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CHAPTER 10: SOCIAL ILLUSIONS *

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Chapter 10. Social illusions

Return to the Minimum game introduced in Chapter 7 and the payoff matrix in figure 7.4 (p. --). 1 This is not the commons dilemma of a Public Goods game. In a commons dilemma, everyone would be better off if all cooperate, but each individual can do even better by shirking while others cooperate. In the Minimum game, however, there is nothing to be gained by free-riding. But cooperation can't be managed anyway.

Over a sequence of rounds, each player reports a number from 1 to 7. The best payoff in a round declines by 10¢ at each step that the minimum choice drops. If everyone reports '7', everyone gets $1.30. But if there are players who choose < '7', the lowest choice determines the payoff schedule for that round, which declines by a dime at each step. A player who matches that lowest number then gets the best payoff available in that round. For each step a player's choice is above the round minimum, the player's payoff is cut an additional 10¢. So if the minimum is '4', a player who reported '4' gets $1, which is down three dimes from what everyone would get if everyone picked '7'. A player who reported '7' when the minimum turns out to be '4', gets 70¢, down another three dimes from the best available when the minimum choice is '4'. At the extreme, if the round minimum is '1', a player who reported '1' gets 70¢ (down six dimes), but a player who reported '7' in a round where the minimum is '1' gets 10¢ (down another six dimes).

So everyone does best when everyone can coordinate on choosing '7'. But the higher the number a chooser reports in any round, the more risk of an incremental loss in that round. All this might seem complicated as written out, but the players are provided with the payoff table, which makes it easy to see how the game works. It is rare that a player finds it difficult to understand the game.

A player who wanted to fully analyze the situation, somehow estimating how others will choose, would face a complicated case of strategic uncertainty. But Schelling long ago showed that players who know it is in their mutual advantage to coordinate on a common response often are able to recognize a salient choice. If we look for that here, it is not hard to find. For '7' is the most prominent number as the table as displayed. And everyone can see that this most prominent number is also would be best if everyone could coordinate on it. And since the game runs 10 rounds, there is not very much at risk in staying with '7' in round 1. Risking a few dimes here could yield improved payoffs from the overall game of several dollars. So before seeing any results, we might suppose that players would mostly stay with '7' in round 1 to see how things stand with other players.

The result, however, is drastically different. A large fraction of players, usually upward of 2/3, chooses < ‘7’ from the start. For groups of non-trivial size, the round 1 minimum will usually be some number intermediate between the payoff-maximizing ‘7’ and the payoff-minimizing ‘1’. It is not often ‘1’ but also almost never ‘7’. And a more puzzling surprise then follows. The long-run cost of a middling minimum in round 1 would be modest if in successive rounds players could edge back up toward ‘7’. In round 1 a player has no way of knowing how low a number someone in the group might choose. But after round 1, everyone in the group has demonstrated how low he was moved to go to guard against a low choice from someone else. It is now hard to see any sensible reason for even a very cautious player to go further *down*. Indeed, since it seems to make no sense for anyone to go further down, choosing one notch higher than the previous minimum seems to risk just a dime for the prospect of a much larger gain over the balance of the game. It avoids a loss even in that next round should everyone else choose at least one notch up.

So even if there is no immediate coordination on ‘7’, by the end of a series of rounds we might expect to get coordination back to 7, or at least approaching '7'. And if NSNX (or any other allowance for other-regarding motivation) is in play, that would reinforce the expectation. A lower minimum is bad for self, but also bad for everyone else.

But the results are entirely different. The minimum quickly falls to '1' and stays there. Some players try to edge up, but except in the smallest groups the minimum quickly falls to '1'.. Weber (2006) summarizes the results of many Minimum game experiments with the table in figure 1.

FIG 1 HERE

Prior experience with the game does not help. Indeed it seems to aggravate the problem. After doing badly players do not seem surprised, nor are experimenters commenting on the game. Apparently even the fall in the minimum beyond round 1 does not violate the intuitions of sophisticated observers, though if directly asked about it no one suggests why players would do that. Overall, on the prevailing interpretation, players are doing what makes sense in a difficult situation. The usual appraisal (see, for example, Camerer 2003) is that players *correctly* suspect someone will choose low and respond correctly to that. With respect not only to the coordination games discussed here but more generally, Camerer's book is an essential complement to this one, providing an exceedingly thoughtful and thorough "mainstream" behavioral survey of the experimental work. Anyone interested in this work will learn a lot from reading him. But on many points the NSNX + cognition view here runs against such views. On the Minimum game, it is tautological that if players feel sure someone will go low and act on that, then indeed they will be correct in anticipating that the minimum will fall. The puzzle, though, is why would players expect that?

I want to argue that we are seeing something akin to what is happening in cognitive illusions like Monty Hall or 3-Cards in Chapter 6, but even harder to correct. People looking at the results of the Minimum game (such as you and me) are vulnerable to the same illusion that catches players in the game, as nearly everyone first encountering Monty Hall or 3-Cards is vulnerable to the probability illusions those problems prompt. But there is now a *social* complication.

When first seeing the Monty Hall puzzle, and sometimes long after first seeing it, very few people are immune to the intuition that there is no advantage in switching. But since the puzzle can be turned into a mechanical experiment no one can reasonably remain indefinitely caught by the illusion. But the Minimum game cannot be converted into a physical experiment with results that can't be denied. So if it is more difficult to escape the adverse intuition, and since that is shared across people (so that it seems "everyone knows" that it is only reasonable to choose < ‘7’) there is no puzzle to be noticed.

If a player feels uncertain about what to do, a middling choice (like 4 or 5) will appeal as a compromise between the biggest risk (choosing '7' and it turns out someone chose '1') and the poorest payoff (choosing '1' when coordination on '7', if achievable, would pay almost twice as much). But what could possibly account for the further decline to '1' if that worst case has been escaped in round 1? And if the round 1 responses are taken to be responses to strategic uncertainty, it is to *myopic* strategic uncertainty, just within round 1. With respect to the whole game, why wouldn't the sensible response to strategic uncertainty be the one mentioned earlier, which is to stay at '7' for that 1st of 10 rounds, to see how things stand with other players? The behavior we see can be *described* as a response to strategic uncertainty. But from the NSNX perspective it is at least questionable that it can be *explained* as a response to strategic uncertainty./1 Why do players so totally miss what is in their common interest when self-interest alone might be enough to make it sensible to wait at least one round before going lower?

I will argue that indeed something odd is happening that turns on what can be usefully identified as a form of *social* illusion. Cooperation falls to its lowest possible level, and under conditions where logically nothing that players do not already know is needed to sustain full cooperation. Players need only respond with minimal sophistication to what is visibly in each player's own best interest. But they don't.

That this can happen in experimental games we already know from the degenerate games of Chapter 7. But there was no essentially *social* character to the faulty responses. A player who escaped the illusion could unilaterally improve her expected payoff by some change that involved no risk of a loss of payoff. In the Minimum game, however, a player who escapes the illusion (as no doubt many do) faces a dilemma. If others are caught by the illusion, unilaterally going against that is going to lose payoff. There is no commons dilemma here, where everyone would be better off if all cooperate, but each individual can do even better by shirking while others cooperate. In the games in this chapter there is nothing to be gained by free-riding. But cooperation can't be managed anyway, and even if many players in fact do escape the dilemma. So in Weber's experiment discussed earlier, the student players were from universities with more competitive admissions than in Van Huyck's game In the control runs, half the players stayed with '7' in round 1, compared to less than a third in Van Huyck. But every group soon collapsed to it worst payoffs anyway.

And of course if some sort of cognitive illusion especially hard to escape because of its social character is governing the outcomes, it would be important to take notice, and consider whether that sort of difficulty could arise in natural settings. A first intuition might be that since players can be prompted to illusory choices in contexts where they could unilaterally escape (Chapter 7), it is not surprising and so perhaps not especially interesting that they could be misled in a context of what I am calling social illusion. But an opposite insight is likely to be more important. If individuals can unilaterally escape an illusion, then in a natural setting over time we could expect illusory behavior to fade. More and more people, perhaps reaching a tipping point, can see what is sensible. But in a context of social illusion insight cannot easily spread, since even those not caught by the illusion have an incentive to act as if they were.

Here is a stripped-down version of the Minimum game that may sharpen the argument. Allowed choices are narrowed to just ‘7’ or ‘1’, and the choice in round 1 will be binding over all 10 rounds.

The payoff table that would go with this simplified, all-10-rounds-at-once game would be:

		Minimum from another player	
		7	1
You choose	7	$13.00	$1.00
	1	$ 7.00	$7.00

And indeed it looks risky to suppose that out of 6 or more players none would make the cautious choice. Should anyone fail to stay with ‘7’, you would earn 10¢ per round rather than 70¢ per round that could be guaranteed by choosing ‘1’.

But suppose you were not required to make an all-at-once choice. Rather you can make a trial choice of ‘1’ or ‘7’ for only 10% of the stake, and after you see the result of the 10% trial you can choose ‘1’ or ‘7’ for the balance (9-rounds-at-once). A strategy you might consider is to report ‘7’ in the trial round, but continue with ‘7’ only if indeed that is the trial minimum. For if everyone stays with '7' in the trial, all almost double their payoffs by just continuing to do what everyone has already demonstrated they are inclined to do. The risk may not seem severe, and the stakes are certainly within what you can afford. If you judge that indeed, if everyone chooses ‘7’ in the trial that is very likely to hold in the balance, then the effective trial round payoff table for this 1 + 9 game would then be:

		Minimum from another player	
		7	1
You choose	7	$13.00	$6.40
	1	$ 7.00	$7.00

where you stand to gain $6 at a risk of only 60¢. If the riskier choice fails, you get only 10¢ in round 1, but you then get 9 times 70¢ for the balance

And if on reflection your intuition about how sensible it would be to stay with '7' in round 1 changes (for this version with a single trial round followed by an all-at-once choice for the remaining nine rounds), how could it revert for an even safer 10-rounds condition? Then you *never* have to risk a bad result for more than 10% of the aggregate stake? But now we are back to the Minimum game.

Extending the discussion to consider a moderate choice (say 4 or 5, rather than 1) would complicate but not undermine the argument. But it is apparent not only in the behavior of players within the game but also in the comments on the game from experimenters, that this way of looking at the round 1 choice rarely governs how the game is seen. Indeed it generates responses like the simple explanations of 3-Cards and Monty Hall in Chapter 6. It is hard to put your finger on what is wrong with the argument (because in fact there is nothing wrong with the argument), but the illusory intuition does not readily go away anyway.

We want to consider why. But the many examples of puzzling choice from earlier chapters suggest an explanation. We want to account for the propensity to make a middling choice in round 1 (not allowing even one round to see how high the payoffs might be kept though the prospective payoff from risking several dimes is several dollars). And the explanation for that round 1 effect should be such that it extends to explain the even more puzzling further collapse of the minimum beyond round 1. But in terms of adverse defaulting within the NSNX cascade introduced in Chapter 7the required explanation is by now is familiar.

The Minimum game is intended to capture the incentives of team production, in contrast to the Public Goods game, which is intended to capture the incentives of a common pool problem. But getting a good result in the Minimum game is strictly a matter of coordination. There is no free-rider temptation, since the only way to maximize own-payoff is to fully cooperate. But this is not the team production problem as encountered in natural settings, where team production is always subject to free-rider problems, and in two forms. I might risk delaying the team project by slack effort. I plan to be on time (my own interest is harmed if I am late) but if something goes awry, I have not allowed enough leeway to be on time. Everyone has an incentive to do just barely enough, since more than that is wasted. But if everyone aims to do just barely enough then someone is likely to have an unexpected problem and the entire team suffers.

So there is a free-rider problem (the player who puts the team at risk by not leaving enough margin for the inevitable occasional slips). My expectation may be improved by shirking (I don't want to be late, but I am only late once in a while I gain whatever advantage tempts me to shirk every time). But team expectation is diminished, since when I am late it imposes a cost on everyone, not just me. *Some* risk of being late must be efficient, since the aggregate cost of never being late at some point must exceed the value of never being late. Shirking here is what is in excess of that.

And a more familiar sort of free-rider temptation might make my work shoddy as well as slack, diminishing the value of the team effort (or putting a burden on others to straighten out my shoddiness). But neither sort of free-riding is at issue in the Minimum game. If I report '7', that is it. There is no such thing as a tardy '7' or a shoddy '7'.

Consequently the Minimum game is not actually like any team production context players would know from experience in the world. From what we have seen earlier of player difficulties in escaping defaults, we could expect players in this game to recognize the context as cooperative (so with the qualifications discussed in Chapter 8, they escape the competitive branch on the right in the NSNX cascade in figure 7.4) but it would be difficult to reach the coordination frame (2b) on the cooperative branch, since there is no strong jolt away from the default "neither selfish nor exploited" weak cooperation frame (2a). In a context where efficient coordination should not be difficult it then turns out to be essentially impossible, since the salient "neither selfish nor exploited" choice for a player in an unfamiliar setting is some middling level of response. Many players are caught by the default, and respond with intuitions guided by a frame within the cascade (2a) that does not match the actual context they are in (2b). In the language I have been using, they are *neglecting* features of the situation that mark it as a coordination game, not the default risky cooperation game.

The data show players choosing at least *as if* that were so. Players choose *as if* the neglect defaults defined in Chapter 6 leaves them caught in a default frame that does not match the context of the game they are actually in. Or players are in the appropriate frame but with an inappropriate sense of some essential feature of the situation, as seen repeatedly in the Charness & Rabin games considered in Chapter 9. Here many players certainly respond *as if* they were in a Public Goods context though the incentives define a coordination context. In that frame, it will be hard to escape the intuition that even if I stay with '7' others probably won't, and I will be exploited by free-riders. We would (in round 1) then see many middling ("neither selfish nor exploited") responses, as if we were in round 1 of a Public Goods games. And this would also account for the even more puzzling further decline of the minimum in later rounds. For in later rounds groups would be at risk to the sort of choices (recall the *updown* effect explored in Chapter 8) characteristic of players in an actual Public Goods game who chose high in round 1, and were with good reason left feeling exploited by free-riders. Again, players are responding as if they were in a Public Goods game, though if explicitly asked they could correctly describe the Minimum game they are in. But this is not at all the only time we have encountered such a disconnect between what players at a conscious level know and what at a tacit level guides their intuitions.

A player who might in an actual Public Goods game give 0 would be tempted to choose ‘1’ in the Minimum game, for any of the various reasons sketched in introducing the Public Goods games in Chapter 8. But when that player looks at the payoff table he gets a jolt that would push almost anyone to think more carefully, since it yields a payoff of only 70¢, which is low relative to most possibilities in the payoff table, and in particular low compared to the possibilities that left-to-right readings habits make most prominent. So parallel to what was seen in the 20-point penalty condition in the convertible Prisoner's Dilemma (Chapter 7), a player is pushed to think again, back off and pick some higher number. But a player inclined to give a middling or higher amount gets no jolt and is likely to be left feeling comfortable with that inclination. .

Is there evidence for this account? In fact there is quite a bit, either in the way of really strong manipulations which jolt players away from the risky cooperation default (hence yield strong cooperation), but also several variants in which what might be supposed to be adequately strong manipulations fail to entirely overcome the difficulty.

A follow-up experiment by Van Huyck et al (1993) reversed the bleak result by *auctioning* the opportunity to play. Only half the subjects were actually admitted to the game, after all had been prompted to look closely to assess how high it made sense to bid. Hence those who would actually choose would be just those self-selected through a public procedure (the auction) as being most confident that a high level of coordination could be achieved. Players did not always start fully coordinated but if not, groups went up not down

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Another strong manipulation that works is providing really emphatic advice on what to do. Chaudhuri et al (2002) ran groups of Minimum game subjects as a sequence of "generations". Each new generation is given advice from all members of the predecessor generation. At NYU and then again in a replication at Wellesley, if groups were given really emphatic, unanimous, and publicly shared advice that it would be stupid not to choose '7', then in round 1 all players would indeed choose '7'. And then this payoff-maximizing coordination on '7' would almost always be sustained throughout. Players coordinated on their best result, instead of deteriorating to coordination on their worst result.

What might appear to be another sufficiently strong manipulation (Weber, 2006) obtained only qualified success. Weber's games started from just 2 active players. With only 2 players efficient coordination can almost always be quickly reached. After 5 or 6 rounds, active members were gradually added, one by one, until twelve were active. Throughout, all twelve sat in the same room, with those waiting to join watching as coordination on ‘7’ was gradually extended. So those not yet in the active group could see successful coordination starting from the group of two and usually being sustained for at least some additional rounds as, one by one, active players were added. This produced far more efficient outcomes than the standard game. Nevertheless only 1 of 9 groups sustained fully efficient coordination throughout. Two other groups were nearly successful. But six of nine groups in this benign situation failed to come close to full cooperation. Similarly, in the Chaudhuri manipulation merely giving players really emphatic advice in writing but not *reading it aloud* clearly improved chances that players would stay with '7' but not enough to avoid the usual collapse.

So we can see that the tendency for cooperation to collapse is hard to block. Even strong manipulations can fail. To work, it seems that a really forceful jolt away from the default is needed. How forceful is surprising, yet not *more* surprising than the many strange details we have by now seen in experimental data, but which can be comprehended if indeed adverse defaulting occurs in the strong form I have been proposing. The Weber experiment is particularly instructive. When Weber adds another player to the game while full cooperation is still being sustained, that new player is joining a group all of whom are fully cooperating, and who had been continuing to cooperate as new members joined. When coordination on '7' breaks down, there usually remain multiple future rounds, and fully cooperating maximizes payoff for everyone. Why would there be sufficient strategic uncertainty about what profitably coordinating players are likely to do in the next round to lead to a breakdown of that maximally profitable level of coordination? But if players are vulnerable to the adverse defaulting I've described, then even if overcome for some rounds it can return, as even after being convinced that it pays to switch in Monty Hall the illusory intuition can return.

On the other hand, if this certainly strange account of what is happening is right, we ought to be able to find more specific evidence for it. Here are some examples.

1. We have already seen (in Chapter 7) that in a variant of the Minimum game in Valencia that totally eliminated strategic uncertainty a large majority of players give middling responses anyway, not only in round 1 but continuing through many successive rounds. Strategic uncertainty is literally zero. But players continue to act as if they are concerned that they need to guard against a concern that does not exist.

2. A restart in the Minimum game, in contrast to the Public Goods game restart seen in Chapter 8, failed utterly to yield the renewed effort at cooperation which is a robust feature of Public Goods games. By the end of Van Huyck's 10 rounds, essentially

all choices were at or very near '1'. Apparently prompted by this dismal result in the first group, each of six more groups (91 players out of the total of 107) were asked to continue with five rounds of the "can't lose" variant described in Chapter 7. As described there, attention is more emphatically directed to the elimination of strategic uncertainty than in the Valencia game, and here by round 15, all players were choosing '7'. A restart with these 91 thoroughly experienced players, with coordination on '7' in place, then yielded an even more dismal result than the first 10 rounds. The fraction of players who immediately dropped to the bottom at the restart hugely increased relative to round 1 (from 2/107 to 24/91). And that can be understood since relative to an actual Public Goods game, where a restart returns players very nearly to their round 1 choices, in this game the loss from choosing high when someone else chooses low is more severe./2

Yet even though the overall restart choices are far below the round 1 choices, the fraction who stayed with the maximum choice hardly changed at all. A NSNX conjecture then is that players who stayed with '7' in round 1, who would have the strongest reason to feel exploited, would be reluctant to do that again at the restart. But those who went against that strong move down would likely include many players who reported less than '7' from the start in the original series, who would be more likely to feel selfish rather than exploited now. Since the fraction staying with '7' was essentially unchanged in the replay, the NSNX perspective would prompt us to ask: did "types" persist, or did types reverse as on a NSNX account they well might?

And among the six groups given the opportunity for a restart, the players who chose '7' were indeed overwhelmingly different in the round 16 restart compared to round 1. Among the 91 players given the restart opportunity, only 8 of 23 choosing '7' at the restart had been among the 25 choosing '7' in round 1. Those who chose '7' in the replay were by a large margin those who contributed to the collapse by starting off at < '7' in the original play.

A similar effect can be seen in Weber's data. Among five groups of 12 run as controls (so they started with all 12 players active), choices of '7' in round 1 were much more common than in Van Huyck's game (33/60 vs. 31/107 in Van Huyck). All groups, nevertheless, quickly collapsed to the minimum. Only one player immediately chose '1' in round 1 (here parallel to Van Huyck, where only 2/107 did that). On the NSNX conjecture of the previous paragraph, those first to drop to '1' would be especially likely to be players who stayed with '7' in round 1, who would feel most exploited. In the four groups where this can be tested there were, counting ties, 6 players were first to choose '1'. And of 26/48 who stayed with '7' in round 1, 6/6 were first in their group to later plummet all the way to '1'. Again players are responding *as if* motivated by "neither selfish nor exploited" concerns that are logically not present in this game.

3. Chaudhuri, having replicated the NYU result at Wellesley, considered what would happen if the coordination game was replaced by a standard Public Goods game. Chaudhuri wondered if players might still "talk themselves to efficiency". It turns out that advice from a prior generation that firmly counseled staying on the team, not be selfish, yielded close to 100% coordination on the optimal group behavior of contributing the full endowment to the common pool. Changing the game from one where the free-rider concern would be illusory to one where it was actually in play made remarkably little difference.

Without strong advice and listening to that advice as a group, many choices in the Minimum game (given the rules, one such choice in a round is enough) responded as if chooser was seeing the game as a free-rider problem, as (unsurprisingly) did players in the game with an actual free-rider problem. With strong advice and listening to that advice as a group, players uniformly framed the Public Goods game as a coordination game. This turned out to prompt a reframing but not an illusory reframing, since in fact the manipulation here was sufficient to orient the players to pretty nearly act as a team. If you are motivated, as NSNX supposes, to be "neither selfish nor exploited", and you expect others to cooperate, then even from the free-rider context (2a) it is likely to seem reasonable to risk cooperating at least through round 1, and to continue that way when that anticipation of cooperation was confirmed.

Chaudhuri's results here were complementary to the striking effect which started this discussion of the Minimum game. Lacking cognitively effective cues that default responses would be unsound, Spanish students in the logically trivial game described in Chapter 7 acted as if they faced "neither selfish nor exploited" choices when no such risk existed. American students at Wellesley chose as if there were, or as if there were not, good reason for free-rider concerns whether in a Public Goods game (where that is an issue) or in the Minimum game (where it isn't), in either case contingent on whether or not they were prompted to expect a high level of cooperation, not on whether there actually was a free-rider risk.

4. A telling detail of the Minimum game results is that although coordination problems of course become increasingly severe as group size grows, choices do not reflect that. Fig. 2 reprints Camerer's (2003, pp. 383-4) tabulation of results across experiments, showing that "distribution of first-round choices is surprisingly invariant to the number of subjects in the group", prompting his comment that "subjects in larger groups should realize that the minimum in a large group is likely to be low, and should choose much lower numbers than in small groups". But if strategic uncertainty is (correctly, of course) directed to the money payoffs at the end of the game, not myopically to the paper tally at the end of round 1, and if NSNX motivation governs, then responses from NSNX players might reveal just such invariance.

FIG 2 HERE

Recall the remarks near the beginning of Chapter 8 on the contrast between standard models and NSNX on the effect of increasing group size. For a NSNX player *not* caught by adverse defaulting, staying with '7' in round 1 remains a reasonable response to strategic uncertainty, since the increasing risk of low choices with increasing group size would be offset by the increasing aggregate value of keeping coordination high. Perhaps that increasing group value of staying with '7' (more players will be hurt by going low) would not fully offset the increasing risk of a low choice by someone else. The theory does not imply which way that would go. But the offsetting effect might be strong enough that players *not* caught by adverse defaulting would respond very similarly in large and small groups.

On the other hand, a player who *is* caught by adverse defaulting would be giving responses anchored on intuitions more appropriate for a Public Goods game than for the Minimum game they are playing. Under NSNX motivation, as discussed in Chapter 8 and as can be seen confirmed in the actual Public Goods game data in Chapter 8, players in the "neither selfish nor exploited" frame also will not be one-sidedly prompted to lower choices by increasing group size. They are not likely to choose '7', but the middling levels favored by this frame would not be much affected by group size. So whether players are caught by adverse defaulting or not, on the account here we have reason to doubt that increasing group size will push choices lower. Standard views, as Camerer makes clear, emphatically say the opposite. A large body of data, across many replications of the Minimum game, show that the standard view is wrong.

5. But what seems to me the most striking support for the NSNX + cognition account comes from Van Huyck's subsequent results in a game where payoffs were determined not by the *minimum* choice in a round, but by the *median* choice (Van Huyck et al, 1991). There were 9 players in each group, using the payoff matrix in figure 3. As before, the game would run for 10 rounds. But now the governing choice in each round would not be the *minimum* choice in the round, but the *5th lowest* among the nine choices (the median).

FIG 3 HERE

In the Minimum game a player would lose by staying with '7' if even one of the eight other players fails to do the same. But in the Median game, staying with '7' is the most profitable move unless at least five of the eight other players choose < '7'. What is required is 5/8 choosing < '7', not 5/9, since if the chooser herself is needed to provide the 5th, she won't. So it is far less risky to choose '7' in this Median game than in the Minimum game. And in addition the payoff matrix now makes it costly to choose lower than whatever turns out to be the governing number, rather than (as in the Minimum game) only costly if the choice is above the governing number. So in this way also any temptation to choose low must be less. Finally, since the median is determined by what most players choose, even in round 1 most payoffs will be in the upper left or lower right quadrant, where payoffs in the upper left are conspicuously bigger than in the lower right.

A player who responded only to that grossest feature of the game has a strong prompt away from the competitive right branch of the cascade in figure 7.6 (p. --).. The better payoffs are only available if players jointly produce a median that makes the high payoffs available. But a player who neglected further details (that is, a player caught by the *neglect* defaulting introduced in Chapter 6) would then be caught by default in the "neither selfish nor exploited" weak cooperation frame (2a). A player caught by that would respond about the same in this Median game as in the Minimum game. For a player neglecting the difference between the Median game and a Public Goods game is scarcely likely to be very alert to the difference between the Minimum game and the Median game. In both games (Minimum and Median) players caught by neglect defaulting would tend to exhibit myopic responses to strategic uncertainty, and would tend to "neither selfish nor exploited" middling choices that look much like choices in round 1 of a Public Goods game (but with the lowest choices deterred in the way mentioned earlier in this chapter).

On the other hand, a player who did *not* neglect all but the grossest features of the game would not be caught in the "neither selfish nor exploited" frame, since there is no free-rider risk here. A player not caught by neglect defaulting would be nudged away from that default over to the coordination frame (2b). Schelling long ago (1960) reported that when he asked people how they would respond if they would win a prize if they make the same choice as another person between "heads" and "tails", that 36 of 42 chose "heads". Here players have the certainly easier coordination problem of choosing between more money and less money. If not caught by adverse defaulting, when players make their choice in round 1 of this 10 round game it would hardly be difficult to see that everyone should want to help get a median in the upper left quadrant.

But set aside what is best for the group and what is best looking ahead. Unless a player thinks the median will be 3 (or less), anyone who actually responds to the payoffs in figure 4 can see that choosing ‘5’ dominates choosing ‘3’ even considering only expected own-payoff within the current round. That 5 of the 8 other players would then choose 3 (or less) looks negligible bordering on impossible. Consequently, for a player alert to what is at issue in this game, the relevant portion of the payoff matrix collapses to figure 4.

FIG 4 HERE

And now, unless you felt almost sure the median would be '4' (but how could you?), you would certainly choose at least '5', since '5' could lose only 5¢ if the median is indeed '4' and otherwise is better by at least several times that, aside from improving prospects for a better median in the nine future rounds. An iterated dominance argument here would yield '7' as the unambiguously best choice. Following Camerer, I treat that as too much to expect even of sophisticated and alert players. But if players are alert (if they are not caught by adverse defaulting which prompts them to choose as if they were in a Public Goods game), we would see only '5', '6', or '7' choices. It would not be at all surprising if the median turned out to be '7'. And certainly we would not see the mostly middling choices that players caught in the "neither selfish nor exploited" frame 2a would report.

So we have a stark contrast between mostly middling choices to be expected from players caught by adverse defaulting and responding as if in a Public Goods game, as against players not caught by adverse defaulting whose choices would be tightly clustered at the high end. Figure 5 shows the results. They look nothing like what we would see from alert choosers even if self-interest alone was motivating responses. And that only becomes more emphatic under the constrained but not negligible NSNX concern for group outcome seen repeatedly in earlier chapters.

FIG 5 HERE

As the cutline explains, the choices on the right are biased downward. But even in the responses (on the left) the fraction staying with ‘7’ (5/27) in this Median game is actually smaller than the fraction in the Van Huyck’s Minimum game (31/107), though on the logic of the situation the result should go in the opposite direction. Choosing ‘7’ should be more common not less common. But it isn't. We should adjust the numbers on the right upward, making the right column look like the left. But that still leaves us with no evidence of the increase in average choice that should be seen if players are responding to the sharp differences in incentives between the Minimum and Median games. Any change is in the wrong direction. Somehow players are not responding to the difference between the Minimum and Median games, but apparently only to the most superficial appearance of the matrix. The presence of negative payoffs for the high choices would give some negative salience to those choices, as having to consider the 5th lowest choice among all 27 players would give extra salience to low choices in the groups on the right in figure 6. But these are reasons that an observer would give to explain choices that make no logical sense given the actual incentives in play.

But if players barely notice the difference between the Minimum game and a Public Goods game, making choices influenced by logically irrelevant salience (such as negative payoffs that a moment's thought would show could not plausibly occur) it is not hard to understand that they would not respond to the difference between the Minimum game and the Medan game.

Reviewing the range of very different variants of the Minimum game (the trivialized Valencia game, the Wellesley experiment using Public Goods payoffs in place of the Minimum game payoffs, the auction game, Weber's evolving game, and now the Median game) we see data that are really puzzling in terms of the standard account of why coordination robustly falls to its worst level in the Minimum game. The same results provide a coherent pattern of responses if players are vulnerable to adverse defaulting, as we have seen they are in numerous examples in earlier chapters.

And all this prompts a pair of important questions.

(1) What should we make of the point that observers of this game seem to be as vulnerable to the illusion as players within the game? So far as I have been able to find, nothing in the extensive discussion the Minimum game questions the standard account, though we have just reviewed a quite overwhelming array of readily available data that suggest that something is seriously wrong with that account. Even as shrewd and careful observer as Camerer, in the comment quoted earlier, is reduced to what almost looks like scolding players for their failure to behave the way they ought to behave.

But being human, of course we observers of the game might be caught by the adverse defaulting that catches our subjects. Few readers would have had trouble seeing that the player responses seen in Chapter 7 are not sensible. Seeing something wrong with the subtle but noticeable decline of contributions in the BSM-EX-R game in Chapter 8, and much more grossly with the deficit of normal reciprocity responses in Chapter 9 is not so obvious. But it usually requires no elaborate effort to persuade readers that there is something odd. .It seems to be enough just to point to what players were doing. Here, though, I have made a pretty elaborate effort to persuade a reader that there is something to be explained and probably fallen well short of complete success anyway.

What accounts for that difference? Players are getting a terrible result. They robustly sink to their lowest payoffs. That the players are doing badly is noticed in all discussions of the Minimum game. But this is taken to be as much as could be expected given the condition of this game. Attention quickly turns to the success of players in achieving a Nash equilibrium. The result is terrible. But it is often a Nash equilibrium, even if an equilibrium coordinated on the worst possibility. Except for the puzzling absence of an effect of group size on initial choices, the results have been treated as unproblematical, showing rational choice at work. Could this be right?

(2) But perhaps all that these results show is how irrelevant laboratory results are to understanding how people choose outside the lab. Could anything so odd occur in the world beyond the lab? I have more than once indicated that I think such things do occur, and with more important consequences than are easily recognized. What makes the games in this chapter of special interest is that they appear to reveal a *social* illusion. The illusion is widely shared in a situation where even a player who escapes it cannot unilaterally improve the situation. So correcting the illusion becomes difficult indeed, in the way I described early in this chapter, which may make the consequences more serious, with both problems aggravated when there are many interacting agents and complicated and conflicting motivation, as is characteristic of political situations.