Rational ritual: Culture, coordination, and common knowledge

(Book proposal working draft)

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Overview

This book uses a simple game theoretic argument to help understand cultural practices such as rituals, thereby connecting considerations of culture and rationality usually thought disparate. The argument goes like this: in some situations, called "coordination problems," each person wants to participate only if others participate also. To coordinate one can simply send a message, such as "Let's all participate." But since each person will participate only if others do, for the message to be successful, each person must not only know about it, each person must know that each other person knows about it. In fact, each person must know that each other person knows that each other person knows about it, and so on; that is, the message must be "common knowledge." This argument, first explicitly made by Lewis (1969), is well known to linguists, game theorists and others interested in communication. The point of this book is to show that its scope is much larger than previously realized: I argue that one crucial function of rituals is to create common knowledge and thereby allow groups to solve coordination problems. I apply this reasoning to a variety of social practices, including This book shows how common knowledge creation is a common theme linking together diverse issues, including television advertising, recent trends in mass marketing, political rallies, the architecture of ritual spaces, and the visual vocabulary of the feature film *On the Waterfront*. Two examples illustrate the flavor of the argument.

A basic question facing students of culture is how cultural practices such as rituals affect individual action. Almost all explanations of this interpret aspects of a ritual's meaning: for example, a bible is used at presidential inauguration ceremonies because we understand this as an appeal to sacred authority. But this kind of explanation cannot account for the simple fact that rituals typically have a large audience: under explanations based on transmission of meaning, each spectator would be equally affected regardless of how many spectators there are. I argue that crucial to rituals is that each audience member knows that many other people are watching: hence each person knows that each other person knows, and so forth, and common knowledge is created. Submitting to state authority is an example of a coordination problem (I will obey an authority only if I think that everyone else will also obey); hence to gain widespread support, the authority must form common knowledge. In other words, the purpose of a ritual is not only the transmission of meaning to each spectator, but the demonstration to each spectator that there are many other spectators.

It is a cliché to call the Super Bowl, the most popular regularly scheduled television program in the United States, a "ritual," but in terms of common knowledge creation this is exactly accurate. For advertisers, buying commercial time on the Super Bowl is extremely expensive, even per viewer: a slot on the Super Bowl reaches roughly five times as many people as a typical prime time sitcom, but costs roughly ten times as much. In other words, if Super Bowl advertisers simply wanted to reach a large number of people, they could do so at half the cost with other programs. I argue that the Super Bowl is able to charge such high rates because it does an excellent job at creating common knowledge: when a person sees an advertisement on the Super Bowl, he knows that many other people see it also. This argument is supported by evidence on which advertisers choose to buy Super Bowl time, which famously include the Apple Macintosh computer and the Discover card; in 1998, computer companies such as Oracle and Intel dominated the Super Bowl. The Apple Macintosh, the Discover card, and computer products all exhibit "network externalities": that is, because of technological compatibility, a person is more likely to buy a Macintosh if many

other people buy it too. Hence Apple placed the ad on the Super Bowl not just to let people know about the product, but to let each person know that many other people know about it. Typical Super Bowl ads are for beer, soft drinks, and snack foods. One can argue that buying these goods, which are usually consumed in the presence of other people, is a coordination problem: I am more likely to buy and serve Crystal Pepsi if I know that my guests have tried it already.

These two examples come from the different contexts of anthropology and marketing, but we can understand them in the same way: rituals, of which the Super Bowl is a modern exemplar, create awareness of other people's awareness, knowledge of others' knowledge, and thereby help solve coordination problems. "Economic" data such as which firms advertise on the Super Bowl can thus help us understand rituals, "cultural" institutions. The idea that game theory can help in the understanding of cultural practices was explicitly advocated by people such as Claude Lévi-Strauss and Erving Goffman. But their calls thirty years ago have gone largely unheeded, and we still suffer under the presumption that rationality and culture are unrelated, even disjoint, worlds. This book shows that rationality and culture, when pushed far enough in their own domains, lead to each other: to better understand rituals, we can appeal to rationality; to understand economic institutions such as the Super Bowl, we must understand them as rituals.

Market

The social sciences today is divided between positivists, who look for explanations of social phenomena, and interpretivists, who try to understand the meaning of social practices. Economics falls within the positivist group, and most of anthropology falls in the interpretivist group; political science and sociology straddle this division. Methodologically, the positivist group is heavily influenced by mathematical model-building and statistics, while the interpretivist group is inspired by techniques from the humanities. This division is related to some extent to a very old division in Western thought between cold mechanistic "rationality" and warm fuzzy "culture." For example, cultural practices such as rituals are usually thought of as affecting people through emotions or affect; models of rational action most often simply do not consider culture.

By showing how game-theoretic rationality can help in understanding rituals and other cultural practices, my book hopes to bridge the division. In spite of the skepticism and misunderstanding across this division, some people are beginning to try to transcend it; for example, some students of culture in comparative politics are starting to use game theoretic methods. To create genuine mutual interest, one must demonstrate how insights from game theory and from cultural studies are relevant to each other. This is my book's goal.

Specifically, the book would appeal to people like:

- Graduate students and scholars in anthropology, sociology, and the humanities who are curious about how game theory might be relevant to them.
- Economists interested in coordination problems generally and the media industries specifically.
- Political scientists interested in revolution, social mobilization, and social movements.
- The general reader interested looking for an introduction to game theory.

Also, the book, since it illustrates the wide applications of game theory, would be a natural supplemental text for undergraduate game theory courses.

Schedule

I plan to finish the manuscript (roughly 50,000 words) by August 1999.

Other books

Thomas Schelling's *Strategy of Conflict* and *Micromotives and Macrobehavior* applied simple arguments insightfully to a wide variety of social phenomena using transparent nontechnical language; these works remain both an agenda for researchers and an introduction for the curious general reader. My book aspires to this standard of imagination and clarity but extends its scope to include cultural practices as well as political and economic phenomena. In my mind, the great thrust of Schelling's work is showing that simple game-theoretic arguments have an applicability much wider than either specialists or outsiders realize. My book continues in this spirit.

Annotated table of contents

Chapter 1. The basic argument

The argument of this paper is a truism, implicit in everyday social interaction. David Lewis (1969), influenced by Thomas Schelling [1960] (1980), first made it explicitly; it is best expressed in an example.

Say you and I are co-workers who ride the same bus home. After work, we like to go for a drink; we usually just go to the neighborhood bar near our usual stop. Today the bus is completely packed and somehow we get separated, with you standing near the front door of the bus and me near the back door; I catch a glimpse of you only at brief moments. Before we reach our usual stop, I notice a mutual acquaintance yelling at us, "Hey you two! Join me for a drink!" Joining this acquaintance would be nice, but we care mainly about each other's company. The bus doors open; separated by the crowd, we must decide independently whether to get off.

Say that when our acquaintance yells out, I look for you but cannot find you; I'm not sure whether you notice her or not and thus decide to stay on the bus. How exactly does the communication process fail? There are two possibilities. The first is simply that you do not notice her; maybe you are asleep. The second is that you do in fact notice her. But I stay on the bus because I don't know whether you notice her or not. In this case we both know that our acquaintance yelled but I do not know that you know.

Successful communication sometimes is not simply a matter of whether a given "message" was received. It also depends on whether people are aware that other people have received it. In other words, it is not just about people's knowledge of the message; it is also about people knowing that other people know about it, "metaknowledge" of the message.

Say that when our acquaintance yells, I see you raise your head and look around for me, but I'm not sure if you manage to find me. Even though I know about the yell, and I know that you know since I see you look up, I still decide to stay on the bus because I do not know that you know that I know. So just one "level" of metaknowledge is not enough.

Taking this further, one soon realizes that every level of metaknowledge is necessary: I must know about the yell, you must know, I must know that you know, you must know that I know, I must know that you know that I know, and so on; that is, the yell must be "common knowledge" (Lewis 1969; see also Clark and Marshall 1992 and Geanakoplos 1992). The term "common knowledge" is used in many ways but here we stick to a precise definition. We say that an event or fact is common knowledge among a group of people if everyone knows it, everyone knows that everyone knows it, everyone knows that everyone knows that everyone knows it, and so on. Two people can create these many levels of metaknowledge simply through eye contact: say that when our acquaintance yells I am looking at you and you are looking at me. Thus I know you know about the yell, you know that I know that you know (you see me looking at you), and so on. If we do manage to make eye contact, we get off the bus; communication is successful.

The entire point of this paper is that in coordination problems, each person cares about what other people do, and hence each person cares about what other people know. Hence communication is not just about distributing a message; it is also about what the people involved know about each other's knowledge. Two examples illustrate this further.

Rebelling against a regime is a coordination problem: each person is more willing to show up at a demonstration if many others do, perhaps because success is more likely and getting arrested is less likely (see Chong 1991 and Moore 1995). Regimes in their censorship thus target public communications such as mass meetings, publications, flags, and even graffiti, by which people not only get the message but know that others get it also (Sluka 1992, Diehl 1992). For nearly thirty years, the price of a loaf of bread in Egypt was held constant; Anwar el-Sadat's attempt in 1977 to raise the price was met with major riots. Since then, one government tactic has been to gradually make the loaves smaller; another has been to quietly replace a fraction of the wheat flour with cheaper corn flour (Jehl 1996). These tactics are more than just a matter of individual deception: each person could notice that their own loaf was smaller or tasted different, but be unsure about how many other people also noticed. Changing the size or taste of the loaves is not the same public event as raising its price.

In January 1984, Apple Computer introduced their new Macintosh computer with a visually stunning 60-second commercial during the Super Bowl, the most popular regularly scheduled television program each year. The Macintosh was completely incompatible with existing personal computers: Macintosh users could easily exchange data only with other Macintosh users, and if few people bought the Macintosh, there would be little available software. Thus a potential buyer would be more likely to buy if others bought them also; the group of potential Macintosh buyers faced a coordination problem. By airing the commercial during the Super Bowl, Apple did not simply inform each viewer about the Macintosh; Apple told each viewer that many other viewers also know about the Macintosh.

Chapter 2. Coordination problems

The key assumption behind our bus example is that we mainly enjoy each other's company: I want to get off only if you get off and you want to get off only if I get off. For example, say that instead of an acquaintance it is your boyfriend yelling; I care only about your company, but you would rather join him than me. I would thus get off if I knew that you heard the yell, but I need not care if you know that I heard it, since you will get off regardless of whether I do. Situations like the acquaintance example are called "coordination problems": each person wants to act only if others do also. Another term is "assurance game," since no person wants to act alone (Sen 1967). The boyfriend example is not a coordination problem because one person wants to act regardless of whether anyone else does.

A coordination problem is about uncertainty in the actions of other people, not about uncertainty in the "external" situation. Hence communication in coordination problems is not primarily informational: when our acquaintance yells in the example, she is not making a factual claim.

A coordination problem is also not a "free rider problem," also known as the "prisoners' dilemma." In a free rider problem, no person wants to participate under any circumstances: each person always prefers to "free ride" on the participation of others. We all want to keep the common field green, but everyone has an incentive to let his herd overgraze. "Solving" free rider problems hence requires enlarging people's possible motivations, by for example legal or social sanctions against free riders or repeated contexts in which free riding now might make people not cooperate with you later. "Solving" coordination problems, however, does not require changing peoples' motivations: when everyone cooperates, each person wants to do so since everyone else is. By

leaving our fields fallow at the same time, we starve out the insects and rodents which plague us all; if I alone plant, I attract all the pests (Lansing 1991). Although "collective action problem" is often used to refer only to free rider problems (Olson 1971), some argue that collective actions such as political protest are better described as coordination problems (for example Chong 1991; see also Moore 1995).

Chapter 3. Metaknowledge

Here I show how metaknowledge is "real" and compelling, not just a philosophical curiosity, and is essential to the commonsense meaning of "public." In everyday conversation, people consider the knowledge or beliefs of others. For example, to positively respond to my friend's question, "Do you want some coffee?" I would say,"Coffee would keep me awake" only if I think that my friend knows that I want to study for an exam tomorrow rather than sleep (Sperber and Wilson 1986). Experimental psychologists find that children as young as seven can reliably answer questions like "Does John know that Mary knows where the ice-cream van is?" (Perner and Wimmer 1985). Awareness of the knowledge of others does not even require human rationality: for example, when a wildebeest notices a lion creeping toward it, instead of trying to evade, it walks toward the lion to show him that it knows that he is there.

A recent development in US political campaigning is "push-polling," in which voters are asked leading questions in some impartial guise. As part of a contract with Bob Dole during the 1996 Republican presidential primary, Campaign Tel Ltd. employees identifying themselves with "Iowa Farm Families" made more than ten thousand calls to Iowa voters attacking opponent Steve Forbes's flat tax plan. In response to criticism, a Dole campaign spokesperson said that the calls "amounted to messages that have mirrored our television commercials" (Simpson 1996). This response relies on the obviousness of the distinction that television commercials, as opposed to telephone calls, are public. This distinction holds even though a "mass audience" of at least ten thousand people received telephone calls, and would remain even if fewer than ten thousand people saw the television commercials.

The New York Metropolitan Opera finally decided in 1995 to display translations of the libretto during performances. However, instead of "supertitles," in which translations are projected on a screen above the stage, the Met developed its own "Met Titles," in which each member of the audience has her own small electronic screen which she can turn on or off. According to one reviewer, " 'Met Titles' are markedly superior. . . they don't become part of the performance's public discourse" (Griffiths 1995). Even if most people turned their screens on, the translations would not be common knowledge since a person reading them cannot presume that others are also.

Metaknowledge is affected not only by technology, but also by how people choose to communicate. George describes how he came out as a gay man: "I told Peter first. . . then I told Fred. . . . and told them not to tell anyone else or talk about it with anyone else until I did. . . . After I talked with other people in our circles, then they did, so after a while everyone was talking with everyone else about it instead of having this big secret that everyone bottled up inside" (Signorile 1995, p. 76). Initially, George told other people individually; even though everyone knew that George was gay, for each person it was still a secret. Once Peter and Fred initiated conversation, people began to know that other people knew; the secret evaporated only after metaknowledge was formed.

Metaknowledge is not always desirable; sometimes people deliberately avoid it. A hotel butler who intrudes upon a naked female guest, instead of acting embarrassed and thereby letting the guest know that he knows, might say loudly, "Pardon me, sir."

Metaknowledge comes up not only in few-person but also macrological contexts. The concept of "pluralistic ignorance" from social psychology refers to a situation in which people hold very incorrect beliefs about the beliefs of others. To take one of many examples, in a 1972 survey, 15 percent of white Americans favored racial segregation, but 72 percent believed that a majority of the whites in their area favored segregation (O'Gorman 1979; see also Shamir 1993). Most see pluralistic ignorance as a distortion at the individual level (for example Mullen and Hu 1988; see O'Gorman 1986): a person reduces dissonance by thinking that her own view is the majority view, for example. Recently it has been applied to the former Soviet Union and eastern European states, the idea being that dissatisfaction was widespread but that few people knew how widespread it was. These accounts focus on social distortions: limited communication due to criminal penalties for self-expression, a government-controlled press, and a lack of social ties (Coser 1990, Kuran 1991). "The reduction of pluralistic ignorance," due to modern communication technology and increased foreign contacts, "led. . . to a political wave of tremendous power" (Coser 1990, p. 182).

Chapter 4. Rituals and power

Clifford Geertz (1983, p. 124) writes that "the easy distinction between the trappings of rule and its substance becomes less sharp, even less real; what counts is the manner in which. . . they are transformed into each other." Lynn Hunt (1984, p. 54) is more direct: during the French revolution, "political symbols and rituals were not metaphors of power; they were the means and ends of power itself." How exactly does this happen? What is the mechanism?

Our explanation starts by saying that submittting to a social or political authority is a coordination problem: each person is more willing to support an authority the more others support it. For example, Jürgen Habermas (1986, p. 76) explains Hannah Arendt's view that "the fundamental phenomenon of power is not the instrumentalization of *another's* will, but the formation of a *common* will in a communication directed to reaching agreement." This coordination problem can result not only from a desire to reach consensus but also from intimidation: according to Michael Polanyi (1958, p. 224), "if in a group of men each believes that all the others will obey the commands of a person claiming to be their common superior, all will obey this person as their superior. . . . [A]ll are forced to obey by the mere supposition of the others' continued obedience, without any voluntary support being given to the superior by any member of the group." Since submitting to an authority is a coordination problem, an authority creates ceremonies and rituals which form common knowledge.

Geertz's explanation starts with a society's core cultural beliefs, its "master fiction"; a symbolic communication such as a ceremony or ritual is powerful through an "intimate involvement" with this master fiction. Geertz (1983, passim) illustrates this in three examples of royal progresses. In sixteenth-century England, the progress was didactic and allegorical: "four townsmen [were] dressed to represent the four virtues—Pure Religion, Love of Subjects, Wisdom, and Justice," with Elizabeth Tudor representing the Protestant virtues of "Chastity, Wisdom, Peace, Perfect Beauty, and Pure Religion." In fourteenth-century Java, which had a hierarchical, nested-circle world view, the king Hayam Wuruk appeared in the middle of the precession, with each of the four compass

points represented by a princess. In eighteenth- and nineteenth-century Morocco, a core belief was that "one genuinely possesses only what one has the ability to defend," and hence "as long he could keep moving, chastening an opponent here, advancing an ally there, the king could make believable his claim to a sovereignty conferred by God." For our purposes, the more basic question is not how these three cases differ but how they are the same: that is, why progresses? "Royal progresses. . . locate the society's center and affirm its connection with transcendent things by stamping a territory with ritual signs of dominance. . . . When kings journey around the countryside. . . they mark it, like some wolf or tiger spreading his scent through his territory, as almost physically part of them."

But this interpretation misses, or takes for granted, the most obvious aspect of progresses: their very large audiences, "crowds of astonished peasants" (Geertz 1983, p. 132); under this interpretation, the audience would be powerfully affected regardless of how large or small it is. Our interpretation focuses exactly on publicity, the common knowledge that ceremonies create, with each onlooker seeing that everyone else is looking too. Progresses are mainly a technical means of increasing the total audience, since only so many people can stand in one place; common knowledge is extended since each onlooker knows that others in the path of the progress have seen or will see the same thing. That the monarch moves is hence not crucial; mass pilgrimages or receiving lines, in which the audience moves instead, form common knowledge also. Under our interpretation, widespread ritual signs of dominance do not by their omnipresence evoke transcendence, but are rather more like saturation advertising: when I see the extent of a vast advertising campaign, I know that other people must see the advertisements too. Taking the wolf analogy seriously leads us sharply away from considerations of publicity: a lone animal knows to stay away from another's area by smelling the scent at a given place; no one perceives the entire scent trail (for that matter, scents keep away rivals, while progresses are for "domestic" consumption).

Another way of saying this is that Geertz's explanation focuses on the meaning or content of progresses, while ours focuses on how progresses create common knowledge, or publicity. To see the distinction, consider two examples. Abner Cohen (1974, p. 133) describes the Friday midday prayer in Islam as both "a demonstration of allegiance to the existing political order. . . . [and] an ideal strategic occasion. . . for staging rebellion. . . in the presence of all the men of the community in one gathering." The public execution, described by Michel Foucault (1979, p. 50, p. 58–60) as a "ritual of armed law," was actually quite unstable: "the people, drawn to the spectacle intended to terrorize it, could express its rejection of the punitive power and sometimes revolt. Preventing an execution that was regarded as unjust, snatching a condemned man from the hands of the executioner, obtaining his pardon by force. . . overturned the ritual of the public execution." An event's meaning can be "overturned," but the aspect of publicity, necessary for both mass legitimation and mass rebellion, remains constant.

The point is not that content and meaning are unimportant, but that the aspect of publicity must also be considered. According to Geertz (1980, p. 135), "anything that somehow or another signifies is intersubjective, thus public, thus accessible to overt and corrigible *plein air* explication. Arguments, melodies, formulas, maps, and pictures are not idealities to be stared at but texts to be read; so are rituals, palaces, technologies, and social formations." But using "public" to include anything intersubjective nullifies its powerful commonsense meaning; my income tax returns are intersubjective and to some extent accessible, but they are not public. "Public" in Geertz's sense does not allow us to see that the whole point of some ceremonies is to make public. Speaking

glibly, rituals and ceremonies are not just "texts" but also publishing processes (see also Keesing 1987).

Chapter 5. Commercials

The best mass common knowledge generator in the US today is network television, which plays its part in maintaining social authority but of course exists because of its ability to advertise products. In this section, I call a good "social" if a person is more likely to buy it the more other people buy it; hence buying a social good is a coordination problem. Assuming that viewers know which shows are popular, when a product is advertised on a popular show, not only do many people see the ad, each viewer knows that many other people see the ad. Hence our argument would say that social goods should be advertised on popular shows. Here I present data which not only suggest that social goods are advertised on more popular shows but also that advertisers of social goods are willing to pay more per viewer to do so.

I look at cost and audience size data on 119 brands advertised on the three US networks during three months representative of a network year (October 1988, February 1989, and July 1989). By seeing on which shows a given brand advertises, and finding demographic and cost data available on each show, it is possible to determine that brand's overall advertising strategy.

First I categorize the brands into social and nonsocial; very crudely, along with computers, I include in "social" brands those which are typically consumed together with people outside the household: in our sample, the social brands are the Apple Macintosh, IBM hardware, the US Army, Dominos Pizza, Gallo Wines, and thirteen brands of beer. The reason that computers are social goods is because of technological compatibility: a person is more likely to buy a Macintosh the more others buy a Macintosh. The idea with beer (and wine and pizza similarly) is that I might prefer to buy a beer brand which I think my guests will know and like, I might not want to be the only person who brings a strange brand of beer to a party, or simply that if everyone else drinks Coors Light, then I might prefer to drink Coors Light also. This is fairly ad hoc, but at least we might say that goods which are consume in separate households are less likely to be social goods because people buy them for themselves, other people cannot see them consuming it, and they cannot directly see what other people are consuming. Anyhow, we graph average audience sizes and cost per thousands for all 119 brands in Figure 1. Again, the first finding is that social brands tend to be advertised on popular shows. The second finding is that campaigns for social brands pay a higher cost per viewer.

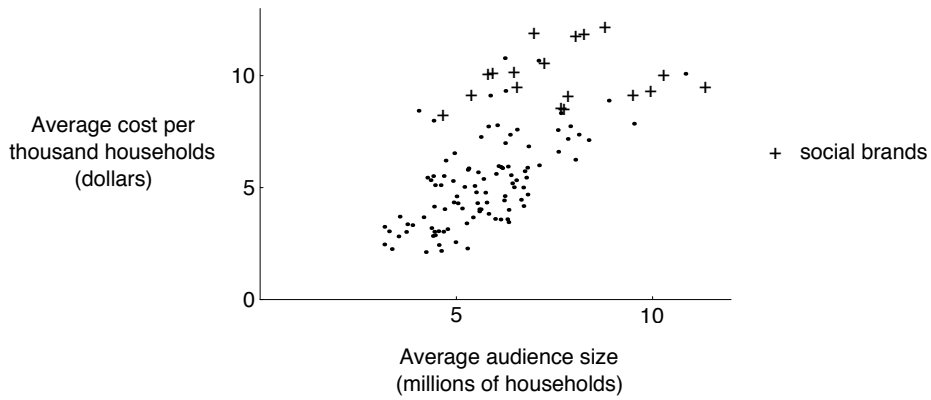

Figure 1. Costs per thousand versus average audience size

There are several plausible explanations for why popular shows tend to be more expensive per viewer. One is that a commercial which reaches 10 million households costs more than a pair which each reach 5 million because the pair have overlapping audiences and do not reach a total of 10 million (see also Fisher, McGowan, and Evans 1980, p. 700). Another explanation might be that popular shows have better demographics, a greater ability to reach rich people for example. Data is available on cumulative exposure and a full range of demographic categories; after correcting for these, the result remains (Chwe 1997). Another explanation might be that there are relatively few popular shows, and hence networks are in a better bargaining position for these shows when negotiating with advertisers. Popular shows might be more interesting and hence viewers might recall the commercials better (Webster and Lichty 1991). Advertising a brand expensively on a popular show might indicate high quality (Nelson 1974, Kihlstrom and Riordan 1984, Milgrom and Roberts 1986). Popular shows might simply be more persuasive, better at changing preferences toward purchase. These explanations of why popular shows are more expensive per viewer are all plausible, but none can explain why social brands tend to be advertised on more popular shows. In other words, there is no obvious reason why issues of recall, quality, and persuasion apply more to social brands than to nonsocial ones. Our sample of social goods is quite limited, dominated by male-oriented goods, especially beer; determining independently whether a good is social or not is also difficult. For now at least we can say that our argument is emprically falsifiable and not just a logical nicety.

Chapter 6. The Super Bowl

The Super Bowl has become the premier showcase for the introduction of new products ever since Apple Computer's introduction of the Macintosh computer in 1984. The commercial, which naturally played off George Orwell's novel, showed a youthful woman hammer thrower wearing the Macintosh logo entering an auditorium in which rows of grey zombies stare at Big Brother on a massive television screen; as Big Brother exclaims "We shall prevail," the hammer flies and shatters the screen; the open-mouthed audience gapes into the explosive wind (Rutherford 1994, p. 140–141, Johnson 1994).

Thus Apple promised liberation from the totalitarian consensus of the dominant IBM personal computer. The meaning of the Macintosh hammer destroying the telescreen is nicely ambiguous: the explosion is both a public event (we are shown explicitly the zombies' reaction to it) and also

the destruction of the mechanism of publicity. In other words, Big Brother is not vanquished and replaced on the telescreen by a Macintosh; rather, the Macintosh destroys the communications technology which makes Big Brother possible. That this destruction was aired on the Super Bowl was an irony appreciated by the trade magazine *Advertising Age:* "Apple gave birth to Macintosh with the sort of smoke and mirrors that would make Big Brother proud."

What would it mean to take a hammer to the Super Bowl? Interactive video and the internet, which allow consumers to order a program whenever they want it, loom large. But there remain the "communal pleasures of watching a popular show at the same time as everyone else in the country. 'The shared experience is the value of television,'. . . asserts CBS president [Howard] Stringer" (Zoglin 1993).

In any case, it may be more effective to harness rather than attack the Super Bowl's publicity. Three days before the 1993 Super Bowl, domestic violence activists held a press conference presenting anecdotal evidence that more husbands beat their wives after the Super Bowl than on an average day; the group called not for a boycott but for NBC to donate Super Bowl air time to discuss domestic violence. NBC supplied thirty seconds in the pregame show; the public service announcement, which showed a man in a jail cell, made no reference to football (Gorov 1993, Lipsyte 1993). The point here is that simply by airing it on the Super Bowl, activists put domestic violence on the national agenda more publicly than ever before. On Super Sundays since 1994, artist Robert Markey has installed a "scoreboard" in New York's Grand Central Station which shows the teams' scores together with the number of women battered in the US since the opening kickoff: one woman every fifteen seconds (Cheng 1996). Here the issue of whether in fact domestic violence increases after the Super Bowl need not be addressed; the point is that even the "average" rate is shocking. Once the public association between the Super Bowl and domestic violence was made, it became an organizing resource itself.

If people want to see what's popular, going to see a movie is a coordination problem: the first movie to be advertised on the Super Bowl, " 'Independence Day' is a mega meta-phenomenon—a pseudo event in which the audience prides itself on being part of the hype" (Wolcott 1996). The same might be said for television: in 1995, the group TV-Free America promoted National TV-Turnoff Week (Williams 1995); presumably national is more effective than individual exhortation because other people watching TV makes you want to watch TV more. After the film *Billy Jack* opened poorly in a traditional release, it reopened in May 1973 in Southern California "with an unheard of one-week ad expenditure of $250,000. . . . The response was phenomenal: the first week's gross of $1,029,000 represented the largest boxoffice take in Southern California film history" (Wyatt 1994, p. 110–111). This marketing technique, known as "four-walling," was widely imitated; now movie ads routinely include their nationwide opening dates, presumably hoping that people will come on that very day.

This trend has had implications far outside the movie industry; the Macintosh "1984" commercial was apparently inspired by the marketing of the film *Star Wars* (Johnson 1994). Now mammoth marketing efforts routinely try to take advantage of "synergy": to take an early example, the premiere of *King Kong* in 1976 was accompanied with the introduction of "Jim Beam *King Kong* Commemorative bottles. . . *King Kong* sportswear. . . 7-Eleven *King Kong* cups, *King Kong* peanut butter cups, and *King Kong* GAF Viewmaster slides" (Wyatt 1994, p. 150). Personifying this trend is the basketball player Shaquille O'Neal, who throughout his product endorsements

(including Reebok, Spalding, and Pepsi), video games, books, rap recordings, and movie roles presents the same consistent image, the same trademarked name "Shaq," and even the same "Shaq" logo. Michael Jordan, representing an earlier marketing era, presents a different image in each of his product endorsements (Lane 1993).

On August 24, 1995, Microsoft introduced its Windows 95 operating system with an unprecedented worldwide marketing effort: Microsoft bought the entire press run of the London *Times* and distributed it free with an advertising supplement, placed a 600-foot Windows 95 banner on the CN Tower in Toronto, the world's tallest free-standing structure, towed a four-story-high Windows 95 box into Sydney Harbor, and hand-delivered the first copy in the Philippines to President Fidel Ramos. The hype was necessary because, as one industry analyst observed, "it would be a self-fulfilling prophecy if few decide to upgrade" (Helm 1995); in other words, people will upgrade only if they think that others will: upgrading is a coordination problem. According to Microsoft chairman Bill Gates, "you have to create a lot of excitement to overcome inertia" (Helm 1995). But excitement would seemingly apply to all goods; for coordination problem goods such as computer operating systems, you need more than just excitement: you need common knowledge.

Chapter 7. Inward-facing circles

One specific way to generate common knowledge, as mentioned in our bus example, is eye contact. For larger groups the closest thing to eye contact is for everyone to face each other in a circle, which enables each person to see that everyone else is paying attention. In this chapter, I speculate that this is one reason why inward-facing circles help in coordination.

A common feature of prehistoric structures throughout the southwestern US is the *kiva*. Built partially underground, kivas were typically circular and people presumably sat facing each other (some kivas had a masonry bench built along the wall). The large "great kivas" of Pueblo Bonito in Chaco Canyon, New Mexico, for example, had impressive features such as deposits of beads in niches in the walls. The difficulty of their construction suggests their importance: "in a limited sense Great Kivas can be considered public monumental building" (Lekson 1984, p. 52; see also Lipe and Hegmon 1989). Most interpreters see the function of kivas, especially the large great kivas, as ritual structures for the village, where public activities can be held. Their purpose was to integrate the village across household and family groups, which presumably involves solving coordination problems.

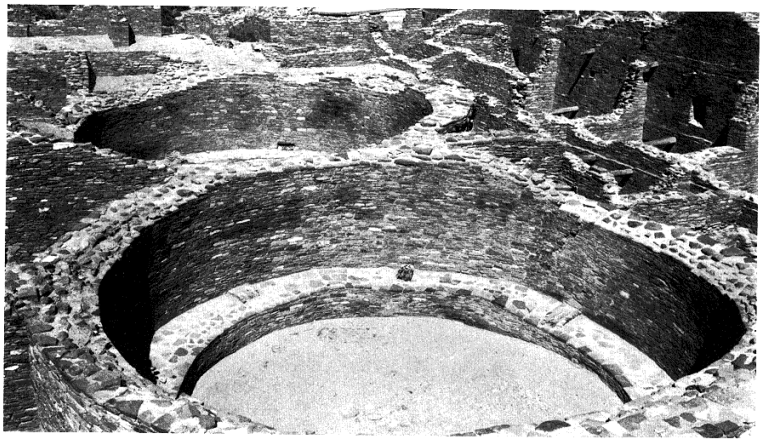

Figure 2. Chetro Ketl kiva (Lekson 1984, p. 166)

In his survey of city halls in the US and Canada, Charles Goodsell (1988, p. 158) finds that curving rows feel friendlier than the more traditional parallel linear rows: they "help to create the impression that the occupants are bound together." In Fort Worth's city hall, the seats are arranged in coincentric inward-facing circles; the architect Edward Durrell Stone hoped "that a council meeting would be in the vein of a town hall meeting. . . . [I]n the circle, members of the audience would have visual contact with each other as well as the council, therefore enabling them to observe feelings and responses" (Goodsell 1988, p. 166). Note that Goodsell's explanation of the effect of circular seating is based on content, an interpretation of its meaning; Stone's explanation is based on publicity, the ability of people to see each other.

Mona Ozouf (1988, p. 130–131) finds that for revolutionary festivals in the French revolution, circular forms were considered ideal: there was an "obsession with the amphitheater. . . which enabled the spectators to share their emotions equally and to see one another in perfect reciprocity." Another reason was that organizers wanted to emphasize inclusivity by making the boundary of the festival as loose as possible; a circle is nicely enclosed by the outermost spectators, and can grow organically as more spectators arrive. Finally, the "circle was an emblem of national unanimity."

Again, the last reason relies on content, the symbolic meaning of a circle, while the first relies on publicity, people being able to see each other. Ozouf's quotations (1988, p. 308, p. 131) from contemporary observers set up this distinction nicely: according to Mouillefarine fils, "the circle is more symbolic of the facts to be immortalized, its solidity deriving from reunion and unanimous accord"; De Wailly writes that "the audience placed in front of the boxes thus becomes a superb spectacle, in which each of the spectators seen by all the others contributes to the pleasure that he shares." Is the circle symbol or communication technology?

Ozouf (1988, p. 136) answers directly: "What was most important in the conversion of churches into *temples décadaires* was not the ingenuity employed in transforming a former Eternal Father into Father Time. . . or a Saint Cecelia into a goddess of Equality. . . . The essence of such conversions was to be found in those abolished side chapels, those truncated transepts, that re-creation within the church—by means of flags, hangings, foliage—of a place that could be taken in at a glance." It's not just a matter of changing symbols, but of changing the physicality of ceremonial spaces to make it difficult for someone to see you without you also seeing them, to better generate common knowledge.

Chapter 8. Common knowledge and content

The main message of this book is that publicity (more precisely, common knowledge generation) as well as content must be considered in understanding cultural practices such as rituals. But although this distinction is useful analytically, content and publicity are never fully separable in practice; in this chapter I explore how they interact.

Sometimes content indicates the social situation, which includes considerations of publicity, in which a communication is to be understood: when a paperback best-seller has "Over 5 million copies sold" on its cover, this sentence is part of the "text" of the book. The language in which a book is written indicates a presumed audience.

A message's content can also affect the extent to which common knowledge is generated. Stanley Tambiah (1985, p. 128) finds that rituals use "multiple media by which the participants experience the event intensely"; hence a person in a ritual has a strong presumption that other people

are experiencing it also. In the spirit of information theory, repetition of the same phrase can be understood as providing redundancy. But as Tambiah (1985, p. 138) notes, information theory is not directly applicable because rituals are more about "interpersonal orchestration and. . . social integration and continuity" than transmitting information. In our interpretation, repetition is not just about making sure that everyone gets a message but also making that repetition evident to each person, so that each person knows that everyone else gets the message; this is the entire point of the communication, and the message itself need not carry any new information. Audience participation is another way of creating common knowledge: each person can see from the gestures or speech of others that they are in fact paying attention. Tambiah (1985, p. 123) quotes A. R. Radcliffe-Brown's interpretation of dance as enabling "a number of persons to join in the same actions and perform them as a body." Under our interpretation, group dancing "as a body" is an ideal way of creating common knowledge: if any person loses interest, then this is immediately evident to everyone because the pattern of movement is disrupted. Repetition, call and response, and dance forms are usually considered part of a ritual's content or form. But they might be just as important in creating common knowledge as those aspects more obviously about publicity, such as having a large audience.

Michael Fried characterizes some modern sculpture as "public" or "theatrical" on various grounds including size and "objecthood." A large sculpture "distances the beholder"; if it is too large, however, Fried quotes Robert Morris as saying that "the object can overwhelm and the gigantic scale becomes the loaded term." Fried (1977, p. 446, p. 447) interprets this in terms of anthropomorphism; for example Tony Smith's *Die,* a six-foot cube, is a "kind of *statue*." If "public" and "theatrical" are understood in terms of common knowledge, then when you see a large sculpture, you are more likely to believe that others will not overlook it; if the piece is too large to be seen in a single glance, you are not sure that when others look at it they see the same thing you do. Theatrical sculpture emphasizes "wholeness, singleness and indivisibility. . . a work's being, as nearly as possible, 'one thing,' a single 'Specific Object' " (Fried 1977, p. 440, p. 453). Thus the sculpture of Anthony Caro resists theatricality because of its "mutual and naked *juxtaposition* of the I-beams, girders, cylinders, lengths of piping, sheet metal and grill which it comprises rather than in the compound *object* which they compose." Perhaps unitary objects are theatrical because each observer expects that others will see it in a similar way; an observer looking at a sculpture with many interacting elements expects that others will more likely see and understand it differently.

Chapter 9. Common knowledge generation itself as a symbol

Another way content and publicity interact is that mechanisms of publicity are sometimes simply included in the content. Here I show this with scenes from *On the Waterfront*, a 1954 feature film directed by Elia Kazan, which tells a story of how longshoremen gradually come together to fight against a gang of corrupt union "officials," who exploit the workers by physical intimidation.

When Father Barry asks the frustrated men if they have a union, their postures and positions speak more strongly than their words: they each face in a different direction, with no eye contact (left). In contrast, the unity of the corrupt gang is emphasized by their circular huddle (right).

Figure 3. "What about your union?" vs. "Payday"

The longshoremen's passivity and powerlessness are emphasized spatially: they always appear outside and exposed, never in a place of their own. However, things start to improve after Father Barry convinces Kayo Dugan to testify to the Crime Commission currently investigating the corrupt union (Joey Doyle was killed because he testified). With the film's first serious eye contact between a worker and anyone else, Father Barry promises: "You stand up and I'll stand up with you."

Figure 4. "All the way," "Down the line"

Kayo Dugan is also killed by the gang in an "accident" in a ship's hold. Father Barry's eulogy exhorts the workers to stand up for themselves, and this turning point in the film is the first time that the worker "public" experiences something, the funeral ritual, together; it is the first time that they have common knowledge of something. Father Barry accompanies Dugan's body as the crane pulls it out of the ship's hold, and the setting is much like the Greek amphitheater, with rising coincentric rings of spectator participants.

Figure 5. Ship's hold as amphitheater

Since one of its messages is that "ratting" on former friends can be heroic, *On the Waterfront* is obviously related to Kazan's willing testimony to the House Un-American Affairs Committee. But communication, private and public, powerful and impaired, is not just a "subtext" but actually a recurrent theme. Throughout, there is the constant punctuation of the ships' horns and steam whistles; thus we are reminded of the power of the employers, their ability to communicate publicly. When Terry tells Edie Doyle, Joey's sister, that he was involved in Joey's murder, Edie responds by first covering her ears with her hands, then by covering her eyes, and finally by covering her mouth.

Chapter 10. Rationality and culture

In this chapter I look briefly at the development of rational choice theory during the past fifty years and argue that its long-avoided consideration of cultural practices is now inevitable. In other words, the consideration of cultural practices such as rituals should be considered not as a diversion of rational choice theory but as its necessary next step.

The prototype of rational choice reasoning in economics today remains the classical competitive market model, in which each person (firm) takes existing prices as given and chooses consumption (production) given these prices to maximize utility (profits). Perhaps this should not be surprising; it is often observed that the development of the Western idea of rationality was closely historically related to the development of capitalist society. This classical competitive market model has two distinct features. First, consumer preferences and firm technology are taken as given. How technology evolves and grows, presumably a fundamental question for economics and the focus of much recent work, still has less disciplinary primacy then the classic questions of supply and demand in a competitive market. The question of how preferences form has been all but untouched (one exception is Becker and Mulligan 1998), typically relegated to "culture" and thus someone else's problem. In other words, most economists and other rational choice theorists have understood the relationship between rational choice theory and the study of culture in terms of professional specialization, a division of labor. The typical conception is that rational choice is the study of choice given preferences, and culture and other "social" considerations enter in the formation of preferences.

The second feature of the competitive market model is that each individual or firm is a "price taker," making decisions under the assumption that existing prices are an objective unchanging

fact. In other words, each person's decision can be considered independently from anyone else's: no one thinks about how his purchases or sales affect anyone other than himself. Obviously, this model does not apply to many situations, for example when a firm tries to drive another out of business by flooding the market and lowering prices. In situtation such as these, each person has to think about how other people will react to his actions, and thus has to think about the rationality of other people. This kind of situation, starting with Cournot's model of oligopoly, motivated the development of game theory.

The entire point of game theory is to consider situations in which people care about the actions of others. Game theory is thus much more flexible than the classical competitive market model, and thus was rapidly adopted outside of economics. But it is also important to note that game theory was taken up by economics because of questions left unanswered by the competitive market model: for example, the competitive market model establishes conditions on equilibrium prices but does not give a convincing description of how exactly individuals set prices. Thus game theory can be thought of as the next step in rational choice's own "internal" agenda.

But from the very beginning, game theory's own limits became apparent. The big problem is indeterminacy: most game theoretic models have too many equilibria. How to deal with this "equilibrium selection" problem has been the main question of game theory since the mid 1980s. Interestingly, much recent work toward this question has moved away from rationality, appealing to bounded rationality, adaptation, learning, and evolution. But there is an older answer to this question which is based on "culture": the "focal point" reasoning of Thomas Schelling.

For example, say that a young woman and an old man approach a doorway simultaneously. There are two equilibria: the young woman can wait and let the old man go through first, or the old man can wait and let the young woman in first. They do not care which one goes first; this is a problem of "pure coordination." Rationality assumptions alone cannot predict who goes first. Schelling's "focal point" argument is that in a given society, there will be a set of shared "cultural" assumptions about who goes first. So depending on the culture, either the young woman or the old man will expect the other to go first, and the indeterminacy is solved.

In this argument, culture plays a stronger role than in the earlier view in which culture acts by forming preferences. Here culture is not an independent side concern but is rather invoked to solve a problem which rationality alone cannot solve. As rational choice theory progressed from the competitive market model to the more complex and contingent world of game theory, the need to invoke culture became stronger, not weaker.

Again, most recent work on equilibrium selection appeals to learning or evolution: for example, if some proportion of society expects the young woman to go first and another proportion expects the old man to go first, adaptation or learning over time can predict which convention will eventually dominate the entire population. But these arguments do not apply to the many situations in which people try to coordinate purposefully. Under evolutionary arguments, if you and I want to meet at a better restaurant than our usual hangout, one of us would first have to "mutate" and enter the better restaurant by mistake. The fact is that people call each other and make dates: people coordinate by communicating. In other words, as Schelling (1980, p. 144) notes, "when there is no apparent focal point for agreement, [a person] can create one by his power to make a dramatic suggestion."

Game theory says that in order to coordinate, a communication must generate common knowledge: knowledge of others' knowledge and so on. So if we are interested in how coordination, or equilibrium selection, takes place through communication, we have to look at common knowledge generation. The point of my book is that the preeminent common knowledge generators are rituals.

This invocation of culture is again even stronger. In both "focal point" theory as it is usually understood and the classic competitive model, culture is seen as a static property of an individual or society. An understanding of rituals as common knowledge generators sees cultural practices as active processes. In these earlier theories, culture is either a completely independent domain or something which arrives at the last minute to save us from indeterminacy. I argue that to understand common knowledge generation, rituals are themselves the object of study.

Again, the argument is not that cultural practices are additional side topics that it would be nice for rational choice theory to look into. The argument is that the agenda of rational choice theory itself demands it. The need to look at "intersubjective" communicative processes, in which people learn about the knowledge of each other, comes from strategic rationality itself.

Claude Lévi-Strauss saw game theory as allowing the "increasing consolidation of social anthropology, economics, and linguistics into one great field, that of communication" (1963, p. 298). A more timid claim would be that some oppositions cannot be so obviously sustained. For example, James Carey (1988, p. 15, 18–20) writes that the "transmission view of communication. . . . defined by terms such as 'imparting,' 'sending,' 'transmitting,' or 'giving information to others' " has dominated the "ritual view of communication. . . . linked to terms such as 'sharing,' 'participation,' 'association,' 'fellowship,' and 'the possession of a common faith.' " This is because of "our obsessive individualism. . . [and]. . . disdain for the significance of human activity that is not practical." But transcending the "transmission" view and including the "ritual" view is exactly what is required when considering the decisions of individuals facing real, practical problems of coordination. The idea of individual rationality, historically associated with atomistic market societies, can help in understanding cultural practices which seem to create social unity. Cultural studies has long considered social and economic contexts; pursuing the logical consequences of economics' defining assumption of rationality, game theory finds culture.