cooperation among indigenous people with the ideological imperatives of Soviet industrialization, modernization, and the post-Soviet transition to market economies. The people who animate contemporary collectives in Kamchatka draw on these multiple legacies in creative ways to sustain their lives and livelihoods in uncertain environments, where cooperation continues to play an important role. Thus, Kam-

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chatka provides a valuable opportunity to examine how ecological, cultural, and historical conditions influence the ways people reconcile individual and common interests.

Building on the insights of nascent anthropological research with economic games, I explore connections between patterns of cooperation in experimental and naturally occurring contexts. Specifically, I focus on post-Soviet collectives that coordinate fishing and herding, examining how people's experiences with these institutions influence their decisions to cooperate in an experiment called the public goods game (PGG). I show that levels of cooperation in the PGG are dramatically higher in Kamchatka than elsewhere, reflecting the importance that people in Kamchatka place on cooperation in their daily lives. Further, I find that framing the PGG to refer to post-Soviet collectives affects patterns of cooperation by altering the relationship between participants' contributions and their expectations of how much others will contribute. I explore connections between the abstract structure of the game and the lived experiences of people in Kamchatka through analysis of postgame interviews, where I invited participants to share their impressions of the PGG and assist me in interpreting the results. Synthesizing my analysis of these data with perspectives gained from 19 months of fieldwork focused on food-sharing networks, post-Soviet institutions, and collective action movements in Kamchatka, I suggest ways that this mixed-method approach can make theoretical and methodological contributions to the interdisciplinary study of cooperation and the ethnography of contemporary Siberia.

Theories of Cooperation, Economic Games, and Culture

Developed from the theoretical perspectives and empirical models of game theory (Binmore 2007; Gintis 2009; Maynard Smith 1982), economic games reflect an attempt to isolate specific factors and understand how they influence individual decisions in the controlled context of experiments. Such factors include the structural properties of a dilemma, the range of available options, the costs and benefits that determine the consequences of decisions, and the information available for assessing possible strategies and outcomes. Thus, economic games provide opportunities to measure patterns of cooperation, compare them from one place to the next, and put theories of cooperation to empirical tests. Initially wielded by economists and political scientists working mostly with university students in the United States, Western Europe, and other industrialized countries, economic games soon generated data on cooperation that challenged the canonical assumption that people will seek to maximize short-term, individual benefits at the expense of common interests or the interests of others. However, these data and the theories derived from them reflected only a small part of the broad range of human ecological, social, and historical diversity. Although

anthropologists have long emphasized this shortcoming in economic theories (Chibnik 2005), Henrich was the first to address it by adapting economic games to conduct field experiments, initially with Machiguenga forager-horticulturalists in Peru (2000) and later by coordinating two cross-cultural, collaborative projects with ethnographers working in a variety of small-scale societies throughout the world (Henrich et al. 2004, 2006, 2010). These projects demonstrated quantitatively how patterns of cooperation vary across cultures, convincing many skeptical researchers outside anthropology that cultural norms, values, and institutions are important for understanding that variation.

While Henrich et al.'s projects have contributed a number of insights about the factors underlying cross-cultural variation in economic games, much remains to be explored. How do patterns of cooperation in these experiments relate to patterns of cooperation in naturally occurring contexts? Henrich et al. (2004) suggested that the importance of cooperation for people's everyday lives could explain the cross-cultural differences they found in levels of cooperation in economic games. However, few studies have assessed the external validity of economic games directly by combining quantitative measures of cooperation from experimental and naturally occurring contexts. The assumption that economic games measure an individual's or a group's propensity to cooperate underlies the prominent role of data from economic games in many current theories of cooperation.

One way to assess the external validity of economic games is to combine experimental data with more traditional ethnographic methods used to study cooperative behaviors. Two studies that combined data from games with quantitative data on food-sharing, time spent socializing, and contributions to public goods (community feasts, public works projects) did not find significant correlations between cooperative behaviors in experimental and naturally occurring contexts (Gurven and Winking 2008; Hill and Gurven 2004). Gurven and Winking concluded that such results may reflect a tension between relatively stable personality traits—such as an individual's propensity to cooperate, perceptions of risk, or tendency to conform—and a variety of contextual factors that alter the costs and benefits of cooperation—including reputation maintenance, resource properties, possibility of punishment, and past interactions. Other researchers have addressed the problem of external validity by conducting games with structures that more closely parallel the real-world contexts of cooperation that they are trying to understand, finding significant correlations between patterns of cooperation in economic games and both indirect (Sosis and Ruffle 2006) and direct (Soler 2012) measures of cooperation and commitment. Though more research is needed to understand why researchers find external validity in some contexts (e.g., Sosis and Ruffle; Soler) and not in others (e.g., Gurven and Winking 2008; Hill and Gurven 2004), these results suggest that decisions in economic games can reflect important dimensions of naturally occurring cooperative behaviors.

Even when the external validity of economic games has been established, substantial methodological challenges remain in understanding how the ecological, social, and historical conditions that individuals face in their daily lives affect their decisions about cooperation in experimental contexts. While the relatively abstract structure of economic games facilitates comparative research, some have argued that this does not preclude participants from drawing upon their own cultural norms, values, and lived experiences to interpret the structure of economic games, evaluate potential outcomes, and adopt strategies (Hagen and Hammerstein 2006). Ensminger (2004), Tracer (2003), and other researchers in Henrich's cross-cultural projects provide anecdotes suggesting that participants did make such connections, complicating attempts to use data from economic games to develop and test theories of cooperation. Ensminger (2004) reported that Orma participants in a public goods game in Kenya spontaneously found congruence between the structure of the game and *harambee*, an institution that coordinates individual contributions for local community development projects. Tracer (2003) also found intriguing evidence linking cultural norms and values of competitive gift giving to unique patterns of game play among Au and Gnao peoples in Papua New Guinea. In both cases, people appeared to recognize congruities between the structure of economic games and the contexts of cooperation that they are intimately familiar with in their daily lives, making decisions in the games that reflect culturally appropriate behavior in real-world settings. While Ensminger's and Tracer's accounts of the cultural factors underlying cooperative behavior in economic games are intriguing, their experiments were not designed to examine these congruities explicitly, so connections between patterns of cooperation in experimental and naturally occurring contexts remain speculative. Determining how specific cultural norms, values, and institutions shape perceptions of particular facets of an economic game is difficult without research explicitly designed to reveal these connections.

One way researchers can address this problem is through experiments that examine "framing effects," which are differences in decisions that are caused by the ways participants understand cost-benefit structures, interpret rules of the game, use contextual cues provided by game instructions, or identify similarities between the game, everyday life, and past experiences (Andreoni 1995; Dufwenberg, Gächter, and Henning-Schmidt 2010; Kahneman and Tversky 2000). By pairing standard versions of economic games with versions framed to refer to prominent cultural norms, values, and institutions that inform cooperative behavior in naturally occurring contexts and then randomly assigning participants to one version of the game, researchers can begin to understand connections between experimental and ethnographic data.

Lesorogol (2007) did this successfully when she combined standard dictator games among Samburu participants in Kenya with dictator games that framed an individual's decision in the context of sharing food rather than money. Le-

sorogol found that patterns of cooperation in the framed versions corresponded closely to Samburu norms of food sharing, whereas contributions in standard games were less consistent from one participant to another. Similarly, Cronk (2007) combined a standard trust game experiment with a version that was framed to refer to a long-term, need-based gift-giving relationship called *osotua* (umbilical cord) among Maasai men in Kenya. Contributions made by Maasai in the standard version of the trust game reflected strategies based on trust, investment, and reciprocity, with a positive correlation between amounts of money given by one player and amounts returned by another. Conversely, contributions in the *osotua*-framed trust game reflected a greater concern for signs of need, with a negative correlation between amounts of money given by one player and returned by another. While the results of the standard versions of the game appear to support the underlying logic of trust that the game was designed to test, Cronk warns that it would be wrong to apply this logic to results from the *osotua*-framed trust games, which reflect expressions of and responses to genuine need, interpreted according to the logic of *osotua* relationships.

These studies and others like them support the notion that patterns of cooperation in economic games are sensitive to framing effects (Brewer and Kramer 1986; Burnham et al. 2000; Cookson 2000; Cronk and Wasieleski 2008; Henrich et al. 2004:46; Liberman et al. 2004). Economic games were intentionally designed to create an abstract, controlled decision-making environment that would encourage participants to consider only the rules of the game and the immediate cost-benefit structure that the rules establish. Game instructions and protocols were carefully constructed to isolate, minimize, or eliminate important components of cooperation in natural settings, such as communication, reputation, repeated interactions, and group identity (Ostrom, Gardner, and Walker 1994). In this respect, economic games reflect the primary interests of the researchers who designed them and the disciplines in which the games have flourished methodologically. The abstract, controlled structure of economic games has an important advantage: in addition to isolating the utilitarian and rational dimensions of decision making, game structures facilitate comparative research. However, by attempting to isolate decisions in economic games from naturally occurring contexts of cooperation, researchers may be simply inviting participants to apply their own contextual frames to the games (Hagen and Hammerstein 2006). Whether frames are explicitly included by the researcher or spontaneously applied by the participants, their influence on patterns of behavior in experimental economic games must be accounted for when developing and testing theories of cooperation. Anthropologists are uniquely situated to turn this methodological weakness of economic games into an analytic strength. By combining standard versions of economic games with games that are explicitly framed to refer to naturally occurring contexts of cooperation, researchers can better understand how cultural values, norms, and institutions influence decisions while

also retaining the ability to compare patterns of cooperation across space and time. In turn, ethnographers may gain new insights about the particulars of people and place by incorporating economic games and other field experiments into ongoing research with more traditional ethnographic methodologies.

Framing Effects, Public Goods Games, and Post-Soviet Collectives in Kamchatka

My research in Kamchatka examines the relationship between cooperation in experimental and naturally occurring contexts by making explicit connections between the abstract social dilemmas of economic games and the lived experiences of people in Kamchatka who played them (Gerkey 2010). Here, I focus on results from public goods game (PGG) experiments designed to explore framing effects by randomly assigning participants to either a standard PGG or a PGG framed to refer to one of two post-Soviet collective institutions, the *sovkhos* and the *obshchina*. The structure of the game presents people with an opportunity to generate group benefits through individual contributions. However, the game also poses a social dilemma in that the group benefits are shared equally regardless of how much an individual has contributed, allowing low contributors to “free ride” on the contributions of others. While cooperation is a general term that is often applied to a variety of phenomena, the PGG has been widely used as an analogue for contexts where tensions exist between individual and common interests, including natural resource management, public goods provisioning, and social movements (Chong 1991; Ostrom 1990; Ostrom, Gardner, and Walker 1994; Rustagi, Engel, and Kosfeld 2010). By framing the game to refer to the *sovkhos* and the *obshchina*, I attempt to make this analogy explicit for people in Kamchatka. Informed by previous research with economic games, I was guided by two general predictions about (1) levels of cooperation in experimental contexts and (2) the influence of naturally occurring contexts.

Prediction 1: Contributions to the Public Good

Reindeer herding and salmon fishing in Kamchatka are inherently cooperative economic activities that require the coordinated actions of multiple individuals. Ethnographers working in Kamchatka prior to, during, and after the Soviet era have emphasized many ways the cooperative character of herding and fishing has influenced people’s notions of property and social relationships. Cultural norms and values derived from herding and fishing are evident in the words and actions of people living in Kamchatka’s rural villages today, extending to other contexts of cooperation such as food-sharing networks, need-based altruism, common property, and collective institutions. If the importance of cooperation in people’s daily lives increases levels of cooperation in economic games—as Henrich et al. (2004) suggest—then con-

tributions in the standard PGG should be high in Kamchatka relative to other places where people’s economic activities are less interdependent.

Prediction 2: Framing Effects and Collective Institutions

Despite congruence between the abstract structure of economic games and the naturally occurring contexts they are designed to reflect, it can be difficult to understand how these contexts influence measures of cooperation in experiments. For example, Ensminger suggests that Orma participants may have been influenced by the congruence between the public goods game and *harambee* institutions, resulting in relatively higher contributions than other places in the Henrich et al. cross-cultural study. Combining standard versions of the PGG with versions framed to refer to post-Soviet collectives like the *sovkhos* and the *obshchina* allows us to examine this congruence explicitly. These two institutions play important roles in coordinating salmon fishing and reindeer herding in Kamchatka, embodying cultural norms and values that blend both Soviet and pre-Soviet, Russian, and indigenous pasts. Framing the public goods game to refer to these collectives should encourage participants in the experiments to draw on their experiences with these institutions when deciding how to solve the social dilemma posed by the game. Given that we expect people who rely on cooperation more in their daily lives to contribute more in economic games, framing the PGG to refer to post-Soviet collectives should strengthen the connections people make between naturally occurring contexts of cooperation and the social dilemmas posed by the experiment, leading to significantly higher contributions in the framed PGG than in the standard PGG.

Collective Institutions and Legacies of Cooperation

Putting cooperation in context entails connecting contemporary patterns of behavior with cultural values, norms, and institutions of the past and present—the particulars of people and place. Cooperation is a constant theme in the history and ethnography of Siberia, particularly evident in collective institutions. The *sovkhos* or “state farm” was developed throughout the Soviet Union during the process of collectivization, allowing the state to control economic production on the local level and integrate these activities into the state economy. *Sovkhos* collectives were often formed by consolidating existing *kolkhoz* collectives (collective farms), which were founded during the initial stages of collectivization. Both the *sovkhos* and *kolkhoz* shared a similar organizational structure tied to Soviet ideologies of industrialization and modernization. However, the *kolkhoz* generally exhibited greater local control, while the *sovkhos* more fully exemplified the top-down flow of political and economic authority in the Soviet Union (Humphrey 1998). Initially formed in European Russia, Soviet era collectives were soon used by government officials to expand

their control over the lives of indigenous peoples throughout Siberia (Forsyth 1992; Slezkine 1994). Directors of *sovkhoz* and *kolkhoz* collectives took charge of traditional subsistence strategies like hunting, fishing, and reindeer herding, modifying the scope of these activities to match the push toward Soviet modernity (Anderson 2000; Kerttula 2000). *Sovkhoz* and *kolkhoz* collectives were established in newly formed villages, and indigenous peoples were compelled and coerced to inhabit them. Although Russian intellectuals had long lauded forms of cooperation and common property among indigenous peoples in Siberia, even romanticizing them as “primitive communists,” the early stages of collectivization entailed substantial conflict between existing economic practices and those the Soviet government sought to impose (Slezkine 1994). This tension was particularly evident among reindeer herders throughout Siberia. Wealthy herders who refused to hand over their reindeer to the *sovkhoz* or *kolkhoz* were villainized as *kulaki*, a Russian word meaning “fists” that was used to describe wealthy landowners who resisted collectivization in European Russia. In both places, coercion and violence were used to transform existing property relations to fit Soviet moral and economic ideologies. Thus, Soviet collectives and the villages they supported became spaces for implementing economic transformation and cultural construction (Grant 1995; King 2011). The importance of this legacy for understanding the lives of contemporary people in Siberia is emphasized in a number of recent ethnographies (Habeck 2005; Stammler 2005*b*; Ventsel 2006).

One unique feature of Soviet collectives was the balance they established between individual and common interests. Workers were compensated for their labor, but the Soviet state retained control over the means of production and the distribution of goods. In Siberia, the state also assumed the responsibility of providing for people who had once been autonomous, self-reliant foragers, fishers, and herders. Once established, Soviet collectives became “total social institutions,” providing employment, housing, food, energy, transportation, and a variety of public goods within the village (Humphrey 1998). Although the conflicts of collectivization continued in overt and subtle ways throughout the Soviet era, it is important to appreciate the extent that many indigenous people came to embrace their role in Soviet collectives and rely upon the benefits they provided to the community. Thus, when the economic reforms of perestroika pushed Soviet collectives to privatize or liquidate in the late 1980s and early 1990s, the balance between individual and common interests began to shift once more in traumatic and unpredictable ways (Gray 2003, 2005*a*; King 2003*a*; Ziker 2003). In the region of Kamchatka where I work, some Soviet collectives were able to resist privatization by remaining under the oversight of regional governments, but the financial support and subsidies available to them decreased dramatically, making it difficult to access markets, generate profit, and compensate workers. Other collectives were quickly sold to newly formed private companies, who eliminated activities that did not generate

profit and reduced employment, depriving local communities of services and vocations they relied upon. In some cases, Soviet collectives collapsed entirely, leaving an institutional and economic vacuum in rural villages that had once revolved around them.

Amid the remains of Soviet collectives, a new institution called the *obshchina* has emerged. Often translated as “community” or “commune,” the term *obshchina* (plural *obshchiny*) originally referred to prerevolutionary agrarian institutions that coordinated property relations among peasants in European Russia (Bartlett 1990). However, the term was also used by early Russian ethnographers to describe the fundamental socioeconomic unit of indigenous peoples throughout Siberia prior to collectivization (Antropova 1971; Jochelson 1908; Schweitzer 2000; Sirina 2004). In the post-Soviet context, the *obshchina* is a formally recognized institution, created by a series of laws drafted by the Russian federation beginning in 1993 and continuing to the present (Donahoe 2009; Stammler 2005*a*). The movement to establish *obshchina* collectives was driven by community leaders, indigenous rights activists, and ethnographers who wanted to secure formal rights to access land and resources underlying traditional subsistence activities and ways of life for indigenous peoples in Siberia (Fondahl 1998; Novikova 2002; Pika 1999). However, the laws established these rights in principle, without specifying the precise details, leading to considerable debate among community members, government officials, and activists (Koester 2005). The outcomes of these debates remain fluid and differ from one region of Siberia to the next, resulting in substantial diversity among contemporary *obshchiny*. An *obshchina* can be founded by just a few members, or it can include an entire village. Once an *obshchina* has satisfied the basic bureaucratic requirements, its members are free to allocate resources, rights, and obligations among themselves as they see fit. As a result, *obshchiny* within a single village can differ from one another in important ways. Still, common narratives formed during the initial phases of the *obshchina* movement continue to circulate widely throughout Siberia, emphasizing the *obshchina*'s connections to traditional economic practices and the cultural norms and values they are intended to sustain.

In Kamchatka, debates over the *obshchina* have become particularly important because *obshchina* leaders and activists have fought for and won access to industrial salmon fishing quotas that substantially exceed the subsistence quotas granted to all indigenous people living there (Gerkey 2011). *Obshchina* collectives also coordinate reindeer herding in several villages in the Oliutorskii District, managing reindeer that were owned privately but kept within the collective herd during the Soviet era. These *obshchiny* continue to coexist with *sovkhoz* and *kolkhoz* collectives in a few villages, as well as recently privatized Soviet collectives that engage primarily in industrial salmon fishing. Though currently less profitable economically than salmon fishing collectives, *sovkhoz* and *obshchina* collectives engaged in reindeer herding support practices with tremendous symbolic importance, tied to the ways

that many indigenous people in Kamchatka derive a sense of common identity and purpose from their relationships with reindeer (King 2003b). Salmon have a similar symbolic importance that is strengthened further by the widespread reliance on summer salmon migrations that provide food and income for people year-round in the mixed cash-subsistence economy of Kamchatka's rural villages. Thus, traditional subsistence activities and the collective institutions that coordinate them continue to play a fundamental role in people's lives as they adapt to the uncertainties of the post-Soviet era.

Each of these contemporary collectives embodies an overlapping but unique constellation of cultural norms and values that influence social relations among their members and within the community at large. Although the few remaining *sovkhoz* and *kolkhoz* collectives in Kamchatka have changed as a result of perestroika and the transition to new markets, their continued presence in rural villages reflects an unwillingness to abandon the institutional structures of labor, ownership, and authority established during the Soviet era (Konstantinov 2002; Vladimirova 2006). At the same time, the presence of privatized collectives that operate more or less like any other company creates a clear contrast between Soviet-era cultural norms and values and those that are emerging in the post-Soviet era. Privatized collectives continue to employ village residents, but many are either denied the opportunity or choose not to seek it for practical or emotional reasons. Positions that were once year-round are now seasonal, and workers are often imported to fill jobs that village residents could perform. *Obshchina* collectives have expanded the range of possibilities, allowing indigenous peoples greater freedom to develop their own institutional arrangements. People have responded by shaping institutions that expand connections between personal networks of social support and strategies that combine elements of the formal and informal economy in creative ways. Most *obshchina* collectives are founded by close and extended kin, but they frequently include friends and business partners as well. These institutions are also integrated into broader collective action movements, particularly those that concern indigenous rights, access to natural resources, and economic development (Gray 2005b). *Sovkhoz*, *kolkhoz*, and privatized collectives also maintain connections to local, regional, and national government officials and agencies, either through budgetary support, subsidies, or other initiatives intended to strengthen regional economies. This institutional diversity in contemporary Kamchatka provides a unique opportunity to understand how cultural norms, values, and institutions influence cooperation in the experimental contexts of economic games.

Research Setting

Following the protocols established by previous researchers who adapted public goods game experiments to field settings (Henrich et al. 2004), I conducted single-round public goods games in two villages, Khailino and Vyvenka, located in the

Oliutorskii District on the northern half of the Kamchatka peninsula. In 2009, Khailino had an official population of 802 people, with about 84% belonging to one of the three major indigenous ethnic groups: Koryaks, Chukchis, and Evens. Vyvenka is smaller, with an official population of 460 people (77% indigenous). Thus, people in Oliutorskii District often refer to Khailino and Vyvenka as "ethnic villages" (*natsional'nye poselki*) in contrast to the district administrative center, Tilichiki, where Russians, Ukrainians, and other non-indigenous ethnic groups are the majority (2009 population: 1,716, 29% indigenous). Both villages are located along the Vyvenka River, with Vyvenka near the mouth of the river on the Bering Sea and Khailino far upstream, on a tributary called the Tilgovayam River. However, people rarely travel directly between Khailino and Vyvenka, more often moving via Tilichiki, which is about 90 km through the tundra from Khailino and about 45 km up the coastline from Vyvenka.

Although both reindeer herding and salmon fishing have long been practiced in each village, only Khailino currently has reindeer herds. Two of Khailino's three herds are managed by the Korfskii Sovkhoz, a Soviet-era collective that resisted pressures to privatize during perestroika in the 1990s. The third reindeer herd is managed by the Khailino-Vetvei Obshchina, a collective formed in the early 1990s to assume responsibility for the private reindeer owned by village residents. Despite the prominence of reindeer herding in Khailino, salmon fishing also plays a very important role in the community. The vast majority of people spend their summers living in small camps along the Tilgovayam and Vyvenka Rivers, harvesting and processing salmon for food and salmon roe for sale. The prices of food in village stores are very expensive, so dried and salted salmon, along with potatoes and other garden foods, are the foundation of most people's diets. Some indigenous people in Khailino have begun to form smaller, kin-based *obshchina* collectives (*rodovie obshchiny*) in order to obtain larger salmon quotas than they would otherwise receive for "subsistence" purposes.

In Vyvenka, the individual practices and collective institutions associated with salmon fishing are very similar to Khailino, with one important exception. Vyvenka is home to a privately owned and managed fish factory, OOO Vyvenskoe, that harvests large amounts of salmon using seine nets that are set along the coastline on either side of the mouth of the Vyvenka River. This company was formed in the mid 1990s by privatizing the former Soviet collective farm, Gorky Kolkhoz. During the Soviet era, Gorky Kolkhoz managed several reindeer herds, but herd sizes declined rapidly during perestroika, and by the late '90s, the few deer that remained were butchered and sold. Today, OOO Vyvenskoe is involved solely in the production and sale of fish, after liquidating many of the other economic activities that were formerly part of the Gorky Kolkhoz. Some residents of Vyvenka work for OOO Vyvenskoe to clean and process fish, but few are employed in more lucrative jobs harvesting fish on the seine nets. For these jobs, the company chooses instead to import seasonal

workers from outside the village. Many of Vyvenka's salmon fishers who previously worked for the *kolkhoz* have been active in forming *obshchina* collectives and lobbying for increased salmon quotas.

Game Procedures

The experiments were conducted first in Khailino and several weeks later in Vyvenka. A total of 70 people (42 in Khailino and 28 in Vyvenka) volunteered to participate after learning of the experiments through written invitations posted at prominent places and by word-of-mouth advertisement. The sample of participants is female-biased, with 46 women and 24 men.¹ Participants were not asked to identify their ethnic group, though the majority in both villages belonged to one or more of the predominant indigenous groups. Because the experiment was expected to last 2–3 hours, participants were provided with an initial endowment of 200 rubles (≈US\$8), which was roughly equivalent to a half-day's wage for most people in the villages. Then participants were asked to decide how much of this money to contribute to a group fund that would be shared with three other people. Participants were told that the total amount of money contributed to the group fund would be doubled and divided equally among the four group members, regardless of how much each person initially contributed. Because the 200 rubles were given to participants as one 100 ruble note, one 50 ruble note, and five 10 ruble notes, contributing any multiple of 10 rubles between 0 and 200 rubles was possible. In order to understand the relationship between participants' decisions and their expectations about the decisions others would make, I also asked them to complete a short questionnaire, including (1) contribution—the amount they wanted to contribute, (2) expected contribution—the amount they expected the average person to contribute, (3) free rider—whether or not they thought at least one person would contribute 0 rubles to the group, (4) altruist—whether or not they thought at least one person would contribute 200 rubles to the group, and (5) relevance—whether or not they thought the game was similar to situations that they faced in their daily lives. Participants were told that their contributions and answers to the questionnaire would be confidential, and that only I would know the identities of group members.

Participants were randomly assigned to one of three versions of the public goods game: (1) a standard version whose structure was similar to games used elsewhere by other researchers, (2) a version framed to refer to the *sovkhov*, and

1. During postgame interviews, I attempted to find an explanation for the female-biased sample, but no consensus emerged among the participants. By including a variable for participants' sex in the regression models (table 2), I was able to examine whether or not the female-biased sample influenced model estimates. The models do not predict that a participant's sex has any significant influence on contributions nor do they suggest that including sex as a control variable alters the significance of other factors.

(3) a version framed to refer to the *obshchina*. Before playing, participants in each version left the main room and entered a game room, where instructions and examples were read to them.² The instructions included a description of the game rules, four examples of how the game might be played, and what the results would be in each scenario. These instructions and examples were identical in all three versions of the game, with only two exceptions. First, in the standard version, participants were asked to contribute to a "group fund," but in the framed versions, they were asked to contribute to either a "sovkhov fund" or an "obshchina fund." Second, each of the framed versions began with the sentence: "This game is called the *sovkhov/obshchina* game." When all questions had been answered and people felt they understood the game, each person was handed an envelope containing the short questionnaire and 200 rubles. While one version of the game was in progress, the other people watched a film and waited in the main room. The participants were asked several times to refrain from discussing the game with anyone until after the experiment had been completed, and research assistants monitored people in both rooms to ensure that this rule was followed. In each village, the standard PGG was played first, the *sovkhov* PGG played second, and the *obshchina* PGG third. All participants were informed that in order to calculate earnings group members would be drawn randomly once everyone had completed the experiment.³ Participants were reminded that their group could include people who played before, alongside, or after them. A total of 23 people played the standard version, 22 played the *sovkhov* version, and 25 played the *obshchina* version.⁴

Results A: Experiments

Result 1: High Contributions

Across all versions of the public goods game, contributions in Kamchatka were much higher than contributions reported in other parts of the world. Overall, participants contributed an average of 89% of their initial endowment to the group. The mean contribution was high because about 77% of the participants chose to contribute their entire endowment to

2. All instructions were read from a script translated independently by two trained translators. The first translated the script from English to Russian, and the second back-translated the Russian version into English to check for errors.

3. In Khailino, there were 42 participants, so for the two extra participants, two players from other groups were chosen randomly, and their contributions were used to calculate earnings for the extra group. Earnings for the two players chosen for a second group were calculated based only on their first group.

4. I attempted to assign an even number of participants in each village to each version of the PGG, but three participants in Khailino were unable to complete the experiment, leaving 12 in the *sovkhov* version and 15 in the standard and *obshchina* versions. In Vyvenka, 28 people participated, leaving 8 in the standard version and 10 in the *sovkhov* and *obshchina* versions.

the group. Among the lower offers, only three were below 50% of the initial endowment (fig. 1).

Previous research with public goods games shows that average contributions are usually between 40%–60% of the endowment (Henrich et al. 2004; Herrmann, Gächter, and Thöni 2008; Ledyard 1995). Experiments with public goods games have been conducted in several urban and rural cities in Russia, reporting average contributions of 35%, 52%, and 55% (Gächter and Herrmann 2009; Gächter, Herrmann, and Thöni 2004; Herrmann, Gächter, and Thöni 2008). The highest average contribution published in a one-shot public goods game or in the first round of a repeated public goods game that I have found is 72%, which was reported among residents of poor urban communities in Ho Chi Minh City, Vietnam (cited in Cardenas and Carpenter 2008). Thus, to my knowledge, contributions in the public goods game in Kamchatka are higher than in any other part of Russia and also higher than any other place in the world where this experiment has been conducted (table 1).

The questionnaire about participants' expectations for how others would play the game provides additional insights. Overall, participants expected the average person to contribute 64% of the endowment; 93% of participants thought there would be a person who gave his or her entire endowment to the group, while 68% thought that there would be a person who gave nothing to the group; 83% of participants thought that the game was similar to situations that they encountered in their daily lives.

Result 2: Framing Effects

Average contributions were 97.4% in the standard version of the game, 87.5% in the *sovkhoz* version, and 83.2% in the

obshchina version. Comparing the distribution of contributions in the three versions shows that levels of cooperation in the standard version were significantly higher than the *sovkhoz* version (Mann-Whitney U: $z = -1.968, P = .049$) and marginally higher than the *obshchina* version (Mann-Whitney U: $z = -1.822, P = .068$). However, there is no significant difference between contributions in the *sovkhoz* and *obshchina* versions (Mann-Whitney U: $z = -0.093, P = .926$). This suggests that framing the games to refer to post-Soviet collectives slightly but significantly decreases contributions in the public goods game. In order to investigate these framing effects further, I constructed a series of OLS regression models, with the percentage of the endowment contributed to the group as the dependent variable (table 2). Because there was no statistically significant difference between contributions in the two framed versions, they were combined and compared to standard versions using a dichotomous variable in the regression models. Additional independent variables were included that recorded the village where the games were played, as well as the age and sex of the participants. Four variables measuring expectations were also included, corresponding to the answers provided on the game questionnaire.

The regression models show significant framing effects, even when control and expectations variables are included (table 2, model 3). The amount of money that a participant expected others to contribute also has a significant, positive correlation with contributions in the public goods game (models 2 and 3). Among the control variables, neither the village residence ($b = -1, P = .864$) nor sex ($b = 3.2, P = .605$) of a participant has any significant correlation with contributions. However, there is a marginally significant cor-

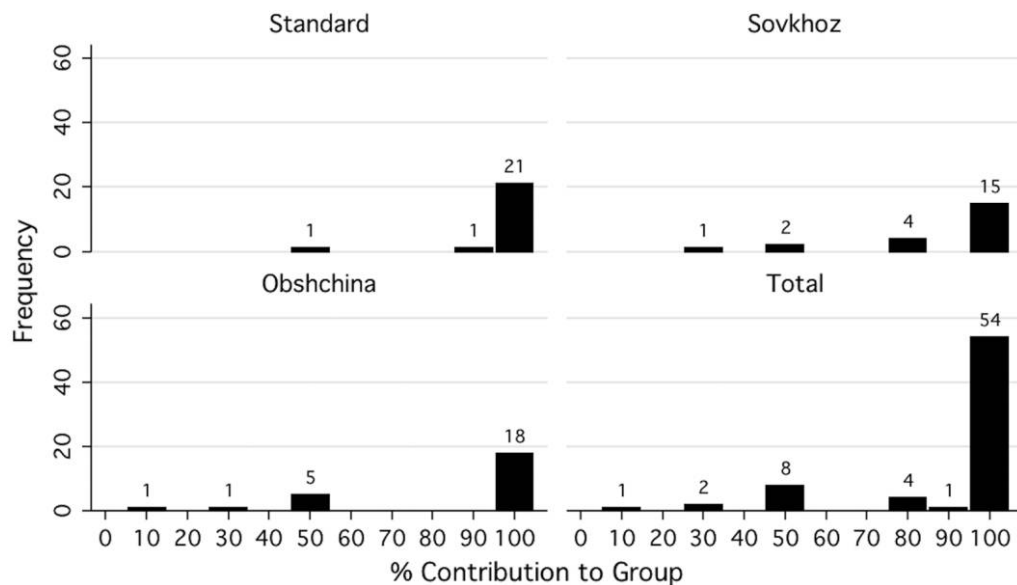


Figure 1. Frequency of individual contributions in standard and framed public goods games.

Table 1. Mean contributions in public goods game (PGG) experiments throughout the world^a

Participants	Mean (%)	Group size	MPCR ^b	Rounds	Country	Citation
Kamchatka (standard)	97	4	.5	1	Russia	Gerkey (this article)
Kamchatka (framed)	85	4	.5	1	Russia	Gerkey (this article)
Samara (students)	55	4	.4	10 ^c	Russia	Herrmann, Gächter, and Thöni (2008) ^d
Kursk and Zheleznogorsk	52	3	.5	1	Russia	Gächter, Herrmann, and Thöni (2004)
Belgorod and Yekaterinburg (students)	35	3	.5	1	Russia	Gächter and Herrmann (2009)
Ho Chi Minh City	72	4	.5	5 ^e	Vietnam	Cardenas and Carpenter (2008) ^f
Bangkok	61	4	.5	5 ^e	Thailand	Cardenas and Carpenter (2008) ^f
Orma	58	4	.5	1	Kenya	Ensminger (2004) ^g
Huinca	58	5	.4	1	Chile	Henrich and Smith (2004) ^g
Tsimane	54	4	.5	1	Bolivia	Gurven (2004) ^g
Salvador da Bahia	48	4	.5	1	Brazil	Soler (2012)
Ache	45	5	.4	1	Paraguay	Hill and Gurven (2004) ^g
Shona	45	5	.4	3 ^h	Zimbabwe	Barr (2001)
Mapuche	33	5	.4	1	Chile	Henrich and Smith (2004) ^g

^a A full review of all studies using public goods games is beyond the scope of this table. I have included studies that meet one of two criteria: (1) public goods games conducted in Russia or (2) public goods games conducted by researchers working with nonstudent participants in the field.

^b Marginal per capita return (MPCR) on individual contribution to public good.

^c The mean contribution reported here for Samara is from the first round of a 10-round PGG.

^d See Herrmann, Gächter, and Thöni (2008) for data from a cross-cultural study with public goods games among university students in 15 countries.

^e The mean contributions reported here for Ho Chi Minh City and Bangkok apparently include data from all five rounds of the PGG.

^f The data reported here are presented in Cardenas and Carpenter (2008), but the citation for these studies is Carpenter, Danieri, and Takahashi (2004).

^g Published in Henrich et al. (2004).

^h The mean contribution reported here for Shona is from the first round of a three-round PGG.

relation between age and contributions, with older participants contributing more than younger participants ($b = .4$, $P = .059$).

Examining the distribution of contributions in each version of the game in relation to the amount that people expect others to contribute suggests that there may be an interaction between individuals' expectations and their contributions (fig. 2). Plotting the relationship between expectations and contributions allows us to identify the strategies individuals chose in the public goods game.

A large percentage of participants in each version adopted a strategy of generosity, contributing 100% of their endowments regardless of how much they expected others to contribute. However, there are also many participants who appeared to adopt a strategy of conditional cooperation, contributing the same amount of money that they expected others to contribute. Although there are some participants who fall on the continuum between generosity and conditional cooperation, only two people adopted a strategy of selfishness, contributing less than he or she expected others to contribute.

This relationship can be examined statistically in the regression models by adding an interaction term between frame and expected contribution (table 2, model 4). The marginal

statistical significance of the interaction term ($P = .066$) suggests that framing a game to refer to post-Soviet collectives may have altered the relationship between an individual's contribution in the public goods game and his or her expectations about how much others would contribute. In other words, contributions made by participants in framed versions of the game appear to be influenced by their expectations about how much others will contribute. Many people who expected others to give less than 100% of their endowment decided to contribute less than 100% themselves. The same does not appear to be true in the standard versions of the game, although this result may be driven by the fact that only 2 of 23 participants in the standard version contributed less than 100% of their endowment. The relatively small sample sizes in each frame, combined with the marginal significance of the interaction term, suggest a cautious interpretation of this result.

Results B: Postgame Interviews

How Did Players Interpret the Game?

Following the games, I sought out people who had played, listened to them describe their strategies, and asked for their

Table 2. OLS multiple regression models estimating factors influencing individual contributions (dependent variable) in standard and framed public goods games (PGGs)

Variable	Model											
	Bivariate ^a		1 ^b		2		3		4			
	<i>b</i>	<i>P</i>	<i>b</i>	<i>P</i>	<i>b</i>	<i>P</i>	<i>b</i>	<i>P</i>	<i>b</i>	<i>P</i>		
PGG version: 0 = standard frame, 1 = collective frame	-.26	.032**	-12.5 (5.6)	.029**	-14.1 (5.7)	.017**	-12.3	.035**	-39.6 (15.6)	.014**		
Village: 0 = Vyvenka, 1 = Khalino	-.07	.58	-4 (5.4)	.460	-2.7 (5.7)	.634	-1	.864	3.9 (6.2)	.538		
Expected contribution (% of endowment)	.34	.00***	.2 (.1)	.031**	.2 (.1)	.031**	.2 (.1)	.027**	-.1 (.2)	.765		
Free rider? (0 = no, 1 = yes)	.04	.73	2.1 (5.8)	.719	1 (5.7)	.862	1	.862	2.4 (5.7)	.672		
Altruist? (0 = no, 1 = yes)	.18	.15	10 (11)	.367	8.3 (11.1)	.459	8.3 (11.1)	.459	11.5 (11)	.300		
Relevance? (0 = no, 1 = yes)	-.10	.43	-9.6 (7.4)	.198	-10.9 (7.3)	.142	-10.9 (7.3)	.142	-11.8 (7.2)	.106		
Age (n years)	.23	.06*	.4	.059*	.4 (.2)	.059*	.4 (.2)	.059*	.4 (.2)	.062*		
Sex (0 = male, 1 = female)	.10	.42	3.2 (6.2)	.605	4.6 (6.1)	.605	4.6 (6.1)	.605	4.6 (6.1)	.452		
Interaction term (collective frame × expected contribution)												
Constant			100 (5.8)	.000	82.2 (13.7)	.000	66.2 (15.8)	.000	78.6 (16.8)	.000		
Adjusted <i>R</i> ²			.046		.138		.165		.201			
Prob. > <i>F</i>			.077		.022		.018		.009			
<i>N</i>			70		65		65		65			

^a Pairwise correlations between individual contributions in public goods games and independent variables used in OLS regression models.

^b All coefficients are unstandardized; standard errors are in parentheses.

* $P < .10$.

** $P < .05$.

*** $P < .01$.

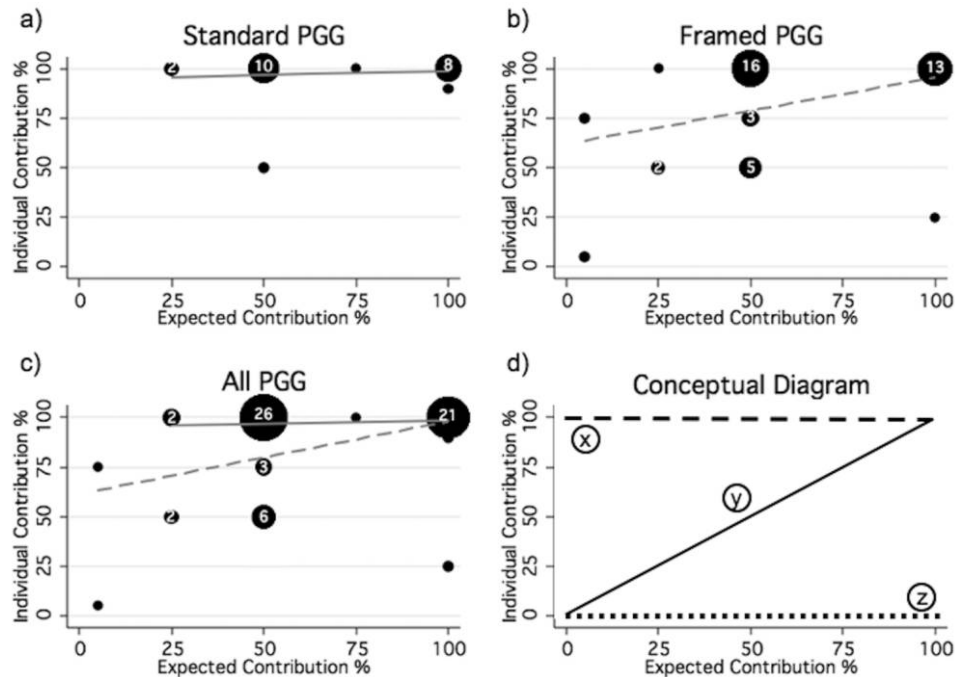


Figure 2. Frequency of individual contributions and expected contributions of others in (a) standard, (b) framed, and (c) all public goods games. Size of markers reflects the number of observations, with labels for all values >1 . Lines represent bivariate regression estimates for individual contribution (dependent variable) and expected contribution. A conceptual diagram (d) illustrates lines for (x) unconditional generosity, (y) conditional cooperation, (z) and selfishness.

help in explaining the unusually high contributions. We also discussed their impressions of the people who contributed less than others, how the structure of the game could be modified to yield more interesting results, and what relevance the game had for their lived experiences in Kamchatka. While the interviews provided many insights on patterns of cooperation in the games, they also established new dialogues that helped me understand the ecological, cultural, and historical conditions of cooperation and collective action in Kamchatka.

Sitting together drinking tea in her kitchen, my neighbor Anna explained to me, "I understood the point as how much people trust each other."⁵ We had been neighbors for several months but had done little more than greet each other as we entered and exited the building or passed each other on the streets of the village. This was the first time I had been invited into her apartment. I asked her why she thought trust was important. "Well, how to explain it," she said, laughing: "Well, for example, now I think, 'I contribute these 200 rubles, and others might not contribute anything, and what would I get out of it?' Well, it ended up that I, and many others in my group, we trusted each other. So, everyone thought to themselves, 'I could contribute nothing.' But we all simply knew what people would do. There was trust. I simply trusted people."

Many other people shared Anna's sentiments. When I asked

if they were afraid that others in their group would make low contributions, most acknowledged the concern but quickly discounted or dismissed it. A man named Dima told me, "Well, yes, there was of course a doubt that there would be people who wouldn't give anything in general or only half. But I thought that the majority would give more." Before I told him about the results of the games, Dima guessed correctly that only "a pair of people, five maximum" gave very little. A woman named Galina responded to the same question with shock and amusement: "Definitely not! I looked around and thought, 'Now, everyone will contribute everything.' I watched people and thought who might contribute, who might not, approximately." These responses suggest that the high contributions in Kamchatka reflect optimism about the willingness of others to contribute to the public good. But is the opposite also true? Did those who contributed less express a lack of trust in others?

One person who contributed less than others, Artur, told me that he decided to give 150 rubles to the group and keep 50 for himself "as insurance . . . because it's possible that my partner won't contribute anything!" Artur went on to explain that his decision was influenced by the fact that groups were drawn randomly. If he had known exactly who would be in his group, he might have contributed the full amount. I interviewed two other men who contributed less than 200 rubles (one gave 100, the other 150), and each had a similar expla-

5. All names used in this article are pseudonyms.

nation about wanting to make sure that they left the game with some money for themselves. Even some people who contributed their entire endowments speculated that this concern for “insurance” could explain why others made lower contributions.

Data on individual contributions and expectations in Kamchatka are consistent with high levels of trust and strategies of conditional cooperation. Only two people who played the game contributed less than they expected others to give (fig. 2). This suggests that very few people attempted to take advantage of high contributions by increasing their own earnings at the expense of other group members. I interviewed one of these people, a woman in her twenties named Nadia. She explained that she had chosen to contribute only 50 rubles because she expected others to contribute much more and calculated that she could earn more money that way. Nadia was one of several people in the village who gathered in the evenings a few times a week to play cards for money, and she applied a similar mentality to the public goods game. Listening to Nadia, I heard pride in her voice but also a bit of embarrassment because she had benefited at the expense of others who had approached the game with a more cooperative mentality. As the results in figure 2 show, a large percentage chose a strategy of generosity, contributing more than they expected others to give. Trust and conditional cooperation do not seem to explain this generosity entirely.

Perhaps people did not view their contributions as confidential decisions in a one-shot environment but as decisions influenced by past obligations and entailing future ramifications. Each of the statements above indicates that participants drew upon their experiences living with other people in the village when choosing a strategy in the game, whether these experiences encouraged them to trust others, seek insurance, or calculate in favor of self-interest. This raises two possibilities that may explain the unusually high contributions in Kamchatka. First, the interaction between the methodology of the game and people’s lived experiences may have artificially increased contributions. Care was taken to develop game protocols that would be sensitive to local notions of privacy, social relationships, and uses of money, so that an individual’s decision in the experiment would reflect his or her propensity to cooperate. However, economic games had never been conducted in these communities, so it was difficult to know in advance precisely how people would react to game protocols. It is possible that methodological factors led to more cooperation in the public goods game than would be observed in naturally occurring contexts in these villages. Second, participants may have used cultural norms and values of interdependence developed in naturally occurring contexts to choose strategies in the public goods game. In this case, the high contributions in Kamchatka do accurately reflect existing propensities and patterns of cooperation. Data from postgame interviews speak to each of these possible explanations. Although people’s post hoc statements about their own and others’ behaviors must be analyzed cautiously, they do provide

unique insights that are particularly helpful in tracing connections between patterns of cooperation in experimental and natural contexts.

Methodological Factors

The confidential, context-free structure of economic games is intended to produce a baseline measure of cooperation that can be compared from one place to the next. However, this approach also makes it challenging for researchers to identify and understand the factors underlying cross-cultural variation in game play. The rules of the game may be the same, but how can we know if individuals in different places understand and act upon them similarly? Postgame interviews can reveal some of the factors that influenced participants’ decisions, guiding researchers to areas where methodological innovations may yield more accurate interpretations. My interviews raised issues about perceptions of confidentiality, attitudes toward risk, and notions of property among participants that suggest how their lived experiences informed their actions in the public goods games.

Although I assured participants several times that their identities and decisions in the games would be confidential, I also observed participants openly discussing the contributions they made with one another after the game was over. One woman even walked from person to person, chiding them gently when their reported contributions did not match her expectations. My neighbor Anna also alluded to the lack of perceived confidentiality, explaining “What would people think [about me] if I didn’t contribute, and they know I didn’t contribute? How are they going to look at me then?” I reminded her about my promise of confidentiality, and she replied, “It has nothing to do with you! The players themselves would discuss it afterward.”

At first, these remarks appear to explain the high level of contributions in Kamchatka. However, public goods games have been played in many places similar to Khailino and Vyvenka, where participants know one another and will encounter each other often after the game. Still, contributions in these places do not reach the level that they do in Kamchatka (table 1). This difference may be due to cultural values and norms of privacy. As Anna’s words suggest, even when the structure of the experiment promises confidentiality, refusing to divulge information about one’s decisions when the experiment is over may be considered unusual or unacceptable in these villages, regardless of the rules of the game. Although researchers design economic games to ensure anonymity or confidentiality, we may need to develop new methods for understanding the extent to which people in a given place perceive the experiment as a space where decisions are truly without ramifications for personal reputations and relationships. Studies that vary the degree of anonymity or confidentiality have shown that contributions are generally higher when decisions are public (Barr 2001; Gurven, Zanolini, and Schniter 2008; Hill and Gurven 2004; Lamba and Mace 2010),

but cross-cultural variations in people's perceptions of confidentiality in experimental contexts more generally have not been explored.

Similarly, the extent that people emotionally or materially value what is at stake in different possible outcomes may vary from place to place. Several people that I interviewed did not explain their understanding of the game primarily in terms of trust but emphasized "risk" instead. When asked about the possibility that others in the group might not contribute, many replied that they were not afraid to risk such a small amount of money when there was a clear common benefit of contributing. A Russian man named Vova expressed this view succinctly: "If you compare it to life, these kinds of moments exist, do you understand? Someone contributes, someone doesn't. Only those who contribute can benefit, but you can also go bankrupt. Economists can figure it all out. But in life it's true that people who don't contribute don't receive anything. Do you understand?"

Vova's remarks indicate two important points to consider when applying the results of economic games to theories of cooperation. First, people faced with making decisions in games may not use backward induction to arrive at income-maximizing strategies, instead relying on heuristics or biases that reflect naturally occurring contexts of cooperation (Gigerenzer and Selten 2002). Participants in Kamchatka may have chosen strategies that reflect their attitudes about risk developed through experiences in a variety of contexts where they need to act despite the fact that the outcome is uncertain and the consequences significant. Second, the amount of money at stake in an economic game may represent different levels of perceived risk for participants in different places. Following previous research with economic games, the size of the initial endowment in these experiments was standardized to the equivalent of about a half-day's wage in Khailino and Vyvenka. In an objective sense, this amount of money is significant for people in these villages. Even so, as a woman named Larisa put it, "I receive 500 rubles per day in salary. For me, all the same, it's not money." Larisa's comment reflects the fact that many people in Kamchatka's rural villages do not rely on money in the way that people living in larger cities do. Although people value and seek the limited opportunities for wage labor in the village, they are also accustomed to coping with income fluctuations by expanding production of subsistence foods, particularly since the collapse of the Soviet economy (Crate 2006; Ziker 2002). Indeed, one can understand Larisa's feelings about her 500 ruble daily salary after visiting the village stores, where prices are routinely as high as or higher than in Moscow, one of the most expensive cities in the world.

After hearing comments like Larisa's, I began to ask people how they might play the game differently if the initial endowment were larger. What if people had been given endowments of 2,000 rubles (about US\$80), rather than 200 rubles? Many people speculated that larger endowments would not substantially decrease contributions to the group. These are

only hypothetical statements, but they do echo the results of high-stakes economic games in other places (Camerer 2003). When I asked a man named Aleksandr if he would still contribute 100% of his endowment if it were 2,000 rubles, he did not waver: "Yes, it's *chuzhie* money! It's not my blood, my earned money! . . . For me, there's no kind of emotion because it's not my money, it's *chuzhie* money."

Aleksandr's use of the word *chuzhie* to describe the game endowment is interesting. In Russian, the adjective *chuzhoi* (plural *chuzhie*) refers to an object that belongs to somebody else or something that is "strange" or "foreign." Interestingly, *chuzhoi* is also used in opposition to the word *svoi*, which describes something that belongs to a person, including personal relationships among friends and family. Many foreigners who visit Russia place a great deal of importance on this distinction. They arrive without close friends or family and are treated as *chuzhoi* until they are accepted into a circle of Russian friends and treated as *svoi*. I clearly recall one instance during my fieldwork in Kamchatka when a person with whom I had recently traveled to visit the reindeer herds in the tundra far outside Khailino was introducing me to another person in the village. The new person was shy and hesitant to talk to me, but my new friend reassured him by saying, "Don't worry, he's already *svoi*!"

Despite the fact that the game instructions emphasized that the 200 ruble endowments were given to the players and should be considered their own property, some people did not easily accept this. A young man named Danil felt that the game would be improved if this point were made more emphatically: "You thought that people consider these 200 rubles [their own]. It's apparent that some people didn't understand. How? 200 rubles, fallen from the sky? Of course, I didn't earn them. You should have done it differently somehow, in order to explain to people that this money, these 200 rubles, they earned them. It's their money."

Like Danil, Marina felt that the individual endowments represented a windfall, exclaiming "like manna falls from the sky, from the sky to the *sovkhoz!*" Marina's words parallel suggestions from past experiments that participants in economic games may treat endowments as windfalls that are obtained without cost (Cherry, Kroll, and Shogren 2005; Gurven 2004). Pressing Aleksandr further, I asked him if he would change his mind if the stake were raised to 20,000 rubles (about US\$800)? He smiled, "Well, then everyone would think it over! That's already a little bit of money! Free money, but money!" Still, he expected that people would continue to contribute a large portion of their endowments. He smiled, "Risk, as they say, is a noble act."

Aleksandr's comments about risk were echoed by a woman named Vera and her daughter Oksana, who suggested that people's lives in Kamchatka involve a level of risk that is greater than that experienced by people in other places. Vera and Oksana live in Vyvenka, located on a part of the coastline that is usually only accessible in winter by snowmobile and in summer by boat. Traveling by foot requires one to traverse

a rough and rocky shore for about 10–15 hours. When the weather is good, most people make the journey in 2–3 hours by water, using small, 15–20 foot fishing boats, powered by 30–45 horsepower motors. Months before playing the games, on my first summer trip to Vyvenka, I traveled this way with Oksana's husband, Viktor. The trip was uneventful, and after we arrived, sitting in Vera's kitchen drinking tea, Oksana asked me if I had been afraid. When I said that I was not, she replied, "That's because you have never done it before. You don't know how dangerous it is."

Every summer, people traveling by boat between Vyvenka and Tilichiki drown as a result of bad weather, equipment malfunction, lack of skill, poor judgment, or some combination of these. In fact, later that summer, I learned this lesson in a very personal way. Vova—the Russian man who told me that both the game and life involved risk but that one needed to take risks in order to benefit—went missing on a trip from Vyvenka to Tilichiki. Earlier that same day, I had made the trip in the opposite direction, traveling again with Viktor. I was sitting with Vova's family later that evening when I learned that they had not heard from him. For the next few days, there was no word about him or the friend with whom he had been traveling. Over the next few weeks, the family called everyone they could think of, but no one had seen either of them. To this day, no one has.

Vera and Oksana explained that people are accustomed to living with this kind of risk because they have no other choice. Trips from Vyvenka to Tilichiki are often necessary to purchase supplies, receive official documents, register for salmon quotas, visit the hospital, and for many other reasons. During the Soviet era, helicopters regularly flew from village to village, but now these flights occur only once or twice a week at best, even in the most accessible villages. In a village like Vyvenka, it is quite common to spend 3 weeks and never see a helicopter land. This isolation is one of the primary difficulties that people in Kamchatka's rural villages face in the post-Soviet era. Several people told me the story of how Vyvenka's electrical station broke down in the mid 1990s. For 2 years the necessary part did not arrive. A few people were able to use small gasoline powered generators sparingly, but most adjusted their lives to make do without electricity. In this context, Vera and Oksana said, the risk of losing 100 rubles in an economic game did not weigh so heavily, particularly when one expects others to make high contributions as well.

These data from postgame interviews indicate that perceptions of confidentiality, notions of property, and attitudes toward risk among participants may explain in part the high contributions in Kamchatka. Although the rules of the game promised participants confidentiality, the authority behind this promise diminished as soon as the game was over, superseded by local norms and values of privacy. Similarly, the game instructions implored participants to consider the money they were given as their own, but some people treated it instead as a windfall that could be risked more easily than money they had earned. For some, the objective significance

of the money at stake was overcome by the economic obstacles and environmental uncertainties that they face daily. Each of these methodological factors may have increased contributions in the public goods games in Kamchatka. Yet, none of them seem sufficiently unique to this particular place that they could entirely explain such high contributions to the public good.

Cultural Norms and Values of Interdependence

Instead of being surprised that contributions in Kamchatka were so high, many people I spoke with were surprised to learn that contributions in other parts of the world were so much lower. When I told Anna that average contributions in public goods games elsewhere usually fall between 40%–60%, she speculated that the small size of her village could explain the higher contributions there. Anna noted the fact that most people had grown up together and knew each other well as a source of their confidence and trust in one another. I explained that previous studies included places that were similar to Khailino and Vyvenka, even some much smaller in size. "And all the same, you mean there was such a small percentage?" she replied. I nodded and she smiled, adding: "I don't know. That means people simply don't trust each other. No, in general, we have a village with a lot of trust. We have it better in terms of trust."

When I asked people how they would understand and explain the uniqueness of the game results in Kamchatka, many told me about the importance of cultural norms and values of interdependence, altruism, and reciprocity. Indeed, many people I spoke with during the course of my fieldwork, indigenous and Russian alike, cited the prevalence of these norms and values as the main reason why they would never seriously consider moving away from the village. Even though moving to the regional capital, Petropavlovsk-Kamchatskii, or another part of Russia might alleviate some of the economic hardships they face, they would lose the social support and sense of camaraderie that define the best parts of life in rural villages for people in Kamchatka.⁶

Artur explained this to me by making an analogy between widespread ethics of reciprocity and a common, important economic activity: planting potatoes in one's garden. "You plant a potato, you grow not one potato, you grow many. That is, a person does a good deed and later receives even more good deeds." Artur suggested that this ethic is an essential part of the "traditional upbringing" (*natsional'oe vospitanie*) of indigenous people in the village, and also serves as a kind of "spiritual law" (*dukhovnyi zakon*) that is "even in the blood of our northern people." Irina, a former schoolteacher, echoed Artur's explanation:

From their spirit! From their spirit, simply! Because people, our village, anyone who has misfortune or is unhappy, they

6. See Thompson 2003 for similar sentiments in a neighboring region, Chukotka.

give their last to them. . . . And everyone interacts with one another. Because in the North, I say, a loner doesn't survive. That's why we support each other. We help each other. And with this experiment, with money all the same, no one took it all [for themselves]. Because then it's possible that someone needs that money.

Irina added that she knew of one woman who kept 100 rubles for herself because, as she explained to Irina, she needed money to buy milk powder for her child. To Irina, the woman's lower contribution to the group was not an expression of selfishness but of need. Indeed, "need" was the most common response that I received to questions about why a person would contribute less than 200 rubles to the group.

Interpreting low contributions as expressions of need also influenced people's willingness to cooperate in the presence of lower contributors. When I asked Dima, "Would you still have contributed 200 rubles if you had known that someone in your group would give very little?" he said, "Yes. All the same, I would have given." I rephrased my question, "Even if you knew that he would earn more as a result of keeping more for himself?" Dima replied, "Well, he probably doesn't have enough of something." Aleksandr said simply, "Consider that I have 1,000 rubles or nothing, all the same I live. Consider 5,000 rubles or none, it makes no difference to me. We have this kind of mentality that emerges here in the North." I began to ask Aleksandr if people felt that money was not as important as personal relationships, but before I could finish the question, he continued:

Well, everyone here thinks money is necessary, but we all come to each other's aid. Any kind of drunkard or alcoholic, all the same we help. They arrive hungry, "Here, eat!" "Give me salted, dried fish." "Here!" "Give me cabbage." "Here!" "Give me bread." "Here!" "Give me vodka, 100 rubles." "Here!" When money arrives, you hand it out, you buy things. You buy things, you hand it out. No difference! We don't have that kind of harsh buy and sell like other people in Tilichiki.

By contrasting the ethic of helping those in need with the "harsh buy and sell" of Tilichiki, Aleksandr suggests that these ethics are rooted in differences between an "ethnic village" like Khailino, and a village like Tilichiki that is populated primarily by nonindigenous people. This contrast implies that indigenous cultural values and norms, which are more prominent in Khailino, may have a greater influence on levels of cooperation in the game than those that reflect the Soviet/Russian past that the two villages share. The predominance of these ethics in Khailino could be due to the difference in scale between larger and smaller villages, the tendency for nonindigenous residents to adopt indigenous norms and values while living in smaller villages, or some combination of these.

Irina made a similar connection between the game results

and several other examples of indigenous cultural values in action. She talked about the widespread practice of keeping shared hunting cabins that are scattered throughout the tundra stocked with dry wood and supplies. When a person arrives, they are free to make use of these amenities, but they are also obligated to replenish them before they leave. As she spoke, I recalled traveling with fishers in Vyvenka and staying in these cabins. When I asked one of the men I was traveling with why people did not lock their cabins, he explained that the risks of traveling far from villages in the tundra meant that resources should be kept available for people in need. What if there is a blizzard and someone is lost and needs shelter? What happens if the cabin is locked and they cannot get in? He explained that some people in the village had begun to lock their cabins, and that this should be considered a crime. He felt strongly that helping a person in need was more important than securing personal property against possible abuse by unscrupulous travelers.

For Irina, this ethic connects to generous contributions in the game:

All the time, leave something behind in the tundra, because there should be reciprocity (*vzaimopomoshch*). And for that reason, nevertheless, I was confident that you wouldn't find the kind of person who wouldn't contribute anything to the [group].

She continued,

Because without helping each other, we cannot survive in the North. And that's why everyone tries to help. . . . That's the kind of people we have. Kamchatka is special, this land.

In addition to trusting that others playing the game would make high contributions, people in Kamchatka conceptualized the few who did not contribute as in need of help. Low contributors were occasionally described as immoral free riders, but even then people found these actions humorously ironic and macabre, rather than feeling indignant. Far more often, low contributors were described as people who probably needed money to support themselves or their family. The words of Irina, Dima, Aleksandr, and others suggest that generous players understood their contributions as altruistic acts, similar to replenishing the supply of wood in a shared hunting cabin or providing food to a neighbor in need. These altruistic acts are seen as essential components of people's ability to adapt to challenging and uncertain environments, as well as expressions of their sense of cultural identity and community. Perhaps the connections people saw between these cultural norms and values of interdependence and the structure of the public goods game explain the uniquely high contributions in Kamchatka.

Defection, Nostalgia, and Post-Soviet Collectives

I chose to conduct experiments with economic games in Kamchatka not only because I was interested to learn how people's behavior would compare to other parts of the world but also

because I thought the games might help me better understand how people in Kamchatka thought about cooperative relationships. Compared to other economic games, the public goods game is particularly well suited as an analogue to real-life situations that present people with an opportunity to work together to achieve a common goal. But like “real life,” the game also poses an important dilemma: individuals who do not contribute to the common good—so-called free riders—can nonetheless benefit from the contributions of others.

For some people, this aspect of the games reminded them of instances where local people had been taken advantage of by others. When I asked my neighbor Anna why she contributed the full 200 rubles to the group, she told me that she trusted other people. But in the next breath, laughing a bit, she added, “In general, I trust. I am too trusting!” I asked her if she had experienced any problems as a result. She answered, “There are situations when you believe and it ends up that people let you down.” She began to have difficulty finding the right words, “All this . . . in money. . . . I’m left back where I started. . . . Well . . . no matter. . . . Not everyone is like that. . . . Most are like . . . normal people . . . who answer for their words.” Anna was still laughing as she spoke, but her smile was strained. Later, as we discussed possible connections between the game and everyday life in Kamchatka, she returned to the theme of trust:

But here it ends up that without trust there won’t be any kind of reciprocity. In order to help, you have to trust. . . . Even if you don’t trust, you help all the same. What are you going to do? Our people, for example, our ethnic groups [*natsional’nosti*]: Koryaks, Chukchis. We trust too much, and others use that. Well, I don’t know. If we trusted less, maybe it would be easier for us to live with such people, people who don’t answer for their words. . . . And us? They simply gather us up and throw us away. How many situations were there like this? All the same, we continue to trust. We don’t learn. It seems to me we won’t learn not to trust. I don’t know. It seems to me it would be better to be harder, trust less.

Anna was still laughing, but I could see the idea that it might be better for people to trust less bothered her. She began to talk about “business” in the village, describing the unethical practices of caviar merchants and the environmental degradation caused by companies that mine the area for gold and platinum:

And we’re not hard, at all. Somewhere you can say, “They’re not right. We need to do something.” But when it comes down to it, for example, when the person is sitting there. . . . No. Silent. You’re silent. I don’t know. To put another person in an uncomfortable position, it’s uncomfortable somehow. He will begin to ask questions, extract himself from it, search for loopholes, explain everything. . . . You even become embarrassed yourself how he stands in front of you, justifying himself, right? And you sit and listen to him. . . . Well, that’s how we live. And trust. Poor. But yes,

if we would be firm, if there were people who promised us everything, the prosperity of the village, and if they would support their words. . . . We wouldn’t lose that gift, that trust. But this is all going away.

Anna was not the only one who drew this parallel between the dilemma posed by the public goods game and the exploitation of local people by outsiders who did not share their sense of trust and altruistic obligations. Artur was similarly dismayed by the trade in salmon caviar that brought merchants (*kommersanty*) to the town every summer, employing local people to harvest fish and prepare caviar but either paying them less than originally promised or paying them in alcohol instead of money. Artur explained:

“Here we have people that are very trusting. . . . And very many people who are newcomers [*priezzhie*] . . . they take advantage of that. . . . It’s of course very bad, because when a person has been deceived many times, he begins to drink, he begins to lose himself. Although on the inside, he doesn’t change. He just begins to use a lot of alcohol and all the same, he becomes so victimized.

This kind of behavior was roundly condemned by almost everyone in the villages, but in the early years of perestroika it was unfortunately all too common. Still, to a lesser extent, it persists today. As Anna says, people often find it “uncomfortable”—even “embarrassing”—to confront the people who do these things and hold them responsible. The consequence is that collectively people begin to lose the “gift” of trust that they feel is such an essential part of their identity. For Artur, the tragedy is more personal: a person begins to “lose himself.”

Anna and Artur’s words reminded me of something Irina told me about the importance of trust to people in the village:

Here in Khailino, we all know each other. . . . Every person is plainly visible like an open palm. We know him from his childhood, how he grew up, how he was born here. So in a big city, it’s possible they would contribute less. Here it’s an entirely different matter. We live like a big family here in Khailino. A common family. Everyone roots for each other, survives. If someone has misfortunes, you try to support them, so the person isn’t let loose. That is, reciprocity here is a very good, necessary thing.

Irina explained how cultural values of trust, altruism, and reciprocity encourage everyone to be “like an open palm,” to “root” for one another, and to support people who suffer from misfortune, so that a person isn’t “let loose.” Deception, cheating, and exploitation, Artur observed, cause a person to “lose himself.” This happens because, in Anna’s words, local people have been “gathered up and thrown away,” given words that are not “answered for.”

The interviews where people shared these thoughts seemed to capture both the happiest and saddest moments, the parts of life in Kamchatka’s rural villages that people are most proud of, as well as those parts they would often rather forget. They

attest to the powerful emotions people feel when reflecting on the transformations that have occurred since the expansion of the Russian empire, the push to construct the Soviet Union, and the dramatic post-Soviet collapse that continues to affect people's lives today. However, it would be a mistake to read these statements as simple repudiations of these transformations. Like many other Russian citizens, people living in Kamchatka's rural villages also maintain strong feelings of nostalgia for the past that guide the present. The difficulty of disentangling these positive and negative emotions is perhaps embodied most clearly in collective institutions.

One woman, a retired schoolteacher and pensioner named Marina, was particularly emphatic that her contribution was for the *sovkhos*: "I said, 200 rubles for the *sovkhos*. . . . Why? Because the *sovkhos*, we all dream that it will recover." Later I mentioned to Marina that, because the contributions here were so much higher than elsewhere, some people might not believe that people in Kamchatka understood the games entirely. She replied:

They should believe. First, because, when you arrive home, that's all your country. Here, we have a different mentality. We live inside this *sovkhos*. It used to have so many profits, everything came from it: gifts, wages for people. Here the *sovkhos* was connected to many things. . . . And now the *sovkhos* has fallen, and people understand. They would like it to recover, and for that reason, they contributed everything.

Marina's words echoed ethnographic accounts of the *sovkhos* as a "total social institution," noting the key role that the *sovkhos* previously played in providing housing, electricity, employment, products, construction, and a variety of public goods for the village. But the *sovkhos* is currently in a prolonged state of crisis, tenuously existing on insufficient government subsidies, aging equipment, limited access to markets, and a host of other problems associated with perestroika and the collapse of the Soviet state economy. I asked Marina if people made these contributions even though the *sovkhos* is now weak and cannot pay salaries to its workers for months at a time? She said:

Yes. All the same. And those people that were connected to that organization. It was profitable, strong. There were 20,000 head [of reindeer]. And today, only somewhere around 3,000? Practically 17,000 lost! . . . It was all lost with this perestroika. And for that reason I think that our people, those who were in their 30s or 40s, they understand that there was a time when they lived well. . . . And for that reason, in that game forum, you shouldn't be surprised about [high contributions].

I asked Danil, a young man in his late 20s, if the word *obshchina* was important to him when he decided how much to contribute. He replied that the word had "many meanings" but that he defined it as "a community [*soobshchestvo*] of people that have a common idea, common interests":

Obshchina. You pointed it out correctly. I don't know if you pointed it out yourself, or if someone helped, but very good. *Obshchina*. It's especially good that you made use of that word. The *obshchina* game. It's immediate, precise. You won't find a better word.

Lighting a cigarette, Danil went on to explain the important role that *obshchiny* were playing by increasing people's access to larger salmon quotas, emphasizing the ways these emerging collectives formalized existing social relationships within the community.

While Marina, Danil, and a few others explained their high contributions by making connections to a collective institution, statistical analysis of the overall patterns suggests that average contributions in the two-framed versions of the game were slightly but significantly lower than the standard version of the game (table 2). Contributions in the framed versions are still much higher than the 40%–60% contributions that are usually observed in public goods games elsewhere, but the fact that contributions in framed versions are lower than in the standard version needs to be explained.

One possibility is that the positive sentiments associated with these collective institutions are offset by a smaller number of people who harbor negative feelings about the *sovkhos* or the *obshchina*. Perhaps the standard version of the game does not tap into these negative feelings to the extent that the framed versions do, so the contributions in unframed games are slightly higher. When I asked Artur, who played in the *sovkhos* version, to explain the high contributions in the village, he offered an alternative to his earlier statements about the importance of reciprocity:

It's just that many people worked in the *sovkhos* here, and it's as if the communist influence still continues to this day. The main religion of the Soviet Union was work. That is, you should work as much as you can, but receive kopeks, meager kopeks. People worked, they contributed it all to that production: the government, the firm. They toiled so much. And for that work, they received very little. And they are already accustomed to sacrifice. That is, give a lot, receive little. This survives from the past.

However, Artur had earlier explained his own decision to contribute only 150 rubles to the "*sovkhos* fund" as a reflection of his uncertainty about who would be in his group and his desire to have "insurance" in case others contributed little. Indeed, his statements about the *sovkhos* were intended to explain why others had contributed so much, not why he had contributed so little. Overall, there were very few people who explicitly expressed negative sentiments about collective institutions or used these feelings to explain their own or other people's contributions. Still, it is possible that hearing the word *sovkhos* or *obshchina* was enough to diminish some players' confidence or trust that others would contribute to the public good. Hearing the word *sovkhos* may have pushed Artur to seek "insurance" by withholding a small amount of

money from the group. Perhaps framing the game in this way evoked the mixed experiences people have had with these struggling institutions, leading more to adopt a strategy of conditional cooperation.

Summary

I constructed the narrative above from the conversations I had with game participants and perspectives from my own statistical analysis, but I feel it is faithful to the people who shared their thoughts with me. Whenever possible, I have made extensive use of quotations so that people's own ideas and explanations could stand together with mine. Their words provide important insights about how people form and maintain cooperative relationships in Kamchatka's rural villages. They suggest that people saw parallels between the dilemma posed by the public goods game and a variety of contexts of cooperation that they encounter in their lives. They also indicate that people drew upon their lived experiences to solve this dilemma in ways that are not immediately apparent when examining quantitative data on contributions and expectations. Their statements suggest that decisions were influenced by perceptions of confidentiality, attitudes toward risk, notions of property, as well as cultural norms and values of altruism and reciprocity that emerge from Soviet and post-Soviet pasts. For empiricists, data from postgame interviews will not conclusively demonstrate whether methodological factors or cultural norms and values of interdependence explain the high contributions in these public goods games. However, these statements do help identify new lines of inquiry for ethnographers to pursue when applying data from economic games to theories of cooperation. Moreover, many of the insights that I gained about cooperation in Kamchatka through these interviews might not have emerged if I had not combined them with economic games. The game provided a shared context that grounded the abstract theme of cooperation, allowing us to find a common space of knowledge and experience from which we could explore and forge connections between our own unique perspectives.

Discussion

Taken together, the quantitative and qualitative data from public goods games highlight ways different cultural norms and values inform negotiations of cooperative relationships in Kamchatka today. People in Kamchatka contributed remarkably large percentages of their endowments to the public good, explaining these decisions as a result of their expectations that other people would make similar contributions, their trust in other people, and their generosity toward those in need. They also interpreted their behavior in the context of cultural norms of reciprocity, altruism, and a willingness to contribute individual effort and resources to collective institutions and common endeavors. The majority of people actually contributed more than they expected others to give,

and only a few attempted to benefit at the expense of others. Combined with data from postgame interviews, these results support the notion underlying my first prediction: contributions in economic games increase along with the importance of cooperation in people's everyday lives. If people in Kamchatka's rural villages experience higher levels of ecological and economic uncertainty—increasing levels of interdependence among them—these conditions may lead to higher levels of cooperation than those found in other places where public goods games have been played. This possibility could be explored further through cross-cultural studies that quantify levels of environmental change, shocks to economic production, and interdependence, and then combine these data with measures of cooperation from economic games.

Although I initially expected the explicit connection between the structure of the experiment and post-Soviet collectives to increase contributions in the framed games, the opposite occurred. Despite the positive sentiments inspired by these connections and expressed in postgame interviews, statistical analysis shows that average contributions were slightly lower in framed versions of the game. The regression models predict that when other factors are held constant, people in framed games contribute 24–28 rubles less from their 200 ruble endowment than people in standard games (table 2). Because most of the people who contributed less than 200 rubles to the group explained their decisions in broader terms as “insurance” against “risk”—rather than explicitly associating the game with negative feelings about collective institutions—the motive underlying lower contributions in framed games may be more subconscious than conscious. Moreover, my statistical analysis suggests that this framing effect may actually follow from a second, subtler framing effect: the interaction between frame and expectations.

Framing the game to refer to collective institutions may have led people to adopt a strategy of conditional cooperation, contributing as much as they expected others to contribute to the public good or slightly more. The standard version presented participants with an abstract social dilemma and little information to guide them, so they appeared to draw upon cultural norms and values of altruism and favor strategies of unconditional cooperation. In this context, they expected that the majority would contribute to the public good and excused those who did not as worthy beneficiaries of altruism. In contrast, the framed versions may have inspired connections to contexts of cooperation in collective institutions past and present, including instances when these institutions succeeded or failed to reward the efforts of their members. Replicating this framing effect in other villages in Kamchatka or elsewhere in Siberia would increase confidence in this interpretation. But the evidence presented here suggests that people's responses to the cooperative dilemmas posed by standard versions of the public goods games can be altered by framing the games in ways that evoke their lived experiences and existing cooperative relationships. Considering the

tenuous existence of collectives in the post-Soviet era, it may be tempting for some to see the lower contributions in the framed versions as an indictment of these institutions. Instead, I would emphasize the fact that average contributions in versions of the game framed to refer to the *sovkhoz* and the *obshchina* remain much higher than all places where the public goods game has been played previously.

In these experiments, putting cooperation in context affected people's contributions by altering the relationship between their level of cooperation and the extent to which they expected others to do the same. This suggests that researchers using economic games may learn more about the factors influencing the emergence and stability of cooperative behavior by devoting greater attention to the relationship between contributions and expectations. Theories of cooperation often implicitly assume this relationship when positing different individual strategies; however, few experiments using economic games have attempted to document this relationship and analyze the factors that influence it (Croson 2007; Dawes, McTavish, and Shaklee 1977; Fischbacher and Gächter 2010; Henrich and Smith 2004). Without data on both expectations and contributions, it can be difficult to identify the strategies adopted by participants in economic games, a necessary step to test fully theories of cooperation. For example, an individual who contributes nothing to the group in a public goods game may do so simply because he or she does not expect others to contribute either. While this strategy is not necessarily cooperative, it is not necessarily selfish. Such conditional cooperators are very different from both a classic free rider—who does not contribute in order to take advantage of the expected contributions of others—as well as an indiscriminate altruist—who cooperates unconditionally, regardless of expectations about how much others will cooperate. These two extremes reflect the only strategies that are entirely uninfluenced by an individual's expectations of other players. While some individuals may pursue these extreme strategies, many others are likely to fall somewhere in between, either contributing as much as they expect others to contribute or erring to the side of generosity or the side of selfishness.

When plotted on a simple diagram, the relationship between expectations and contributions allows researchers to identify patterns of behavior that constitute this middle ground in a given place and then to analyze what factors shape individual strategies (fig. 2*d*). A few studies have used this relationship to classify or "type" individual strategies (Fischbacher, Gächter, and Fehr 2001; Kurzban and Hauser 2005; Rustagi, Engel, and Kosfeld 2010) and compare the relative distribution of strategies cross-culturally (Herrmann and Thöni 2009; Kocher et al. 2008). Together, these studies suggest that strategies of conditional cooperation predominate in a variety of contexts but are also accompanied by strategies biased toward generosity or selfishness in proportions that vary from one place to the next in ways that are poorly understood. Ethnographers can make unique contributions to illuminating this important question.

People's assessments of the costs and benefits of their actions, as well as the actions of others, are clearly influenced by cultural values, norms, and institutions. One way to begin to identify and understand these influences is by designing research that explores framing effects, or combines experimental and ethnographic data in other creative ways (Barr and Genicot 2008; Cardenas 2003; Cronk, Gerkey, and Irons 2009; Lesorogol 2005; Macfarlan and Quinlan 2008; Rucas et al. 2010; Tucker 2012; Wiessner 2009). A major challenge of studying the cultural norms and values associated with cooperative behavior is that researchers may not share the same understandings of key concepts such as altruism, reciprocity, deception, and free riding with the people who participate in their studies. Economic games provide a concrete event, with shared rules and structure that both researcher and participant can draw upon when seeking to understand one another. My understanding of people's ideas about cooperation in Kamchatka was significantly enhanced by the opportunity to refer back to the game when explaining my thoughts and posing my questions. The participants in my research made similar use of the games while trying to help me understand the important role that cooperation plays in defining their identities and ensuring that they survive and thrive.

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Comments

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Drew Gerkey invited the inhabitants of two villages in Kamchatka to participate in a public goods game (PGG). Seventy villagers chose to participate. To 23 of these, the PGG was explained using only abstract terms, while to the other 47 it was explained with reference to one of two types of locally functioning cooperatives. Gerkey reports levels of contribution in the PGG that are very high in comparison to levels recorded during similar PGGs conducted elsewhere. He also reports that, contrary to his prediction, contributions were lower in the framed as compared to the abstract versions of the game and that participants appeared to condition their contributions on their expectations of others' contributions in the framed but not in the abstract version. Finally, he presents a series of quotes drawn from postgame interviews with the villagers. These indicate that the villagers understood the game, that their characterizations of the PGG concur well with those of social scientists, and that they saw similarities between the PGG and aspects of their everyday lives. The importance of trust in both everyday life and as a support for cooperation within the game received considerable attention. However, the quotes also reveal that the villagers viewed the money given to them to play the PGG as windfalls and, thus, different from earned money.

I found the paper enjoyable and thought provoking, and I hope that Gerkey will continue to pursue this line of research. Much of the qualitative work does indeed suggest that the PGGs may have had some external validity. However, given the villagers' perception of the money used in the games as windfall, potential external validity may be limited. Also, it is important to remember that external validity is not only about the way participants perceive experiments. External validity refers to the extent to which we can draw inferences about the way people behave in everyday life from the data generated by the experiment.

The quantitative findings are sufficiently thought provoking to warrant further investigation but are problematic as a basis for drawing conclusions. I am particularly reluctant to accept Gerkey's conclusion that the high level of PGG contributions by the Kamchatka villagers is owing to their cooperativeness in everyday life. This is because there are at least two possible confounds that have yet to be considered. First, the participants self-selected into the experiment after being invited by an outsider with an expressed interest in cooperation and sharing. The less cooperative may have chosen to stay away. Second, the participants, as well as suspecting that their decisions would eventually be found out by their fellow villagers,

may have moderated their behavior because they were being observed by this same outsider.

Second, while I accept that the contributions were significantly lower and significantly more correlated with the participants' expectations in the framed version, the sample sizes are very small. The significant coefficient on the expectations variable under the framed version of the game is driven by 13 people's decisions, 6 of whom appear to be strict conditional cooperators and 6 of whom appear to condition their contributions to some extent. My concerns about sample size are compounded by the self-section mentioned above. This notwithstanding, I do think that these results are sufficiently interesting to warrant further investigation.

Figure 2*b* reveals one other regularity in the data that is not reflected in the text of the paper. The participants dramatically underestimated the cooperativeness of their neighbors. This suggests a degree of distrust, which is not inconsistent with the quotes, as the latter tend to refer to the importance of rather than the level of trust. However, it does raise questions about what was really going on in the PGG.

Marina may have been onto something when she said "And now the *sovkhos* has fallen, and people understand. They would like it to recover, and for that reason, they contributed everything." I wonder whether the recent changes in the post-Soviet collective institutions are perceived as failures or declines in cooperation by the villagers. This might explain the negative framing effect and the mismatch between expected and actual contributions. Anyone who shares Marina's sentiment could have seen the PGG as an opportunity to signal dissatisfaction with the decline in cooperativeness and a desire to play a part in its regeneration. Of course this is all speculation, but it is not inconsistent with Gerkey's findings to date.

Looking ahead, it would be interesting to try and replicate the results based on a larger and representative sample. To explore external validity, one could (1) explore correlations between PGG contributions and village-level changes in the post-Soviet collective institutions and (2) get participants to work for the money that they then go on to use in the PGG to see whether contributions out of earned and windfall money differ.

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Cultural Norms: Transmitted Behaviors or Adaptive Responses?

The target article provides a unique perspective on the methodology of economic games and demonstrates, once again, that economic games are far from ecologically valid. Beyond

this welcome methodological discussion, it also sheds new light on the origins of cultural variations and on the workings of human cooperation. In recent years, many scholars have assumed that cultural differences necessarily reflect the existence of culturally selected behaviors that are adaptive at the group level (Boyd and Richerson 2009; Henrich et al. 2004). Individuals in industrialized societies would display a higher level of fairness because fairness is a useful adaptation for large-scale societies (Henrich et al. 2010). Another possibility, however, is that cultural differences simply reflect adaptive responses to different environments (Baumard, André, and Sperber 2013; Delton et al. 2010). According to this possibility, individuals would behave differently because they face different constraints that require different responses.

There is thus a debate between cultural group selection approaches and approaches based on individual's evolved psychology, and the two main conclusions of the target article are more in line with the latter than the former. First, the high level of cooperation observed in Kamchatka seems to be accounted for by the adaptive response to ecological parameters such as perception of confidentiality, attitude toward risk, importance of money in the environment, and expectations regarding others' contributions. Indeed, all these parameters are compatible with (and actually follow directly from) the idea that cooperation has evolved by partner choice and requires people to carefully choose their partners, monitor their reputation, assess others' reputations, balance the benefits of cooperation with the risk of being exploited, and so forth (André and Baumard 2011; Bateson, Nettle, and Roberts 2006; Haley and Fessler 2005; Kurzban et al. 2001).

Second, the adverse effect of framing observed on participants' contributions appears at odds with cultural group selection. Indeed, if anything, explicit framing referring to cooperative institutions such as *sovkhos* and *obshchina* should reinforce cooperation. Of course, it is possible to accommodate this fact with group selection by making the hypothesis that some participants may associate *sovkhos* and *obshchina* with bad levels of cooperation. However, interviews suggest otherwise: people seem nostalgic from the Soviet Union and associate *sovkhos* with high levels of cooperation.

By contrast, the lower level of cooperation observed in framing conditions may fit with the adapted response hypothesis. Indeed, according to this theory, there is an important difference between small-scale cooperative behaviors that are spontaneously produced by our evolved psychology and large-scale cooperative behaviors that rely not only on human evolved psychology but also on institutions, punishments, and rewards (Baumard, Boyer, and Sperber 2010; Ostrom 1990). Thus, while sharing food, letting one's hunting cabin opened, or taking care of a drunkard belongs to small-scale cooperation, cooperation within *sovkhos* and *obshchina* are clearly sustained by incentives (goods, salaries) and punishments (fines, exclusion). In other words, small-scale cooperation is sustained by intrinsic motivation (morality) while

large-scale cooperation is sustained by extrinsic motivation (reward and punishment).

The existence of reward and punishment in a particular setting is crucial to understand people's psychology. Indeed, recent studies show that rewards and punishments tend to crowd out people's intrinsic motivation (for reviews, see Bowles 2008; Frey and Jegen 2001). Since cooperation is enforced by punishment or reward, people feel that contributing to the common good is not a matter of duty but rather a matter of personal preference. In a classic study in an Israeli day-care facility, for instance, Gneezy and Rustichini (2000) showed that the implementation of a fine on parents who pick up their child late actually decreased parents' moral motivation to arrive on time and reinforced the idea that there was no moral duty to arrive on time. Similarly, in a public good game modeling the tragedy of the commons, Cardenas, Stranlund, and Willis (2000) found that regulating participants' behavior by fining the cheaters actually reduced everyone's willingness to spontaneously cooperate with others. Falkinger et al. (2000) found that participants who experience an incentive system that is eventually removed tend to cooperate less than participants who were never exposed such an incitation system.

In light of the literature, it might be the case that participants in Kamchatka cooperate less in the framing conditions because *sovkhos* and *obshchina* are situations in which one only cooperates to the extent that it is individually profitable and extrinsically rewarded. If this is true, it would confirm the idea that the kind of small-scale cooperative behaviors observed in economic games is influenced by ecological parameters rather than by transmitted norms.

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Gerkey wants to "understand how people in Kamchatka thought about cooperative relationships," and for this he combined ethnographic, experimental, and statistical tools. The depth of the material presented in the article, coming from his fascinating doctoral dissertation, allowed him to discuss the still-open question about the parallels between economic experiments and the reality of the people participating in them. The value therefore is in both the understanding of social dilemmas in rural societies in the post-Soviet era and in using multiple methods to study reality in general. Readers of one of the latest works by the late Elinor Ostrom, *Working Together* (Poteete, Janssen, and Ostrom 2010) would find in this effort by Gerkey a perfect example of their invitation to combine methods to better understand the problem of collective action. I will focus my commentary, however, on the experimental component of the project.

A central question is on how the framing of a public goods

(PG) experiment might influence participants' choices. Although framing effects have been studied in the behavioral and experimental sciences for decades, it remains interesting. In this case, the framing is central to the very nature of the context in which people in Kamchatka live. Gerkey chose to test an unframed design of a PG game against two types of institutions that have governed production and are familiar to his participants, the *sovkhoz* (state farm), and the *obshchina* (community). The first interesting result is that the cooperation rates are quite high, regardless of the treatment, although comparisons need to be made with caution. In particular, we should be aware that the ratio of the returns from cooperation and the returns from free riding here are rather high, since groups were of only four people who knew themselves quite well, and contributions to the public fund were doubled and distributed equally (marginal per capita return = 0.5). Even more interesting, although not discussed in much detail, is the fact that expectations were lower, on average, than actual contributions.

Although I recognize from firsthand experience the effort required to conduct a field operation like this one, one should be alert that the small sample of 70 participants limits the statistical possibilities. By sampling people in two villages, Khalino and Vyvenka, and only the former with reindeer herding economic activity, and by testing the three framings, such a small sample would limit the possibility of explaining the variability of the individual data on the common-resource problem (reindeer or salmon), the location, or the institution. The regression analysis does provide some clues, but these results still invite more discussion.

The article does highlight the puzzle of why it was the unframed game that showed greater cooperation levels than the state farm, and in the lower level the community one suggested one should expect the opposite. One possible explanation is the actual decay of the Soviet-era institutions that led to a belief that community-based production would fall into the trap of free riding, and with the experiment framings of the *sovkhoz* or the *obshchina*, they were cued from experimenters coming from Western societies with market and private property rights. Here all three framings have the exact same material incentives, and with a between-subjects design different groups faced different framings. Therefore, any significant difference could be explained in part by the framing, which affects other nonmaterial incentives. This reminded me of an experimental study conducted by Ockenfels and Weimann (1999) at the right historic moment in the recently reunified Germany. They sampled a set of students who grew up in each side of the Berlin wall. Those from the east Berlin area were less cooperative and had less solidarity than their counterparts in the West. The authors, in fact, revisited their study 20 years later and continued to find the same gap (Brosig et al. 2011). Their design allowed them to have a better counterfactual, the west Germany students, whereas in the Kamchatka case there is not necessarily one. Maybe the detailed ethnographic work conducted by Gerkey and a com-

parison of the interviews with people across the different treatments or framings could show some clues on how the institutions of production in the Soviet era shaped preferences for these people. The study of social norms in communities depending on natural resources and the interactions between endogenous community dynamics and state-based institutions continue to puzzle experimental research (Cardenas 2011).

One more question remains for discussion. Does this framing effect help solve the question of external validity or not? It is hard to tell but worth discussing. The slim difference between the state farm and the community framing opens more questions than answers. These are very different types of institutions, the former being more top-down and the latter bottom-up in terms of how the rules and management were built and implemented, and yet the experimental behavior was quite similar, in both cases showing high levels of cooperation.

Endeavors like Gerkey's should continue in the social and behavioral sciences. Anthropologists with their tools have contributed enormously and have joined other disciplines in looking for answers to the puzzle of social dilemmas.

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What Can't Be Inferred from Cross-Cultural Experimental Games

People will use, in order to make sense of experimental games, their past history of interactions and their cultural knowledge of similar social situations (Heintz and Bardsley 2010). Ethnographers running experimental games have reported that subjects draw analogies with their day-to-day lives in order to make better sense of the experimental games. They use these analogies for understanding what kind of behavior is expected and to predict their partners' decisions. Drawing on cultural information is, from the subjects' point of view, necessary because the information needed to determine what is the right, fair, or estimable choice is not fully provided by the game, and it is only partially inferred by our intuitions of fairness (Baumard, André, and Sperber 2013). What is the *right* amount of money to transfer so as be fair, praiseworthy, or estimable? The rather "weird" experiments need to be interpreted (Baumard and Sperber 2010), and people do that by drawing on their social experience. The consequence is that people from different cultures will interpret the experimental game they play differently; they will form different beliefs about what their partners will play and expect. Let us call the consequent variation in the decisions taken the "cultural framing effects." There is a framing effect when one

obtains statistically different results from psychological experiments that differ only in the way the instructions are presented to the subjects or in the setting of the experiment but not in the cost-benefit structures. Framing effects signal that the decision-making process is sensitive to frame. Thus, the very same person would make different decisions if presented with one frame or another. Let us call “cultural frame” the set of information or cues that are found outside of the experiment but upon which subjects draw inferences for taking their decisions in the experiment. In analogy with framing effects, cultural framing effect denotes the variations that are caused by changing the cultural frame but keeping constant the subjects’ psychological makeup (including their social preferences) and the monetary stakes. The cross-cultural variation obtained in experimental games can result either from cultural framing effects or from cultural differences in the personality of the subjects.

There are very good reasons to think that there are cultural framing effects: Gerkey’s experiments or Cronk’s (2007) provide evidence that all humans, across cultures, are sensitive to frames, and the first paragraph of this commentary presents good reasons to think that this sensitivity extends to cultural frames. But if cross-cultural variation of experimental games’ results can be accounted for in terms of cultural framing effects, then they do not provide evidence that there are cultural variations in the personality of the subjects with regard to prosociality. The null hypothesis that people have similar propensities to trust, be generous, and cooperate across cultures is not proven false. In particular, Gerkey’s results do not demonstrate that people from Kamchatka are intrinsically more generous than others. When asked why they have been generous, subjects of Gerkey’s experiments answered that it is just the way they are. The post hoc aspect of the interviews together with the fundamental attribution error makes their answer unsurprising. It should not lead social scientists to make the same error and ascribe their behavior to personality traits rather than to the external conditions causing cultural framing effects.

With this in mind, what is the value of the external validity that Gerkey has assessed? Gerkey shows that he obtained externally valid data: there is a similarity between behavior in the experiments and behavior in some standard social context of Kamchatka. This, however, is of interest only if it forms a basis for externally valid theories—theories that, explaining behavior in the lab, are sufficiently powerful to also explain behavior in the field. Gerkey’s paper shows that ethnographic data can help explaining laboratory data but not the reverse. Ethnography can help explaining decisions in the lab because subjects of experiments use their cultural knowledge for inferring information that they deem relevant for playing experimental games. The reverse, data on behavior in labs helping to explain variations of cooperative behavior across cultures, would be obtained if game experiments would reveal that people from Kamchatka (or some other culture) are more inclined to cooperate. This inclination could then be hy-

pothesized to results from internalized cultural norms and be the cause of more cooperation in day-to-day life. But this line of reasoning is flawed: Kamchatka’s higher contribution can be due to cultural framing effects rather than stronger propensities to be generous that carry over across conditions—from the lab to all sorts of conditions in natural settings.

Another line of reasoning might provide explanatory value to cross-cultural variation of behaviors in experimental games. If this variation is understood as cultural framing effects, then one can hypothesize that cultures with high contributions in experimental games include more or stronger prosocial norms, which frame the experiment. Cultural framing effects thus provide information about norms of cooperation in diverse cultures. However, even this modest information should not be overestimated: First, the framing norms can be related to specific types of interactions (such as “pay your tram ticket”) rather than general norms of interactions (such as “be generous”). They might indicate the type of interactions there are, but not, if there is such a thing, a general level of cooperation. In particular, higher contributions in experimental games might result from cultural frames made of norms regulating exchange with anonymous individuals, as is common in Western industrialized societies. Second, the existence of norms says little about why people come to abide by the norms. In particular, the framing norms need not be internalized values; it is sufficient that they are known for them to have framing effects. This is what Cronk and Wasieleski’s experiment demonstrates: US Americans, after only reading about an unfamiliar norm regulating giving—the Osetua of the Masai—are subject to framing effects (Cronk and Wasieleski 2008). The Osetua norm was not internalized, and it most probably did not change the social behavior of the subjects once out of the lab, yet it nonetheless acted as a factor of decision in the experimental game. This suggests that cross-cultural variations in experimental games result more from efforts to coordinate on mutually satisfactory outcomes, which depend on what others will do and what they will expect from their partners, than from variations in prosocial dispositions.

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The target article is a welcome case study of the cooperative behavior of a population from the Russian Far East. The key results are (a) Kamchatkans gave significantly more in the public goods game than typically found elsewhere in the world and (b) how the game was framed significantly affected performance in the game. Of the former result, Gerkey states that the fishing and reindeer herding modes of subsistence

“compel individuals to work together to harvest from common-pool resources.” Of the latter result, it may be the case that Kamchatkans have negative associations with collectivized institutions. While Gerkey makes a compelling case, there are a number of questions that need to be addressed. One immediate difficulty of the interpretation that Kamchatkans are more cooperative than others is that we have little in the way of a direct comparative analysis. Of course, such a comparison is impossible until a larger, cross-cultural database is developed, and hopefully Gerkey’s results will help stimulate its development. However, until one exists, Gerkey’s arguments would be more compelling if he were able to demonstrate that Kamchatkans value and/or require cooperation more than others. Follow-up studies would be served well by accounting for variation in individuals’ evaluation of collective endeavors. It remains unclear why the Soviet-inspired frames elicited, on average, significantly lower contributions.

Importantly, one-shot and the initial round in public goods games often elicit high contributions, and in some cases the proportion of the contribution can be quite high depending on the design. For example, Cadsby and Maynes detail that in the first round of a threshold public goods game, participants contributed just over 80% of their total initial endowment (1998:617). In another case, using American undergraduate students, Brown-Kruse and Hummels (1993) report that male contributions in initial rounds in all or nothing trials of low value (US\$1.00) consistently contributed 93.8% across various treatments, with subsequently decreasing contributions. Interestingly, the other Russian groups detailed in table 1 in the target article contribute far less on average than in the present study. As such, case studies with similar conditions are necessary to gauge confidence in the results.

Could it be the case that Kamchatkans were concerned about what the experiment said about them as individuals? This seems apparent in some of the ethnographic quotes Gerkey offers. Therefore, it may be that increased trust borne out by the economy there is not driving the results as much as the economy is driving attempts to appear willing to engage in such risks. For instance, Alexandr’s sentiments that “risk . . . is a noble act” suggests this might be the case insofar as engaging in costly risks is a reliable indicator of commitment to the group when framed in the context of a group. What motivates people in such contexts may be this motivation to be reliably perceived of as committed rather than merely the fear of repercussions, as indicated by Anna’s concern of others’ perceptions. Could such passages express a disregard for the anonymous character of the design?

Given the research setting, it was probably very difficult to get a random sample. The methods of recruitment may have had something to do with the difference in participation between the sexes. If participants arrived together and these participants effectively recruited each other by word of mouth, then the perceived probability that one plays with one’s close friend or relative may be increased even though the assignment was randomized. Anna, for example, speculates that the

higher contributions may have something to do with the lack of anonymity between individuals in the community. If Anna elicited such an interpretation, it may have been the case that she was readily aware of the fact that close relations participated in the study.

Considering that the *sovkhoz* and *obshchina* treatments’ modal contributions were 100% (indicative of a ceiling effect), what needs to be explained is the handful of individuals who gave less in these conditions, as Gerkey rightly suggests. There might be a few ways to do this with the current data set. Were age and sex evenly distributed across treatments? While sex appears to show no overall effects in the present study, there are strong indications that females coordinate better in such games (see Brown-Kruse and Hummels 1993; Cadsby and Maynes 1998; Cox and Deck 2006; Nowell and Tinkler 1994). In future studies, a scale designed to account for variation of the reception of Soviet institutions would be important to include. Nevertheless, the study demonstrates that such framing effects are important and deserve careful consideration in future designs.⁷

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I applaud the author for this delightful, creative, and rich contribution to the literature on sociality and economic games. In this brief note I contemplate what the qualitative, ethnographic data have to say about the quantitative results of the game. I argue that Gerkey’s major success is a rich ethnographic understanding of people’s lived, social experiences. But what is less clear is whether the ethnographic data “validates” the experimental methodology. By validation I do not mean to question the whole enterprise of experiments. I mean validation as it is used in survey research; do we understand what the results of the experiments tell us? Some previous attention has been paid to the external validity of games, that is, whether they predict actual behavior (Gurven and Winking 2008; Smith 2005; Wiessner 2009). Here I contemplate internal validity. Do experimental games measure the same thing (presumably prosocial norms) in the same way across societies? Or do different societies, or different members within the society, understand and play such games in qualitatively different ways? Finally, I ask whether prosocial norms are cognitively accessible, whether we should expect our informants to be capable of reporting accurately why they made generous offers in an experiment, or does the researcher

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hazard recording popular idealized narratives of behaviors that ought to exist?

Gerkey found that people in Kamchatka made exceptionally high offers in the public goods game compared to studies from elsewhere in the world, and players explained their own play by describing strong norms of generosity that patterned their expectations that other players would be generous. On the face of it this would seem to suggest that game play is a faithful match to prosocial norms and behavior.

Statements like Anna's, who insisted that the game was parallel to real life social situations, suggest that the experiment has high "face validity," meaning that the exercise has the same meaning for the research participants as for the researcher. But not everyone saw the game as Anna did. A few card sharks saw the exercise as akin to other recreational games in which the point is to win (Nadia). Other low offers were explained as resulting from personal need for cash, or from low expectations that others will contribute. As Gerkey points out, while all low offers are analytically consistent with a free-riding strategy, none of these explanations is consistent with free riding *in intent*. So we have multiple reasons why people make low or high offers: generalized prosocial norms (Anna), individual risk-seeking strategy to win the game (Nadia), risk-averse strategies to protect oneself when expectations of others' generosity are low, and personal need.

Thus, it is not clear that the PGG and other games measures a single underlying "thing" so as to permit direct cross-cultural quantitative comparison. While some of the cross-cultural differences in an ultimatum game offers and rejection rates are probably due to different prosocial norms (Gächter and Hermann 2009; Henrich et al. 2005), some of this variation could be due to cultural and individual differences in face validity. Some participants see the exercise as an abstract game they should try to win, others as a generalized social simulation, others as a chance to gain some much needed cash, and others as a simulation of a familiar cultural institution.

Should we expect players to be able to explain their choices? Many scholars of judgment and decision making are skeptical about "self-report data" (Bertrand and Mullainathan 2001; Chandon, Morwitz, and Reinartz 2005; Nisbett and Ross 1980:202–210; Nisbett and Wilson 1977). Ask someone why she drove versus taking the train, or voted Democrat versus Republican, and your informant is likely to present a reasonable argument, but this argument does not necessarily correspond to actual behavior. One often repeats popular, public narratives (gas is too expensive, or I don't want higher taxes). The Mikea hunter-gatherer-farmers of southwestern Madagascar that I study are very proud of how generous they are, yet in practice, Mikea men and women often go out of their way to avoid obligations to share food (Tucker 2004). So too much face validity, or too transparent an exercise, may result in people playing to type to demonstrate their allegiance to popular ideals, rather than behaving as they might in real life.

Gerkey quite successfully uses the games to generate fascinating discussion among his informants about sociality and cooperation. His use of games resembles the strategy employed in participatory methods. For example, in participatory mapping, the primary data is the discussion generated from the mapping exercise, rather than the map itself (Chambers 1994).

I applaud Gerkey for combining experimental and ethnographic methods. While the uneven fit between the two forms of data leads to questions of validity, asking such questions is itself a significant step forward. Answering such questions will likely entail further cross-referencing results from experiments, ethnography, and behavioral observation.

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It is an exciting time to be an anthropologist. Many of our colleagues in economics, psychology, political science, and other fields now share (or are at least willing to entertain) our view of economic behaviors as deeply embedded in social systems and cultural meanings. Together, we are working to develop an understanding of the ways in which various social factors—such as cultural norms, social learning, and communication—shape economic decision making.

Experimental economics provides an important set of tools that facilitate rigorous, cross-cultural explorations of these questions. Gerkey's study follows anthropologists, such as Lee Cronk, Carolyn Lesorogol, and Jean Ensminger, who pioneered the "cultural framing" approach to economic experiments. One advantage of this approach is that it helps us demonstrate how cultural institutions (i.e., rules and norms) cause people's behavior to deviate from the predictions of neoclassical economics. Gerkey's results are certainly a striking example of this: he finds that people in Kamchatka, Russia, have the highest average level of contributions ever documented in a public goods game. Gerkey's findings—and the fact that the second-highest level of public goods game contributions was found in Vietnam—seem to suggest that the legacy of communist institutions may be somehow shaping these cooperative economic behaviors. Gerkey anticipates this, designed his experiments to test it, and comes up with some rather unexpected results.

The fascinating puzzle posed by Gerkey's work is not just that people in Kamchatka played the game so much more cooperatively than anywhere else in the world but that they were actually less cooperative when the games were framed as local collective institutions, the *sovkhos* and *obshchina*. To explore this, Gerkey pairs his experiments with in-depth ethnographic and narrative analysis designed to uncover why the *sovkhos* and *obshchina* might inspire less cooperation than the

unframed public goods game. Based on this analysis, he argues that the unique ecological and political-economic characteristics of life in Kamchatka—including extreme climate, subsistence livelihoods, and social isolation—compel people to form cooperative relationships in order to survive. Further, he suggests that Kamchatka residents' past disappointments with failed collective institutions made them less likely to behave cooperatively when presented with the cultural frames.

Gerkey's paper thus brings together two often separate streams of anthropological thinking—one interested in examining macro-level political and economic transformations and another focused on predicting economic behavior at an individual level—in novel ways. In the Kamchatka case, Gerkey argues, collective institutions are well-suited to improve survival outcomes, but locals' historic inability to protect such institutions from outside manipulation and exploitation undermines their willingness to invest in them. This is, in some ways, the flip side of the arguments made so persuasively by Elinor Ostrom, Steve Lansing, Paul Trawick, and others: that self-governed societies can develop collective institutions to sustainably manage scarce resources. Gerkey's work demonstrates that, even when communities possess the knowledge, skill, and commitment to design and maintain such institutions, they cannot do so if their attempts at self-governance are constantly undermined by the political and economic powers shaping the broader society.

Gerkey's work thus hints at some new answers to a question of general and long-standing interest: under what conditions do cultural institutions actually improve humans' ability to manage resources? Gerkey's findings demonstrate how the political-economic conditions driving privatization in post-Soviet Russia play against local socioecological factors that encourage cooperation in Kamchatka. As we engage in larger conversations—beyond the confines of anthropology—about the social and cultural factors that shape economic behavior, Gerkey's work provides a model for navigating the complexities of a holistic approach to understanding human culture. In a recent paper (Anderies et al. 2011), my colleagues and I discussed methodological approaches to studying social context in lab and field experiments; as we argue, this is a domain of research with great potential for making innovative and novel contributions. We have a long way to go before we can fully answer the challenges of rational choice theorists and others who question anthropological understandings of economic behavior, but more of this kind of work—scholarship that harnesses the strengths of our different approaches to understanding economic behavior—will move us closer.

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What better place to study cooperation than Siberia? Prince Petr Kropotkin (1842–1921), author of *Mutual Aid: A Factor in Evolution* (1904 [1902]), argued that cooperation was *the* creative factor in evolution. Gerkey's contribution carries on this tradition in some respects with new arguments and new data about the development of cooperative institutions. In particular, the idea that framing effects are more than simply cultural epiphenomena but are the result of real social interdependence among community members, arguing for the external validity of experimental technique, has broad implications for the inclusion of such experiments in the ethnographer's tool kit. I know from my own use of economic games in northern Siberia as part of the study by Henrich et al. (2006, 2010), community members greatly enjoyed participating in economic games because no one walks away a loser.

"Cooperation in Context" argues that the history of community economic institutions in the Kamchatka region from early Soviet through to the modern-day periods influences game behavior. The manipulation of one variable in the script of the game (generic vs. *obshchina* vs. state farm) "framed" the purpose of a group fund in which respondents were ostensibly investing. With this experimental manipulation Gerkey discovered that indigenous Kamchatkan's view of the Soviet period as a "golden age" is more than simple perception.

While the process of organization of indigenous Siberians, first with voluntary associations, then collectives and state farms, is unitary across Siberia, what is not well understood is the diversity of present-day outcomes in the post-Soviet period. The application of game theory-based experiments helps contextualize why post-Soviet collective institutions, namely the *obshchina*, are not as successful as their state-owned predecessors or the success of a small business in the West: the level of trust in these intuitions is lower than that of the now defunct State farms (*sovkhoz*).

In addition to the game theory-based experiments, Gerkey gathered significant information on food-sharing connections in order to assess the external validity of the economic games, comparing the experimental measures of cooperation with data on food sharing. The issue of external validity is important to the application of game theory-based experiments, because the experiments are comparatively "content-free," which makes them useful across social and cultural contexts.

"Cooperation in Context" provides a unique study of the emergence and stability of cooperation and collective action among indigenous salmon fishers and reindeer herders in Kamchatka, Russia. Gerkey's article strikes a nice balance between empirical data and the ethnographic work that helps to explain the data, something ethnographers of northeastern Asia and postsocialism will recognize. These research topics are of general theoretical interest to anthropologists in human behavioral ecology and economic anthropology, as well as to institutional economists, and this research helps put anthropology on the radar screen of scholars in related fields.

The article does a great job of analysis of the game results,

particularly describing individual strategies in terms of their contributions and expectations of others in the games. The article does not delve into the individual demographic and behavioral variables that may explain some of the variation in the game behavior. Including analysis of individual-level variables would have linked this research with other cross-cultural economic experiments looking into factors of within- and between-group variation. Cultural framing has obvious effects, but underlying those effects are factors that likely cross-cut cultural scenarios. For example, Ziker (forthcoming) found that individual variables, such as household size, material wealth, monetary income, and attendance at religious services, and game variables, such as the number of examples needed by participants until they understood the game, had effects on player 1 offers and player 2 minimal acceptable offers in the dictator game and ultimatum game, respectively. Some of these variables were also found to influence game results in the other studies in the Henrich et al. (2006, 2010) studies. In addition, PGGs conducted in Boise, Idaho, with two random samples of adults (Wampler et al. 2011) showed that behaviors, such as number of volunteer organizations in which participants reported being involved, frequency of contact with local officials, and electioneering, as well as self-reported scores on a trust scale, positively affected contributions in a public goods game. "Cooperation in Context" would provide stronger support if analysis of individual demographic and quantified behavioral variables were presented alongside the interview materials.

Reply

Although research utilizing economic game experiments has grown rapidly among social scientists, this method has not often figured prominently in the ethnographer's tool kit, and many are skeptical about the value of experiments for generating the nuanced, holistic perspectives on human life we seek (Chibnik 2011). My primary goal in this article was to build on nascent research by a small group of anthropologists and economists whose innovation combines the strengths of experimental and ethnographic approaches. I hoped to address a fundamental challenge raised by their work: what methods can we use to connect data from experimental and naturally occurring contexts, and how can these connections contribute to theories of cooperation? I thank all the authors for their perceptive and engaging commentaries. Each draws on a wealth of experience integrating experiments and ethnography to share important insights on this fundamental challenge, and their research has inspired my own. My reply addresses some of their points with the goal of sustaining dialogues that stimulate future research on cooperation within anthropology, as well as across disciplines in the social sciences.

Validity

Many of the commentators raised important questions about the validity of economic games for understanding cooperation in naturally occurring contexts (Barr, Baumard, Heintz, Purzycki and Sosis, Tucker). If we want to use data from economic games to develop and test theories of cooperation, we need to understand the external validity of these experiments. As I noted, one way to assess external validity is to combine data from economic games with data on cooperation from contexts like food sharing, contributions to community projects, or commitments to institutions. This approach is crucial to integrating experimental and ethnographic approaches, but it has produced mixed results. Some studies find significant associations between contexts, others do not, and it remains unclear why.

One explanation is that our attempt to control the context for decision making in experiments creates an environment that is too abstract to elicit actions that consistently correspond to observations in naturally occurring contexts. This disconnect is captured by the concept of ecological validity, noted by Baumard and Heintz: the extent that the range of decisions, the cost-benefit structure of outcomes, and information available in experimental contexts reflects those found in naturally occurring contexts. By necessity and virtue, all experiments are abstractions, so there will always be disconnects that raise questions about ecological validity. Yet, experiments can still achieve sufficient levels of external validity without achieving high levels of ecological validity, as long as their design accurately captures fundamental dynamics of a social dilemma that connect reliably across contexts (Agar 2004a; Levitt and List 2007). We have a strong incentive to strike a balance between external and ecological validity because conducting comparative research often involves a trade-off between the two. Experiments with high ecological validity in one place may have high external validity in that place, but low ecological and external validity in another place, making comparative research more difficult. With that trade-off in mind, the primary value of investigating ecological validity is to understand what aspects of a naturally occurring social dilemma to include in the experiment in order to generate data with sufficient external validity to improve our understanding of factors influencing cooperation from one place to the next. Comparing measures of cooperation from multiple contexts may be a necessary but insufficient step in locating the proper balance between ecological and external validity.

I thank Baumard and Heintz for raising the issue of ecological validity. Their concerns help me clarify my approach to assessing external validity in this article. Building on insights from research by Ensminger, Tracer, Cronk, Lesorogol, and others, I combined standard public goods games with games "framed" to refer to post-Soviet collectives. Framing the games altered the ecological validity of the experiments in a controlled way. The standard and framed games posed identical social dilemmas from a structural perspective. How-

ever, the framed games invited people to connect the experimental context to post-Soviet collectives, rather than an abstract social dilemma that may or may not connect to naturally occurring contexts of cooperation in Kamchatka. Significant differences between standard and framed games could provide clues about factors that affect the external validity of the public goods games in Kamchatka. These factors could be sufficiently general to guide further research beyond Kamchatka. While approaches combining measures of cooperation in experimental and naturally occurring contexts remain important for assessing external validity, approaches investigating framing effects help us identify what specific dimensions of social dilemmas need to be incorporated into experiments in order to maintain external validity and generate data useful for testing theories of cooperation. The two approaches are complementary.

Framing Effects

Many commentators focused on assessing the methodological rigor and theoretical significance of high contributions in Kamchatka relative to studies in other places. However, the strength of this project's design lies in the ability to compare standard and framed public goods games in Kamchatka, where issues of internal validity like self-selection (Barr, Purzycki and Sosis) are unlikely to apply because people were randomly assigned to either a standard or framed version. My article describes two framing effects relevant for understanding the external validity of public goods games in Kamchatka. First, average contributions in framed games were slightly but significantly lower than in standard games. Second, the relationship between an individual's contribution and expectations differs between standard and framed games. In framed games, a significant number of people chose strategies of conditional cooperation—contributing as much or slightly more than they expected others to give—though many people still chose generous strategies. I suggest this second framing effect may actually explain the first. Contributions in framed games are lower because a significant number of people responded to the contextual cues linking the social dilemma of the experiment to social dilemmas in post-Soviet collectives, adopted a conditional strategy relevant to that context, and contributed accordingly to the public good in the experiment. Responding to ideas raised by the commentators, I explore the implications of these results for theories of cooperation, the methods we use to test them, and the ethnography of post-Soviet collectives in Kamchatka.

Theories of Cooperation

The high contributions in Kamchatka stand out among previous studies, both within Russia and throughout the world. Because the factors underlying cross-cultural variation in economic games remain a topic of debate—and one case study is unlikely to resolve the matter—I am hesitant to offer strong generalizations about the significance of this result for theories

of cooperation. Baumard directs discussion in this direction, suggesting data from my experiments and postgame interviews more closely match predictions from evolutionary theories of cooperation emphasizing individual-level benefits (indirect reciprocity, partner choice). He also suggests the data from framed games contradict predictions from theories emphasizing group-level benefits (group selection, cultural group selection). Considering my ethnographic research on cooperation and collective action in Kamchatka, I am inclined to agree with Baumard's first conclusion but hesitant to accept his second without a caveat. I have documented the importance people place on cooperation in their daily lives, the high level of trust they have for others in the community, and their willingness to help those in need through participant observation as well as quantitative surveys of household production and food-sharing (Gerkey 2010). Both methods suggest factors like kinship, reciprocity, and reputation shape patterns of cooperation in naturally occurring contexts, consistent with theories emphasizing individual-level benefits. Although the structure of the experiments is intended to negate these factors, both my postgame interviews and recent research by others (Baumard, André, and Sperber 2013; Guala 2012, Hagen and Hammerstein 2006) suggest we need to be cautious in assuming these factors do not influence decisions, even in one-shot games intended to be anonymous or confidential.

Baumard suggests lower contributions in framed games contradict predictions from theories that emphasize group-level benefits. Post-Soviet collectives appear an appropriate setting to test theories emphasizing group-level benefits. If these collectives effectively restrict an individual's ability to achieve personal profit at the expense of the group, then framing public goods games should increase cooperation. However, closer inspection reveals that these institutions often succeed or fail to the extent the collectives enable members to build and maintain their own social networks, creating a complex balance between individual incentives and common benefits (Konstantinov 2002; Vladimirova 2006). These networks overlap imperfectly within collectives and extend beyond their boundaries, suggesting the appropriate arena for investigating group-level benefits may not be the collectives but the networks they sustain.

Perhaps debates over the relative role of individual-level and group-level factors would be more productive if we focused on the different kinds of groups we expect to emerge from competing theories. The definitions of "group" incorporated in recent models of group selection and cultural group selection often depart from how that concept featured in earlier theories of group selection (Okasha 2006). How different definitions of a group relate to the networks, institutions, and social structures ethnographers study is an important line of inquiry. Whether one finds a preponderance of evidence supporting one theory or another, both approaches emphasize the importance of positive assortment among individuals who cooperate (Hamilton 1975; Henrich 2004). Different means of achieving positive assortment may

lead to the emergence of different kinds of groups, some closely resembling formal institutions like post-Soviet collectives while others approximate social networks. This approach would be interesting to pursue in tandem with Baumard's useful distinction between "intrinsic" and "extrinsic" motivations underlying cooperation. By investigating how these two kinds of motivation drive forms of positive assortment in different contexts (informal networks, formal institutions) across small and large-scale cooperation, we may more productively explore the limits of individual and group-level theories.

My analysis of framing effects provides some methodological insight on "intrinsic" and "extrinsic" motivations that is useful for these theoretical debates. The shift toward strategies of conditional cooperation in the framed games may indicate that people understood the framed game as a context where extrinsic motivations apply and the standard game as a context where intrinsic motivations apply, as Baumard implies. Our ability to document and understand this shift in strategies and motivations rests on research designs that investigate the relationship between actions and expectations. Theories of cooperation often make assumptions about both actions and expectations, but experiments with economic games rarely analyze this relationship directly, focusing almost exclusively on actions. In Kamchatka and elsewhere (Cronk 2007), the fact that different strategies arise in response to the addition of a single word to the game—as opposed to a change in the cost-benefit structure or range of potential decisions—suggests we need to be cautious when assuming that the structure of a social dilemma in an experiment will apply in straightforward ways to naturally occurring contexts. Devoting more attention to the relationship between actions and expectations may allow researchers to document the range of strategies evident in a particular place, or across contextual framings, helping us strike the right balance between ecological validity and external validity. These insights could help determine what naturally occurring contexts we should (and should not) expect to be associated with the experimental contexts of different economic games. This approach could begin with research in particular locations, extend to controlled comparisons on a regional level (as suggested by Barr, Cardenas, Purzycki and Sosis), then build to more expansive cross-cultural comparative research that investigates connections among individual demographic and economic factors (Ziker), personality (Heintz), and variations in social and ecological contexts.

Post-Soviet Collectives

Several commentators (Barr, Cardenas, Purzycki and Sosis, Wutich) reflect on the significance of framing effects for understanding people's attitudes toward post-Soviet collectives in Kamchatka. Barr asks if the struggles of these collectives are tied to declines in cooperation within them. While the collapse of government subsidies and the imperative to privatize did exacerbate existing tensions between private and

public benefits within these collectives, ethnographic research in Siberia and other parts of the former Soviet Union aligns better with Wutich's observation about connections between local institutions and macro-political and economic forces (Humphrey 1998; Verdery 1996). Wutich makes the important point that assessments of an institution's successes and failures should examine how broader social contexts of power and authority limit or undermine an institution's ability to function (Agrawal 2003). The dramatic transformations associated with Soviet collectivization and post-Soviet privatization in Kamchatka have been propelled primarily by these macro-level forces, leaving people in the villages where I work both disillusioned and nostalgic. The balance between these attitudes toward collectives varies from one person to the next, as well as across villages and regions, as Ziker knows from his work in Siberia. My sense is the lower contributions in framed games—caused by a shift toward strategies of conditional cooperation and lowered expectations—are a result of the scale tipping toward disillusionment for a small but significant number of people. Whether this effect is, in Tucker's words, "cognitively accessible" during postgame interviews is unclear, though people's statements about collectives were mostly positive. Cardenas wonders why no significant differences were found between frames that referred to *sovkhoz* and *obshchina* collectives, considering these two institutions reflect different histories and ideologies. This is a difficult question to answer conclusively. I would begin by emphasizing that each collective still struggles to gain a foothold in the post-Soviet economy. While contributions are lower in each collective frame, this effect may arise from their shared struggles, even if the nature of those struggles is unique to each collective. Most people in the villages where I work focus on how different collectives facilitate access to resources that help them build and maintain their social networks, rather than the ideologies associated with these collectives (Ziker 2003). Purzycki and Sosis suggest we develop a scale to measure how people value different collectives or expect cooperation in different contexts. Their idea is one of many interesting ways experimental and ethnographic methods could be combined to support deeper explorations of external and ecological validity, an area of research I hope will continue to grow.

Methodology: Limitations and Opportunities

Some commentators express skepticism about what qualitative interview data from postgame interviews can tell us about quantitative data from economic games (Tucker, Heintz). I share their sensitivity to distinguish between statements about behavior and measures of behavior, but I suggest the value of my interview data lies elsewhere. Had I chosen to conduct structured postgame interviews, I might have been able to discern quantifiable patterns in the responses and link these to data from public goods games. However, this approach runs the risk of precluding people's opportunities to share interpretations of the experiments and lived experiences that

my questions do not anticipate. As Tucker notes, a strength of semistructured interviews is that they can generate unexpected insights, leading to new research questions and experimental designs that more closely capture important aspects of life in Kamchatka. The idea that people in Kamchatka conceptualize low contributions as signs of need rather than selfishness is quite different from what most researchers conducting economic games would assume. We would miss this difference entirely without flexible methods for examining how people explain their own actions and evaluate the actions of others. In this respect, economic games are not so different from established ethnographic methods like surveys and interviews. Anthropologists have learned to relax and reinforce the structure of these methods to achieve different goals, whether facilitating comparative research or exploring particularities of people's lived experiences. Tucker nicely captures the potential of this approach by describing economic games as a participatory research method, and he has accomplished this in his own research (Tucker 2012). The data produced by the primary exercise facilitate a number of secondary lines of inquiry as the researcher and participants reflect on the shared experience and discuss its significance. This approach to economic games has received comparatively little attention, yet it is one anthropologists are ideally suited to explore as part of interdisciplinary collaborative efforts along the lines mentioned by Wutich and Cardenas (Anderies et al. 2011; Cronk and Leech 2013; Poteete, Janssen, and Ostrom 2010). My analysis of postgame interviews highlights issues of internal validity raised by participants—such as windfall effects and anonymity—that also concern many researchers (Barr, Cardenas, Tucker), suggesting where our perspectives converge. However, the interviews also revealed relatively novel factors—like perceptions of risk and attention to signals of need—that have not been sufficiently addressed by research with economic games. Moreover, people shared experiences in postgame interviews that would not have emerged without participating in the public goods game, making the experiment an important tool for qualitative ethnographic work, regardless of the quantitative data it produced. An abductive, iterative, and recursive approach (Agar 2004b) that combines experiments with interviews and other ethnographic methods, using the results of one to inform the other, has great potential to enhance our understanding of external and ecological validity and, in turn, to more effectively develop and test theories of cooperation.

—Drew Gerkey

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