
REWARD DISTRIBUTIONS, JUSTICE

AND

EXCHANGE STRUCTURES

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Homans (1961), Blau (1964), and Adams (1965) have all proposed rules which govern the distribution of outcomes and contributions among participants in a social relationship. Although these rules have been given different names (distributive justice, fair exchange, and equity, respectively) and differ somewhat in formulation and emphasis, the most general statements of all three are identical: an individual's outcomes should be proportional to his contributions, and the outcome/contribution ratios of all participants in a relationship should be equal. These rules are normative, and the violation of them produces noxious consequences for the participants, be it internal tension (Adams), anger or guilt (Homans), or the sanctions of some relevant community (Blau).

The concept of distributive justice, which we shall use as the generic term for these rules, has proved to be extremely useful to social scientists. Homans has relied upon it for a theoretical interpretation of the effects of status incongruence (Simpson, 1972), while Blau considers it a back-up norm for, and thus a partial explanation of, the processes which produce stable power differentials in groups (1964: 91 ff.). The concept has also provided theoretical explanations for otherwise anomalous data on the satisfaction of organization members in a variety of settings (e.g. Patchen, 1961; Yuchtman, 1972; Blauner, 1964). Moreover, the concept has generated a wealth of empirical research, particularly Adams' specific formulation (for two recent reviews, see Goodman and Friedman, 1971, and Walster, Berschied, and Walster, 1973).

The purpose of this paper is not to challenge the utility of distributive justice, nor the reality of the social phenomena it purports to predict and explain. Rather, we shall 1) review some related literature which suggests

that distributive justice is a less than universal norm; 2) examine more closely the assumption that distributive justice is a norm or reward in itself; and 3) present data which bear upon some of the questions raised in 1 and 2.

How universal is distributive justice?

The reader should bear in mind that there is ample evidence, both experimental and field, available in the literature which supports to some degree the basic propositions associated with distributive justice, some of it quite dramatically (cf. Adams, 1965). Since the purpose of this paper is not to dispute this evidence, although some of it will be questioned, but rather qualify its generality, we shall not review it here. The question we raise is not "Is there a rule of distributive justice?" The evidence clearly says there is; we wish to address the question of whether it is the rule governing the distribution of outcomes and contributions in a social relationship, or whether it may not be better be treated as one of a set of rules which are available to the participants. This is not simply a question of how frequently distributive justice is or is not followed in fact: both Homans and Adams recognize that there are many slips twixt the rule and its application. Both dispute over what is to be considered a contribution and cognitive distortions by person of his own and other's contributions and outcomes leave many empirical cases unclear as to whether or not the participants think that they are in a distributively just relationship, whatever, the assessment of an observer may be. But if there are frequently occurring alternative patterns of distribution, then we must recognize that they, too, may be the result of rules, and must be explained.

B. F. Meeker (1971) identifies five rules which are available to the participants in an exchange: rationality (self-interest), altruism,

reciprocity, status consistency, group-gain, and competition. Status consistency and reciprocity are rules that tap two different dimensions of distributive justice. Homans defines distributive justice as

$$\frac{(R-C) - (R-C) \text{ foregone}}{I} \substack{p \\ } = \frac{(R-C) - (R-C) \text{ foregone}}{I} \substack{o \\ }$$

Where R = Rewards received

C = Direct costs incurred,

(R-C) forgone = Opportunity costs, or the outcome available in person's next best available relationship

I = Investments, or those contributions such as education and training, brought into the exchange by a participant

p = Person

o = Other

[This formula is derived from Homans' definition of Profit as (R-C) - (R-C) foregone. (Flynn, 1972; Simpson, 1972)]. Adams' on the other hand, defines Equity more simply as

$$\frac{O}{I} \substack{p \\ } = \frac{O}{I} \substack{o \\ }$$

Where O = outcomes,

I = inputs,

and p, o are person and other.

The definition of outcomes and inputs is not precise in Adams' work, but in the empirical work generated by this formula, outcomes is generally operationalized by some form of monetary reward, and inputs by relatively direct contributions, such as effort and performance, (e.g. Leventhal and Michaels, 1969; Leventhal, Michaels, and Sanford, 1972).

In Meeker's usage, the rule of status consistency emphasizes the relationship of outcomes in an exchange to the status characteristics or background characteristics a participant brings to the exchange with him. In this sense, this rule is similar to Homans' usage of distributive justice. Meeker's rule of reciprocity relates the outcomes of a participant to the costs he incurs in producing rewards for his exchange partner. This seems to be closer to the direct costs Adams emphasizes (Meeker, 487 and 490). The major point is that, for theoretically appealing reasons, Meeker treats two rules representing distributive justice as two of six possible rules, all of which may become normative in an exchange (492). Moreover, she hypothesized that participants will adopt rationality (self-interest), ceteris paribus. The choice of other rules depends upon the relationship providing a pay-off structure such that 1) there is no consistent choice which is rational and 2) there is a consistent choice which meets another rule or 3) there are long run costs associated with rationality. Meeker's analysis moves distributive justice from a "general theory of social behavior" (Walster, Berschied, and Walster, 1973: 151) to one of a range of choices, and not even the dominant one at that. It is these choices, then, which need to be explained.

Sampson (1969), too, has argued that the observance of distributive justice in exchanges is less than automatic. Dealing specifically with the empirical results of a range of studies dealing with status congruence, Sampson argues that groups must deal with two problems: mastery over the environment, and justice in the distribution of outcomes to members. He argues that for the relationships to continue, some sort of a balance must exist in the solutions of these problems. Groups can alternate between procedures which alleviate one problem or the other. For example,

if differential rewarding will secure better performances from individuals (as Katz, 1964 argues), and thus facilitate group mastery, the group on some occasions will differentially divide rewards; on other occasions, internal problems of justice may well dictate egalitarian distributions. Sampson thus introduces another plausible exchange rule: equal distribution, regardless of contribution. Sampson feels that reward distributions in line with distributive justice may well simultaneously meet the demands of justice and mastery, and clearly in the example just presented one could argue that such is the case. But it need not always be so. Members of sport teams with one highly paid super-star may well recognize the necessity for the unequal distribution of monetary rewards. They may in fact be "satisfied" with the situation, but it is highly improbable that they would recognize the \$200,000 annual salary of a super-star as realistically and fairly reflecting 10 times their own contributions, which we might conclude from their annual salaries of \$20,000. Both Gamson (1964) and Yuchtman (1972) feel that equality is the distribution most likely when group solidarity is the concern. Some evidence that distributively just allocations may not be the best way to deal with internal groups conflicts is presented by Leventhal, Michaels, and Sanford (1972). These investigators found that allocators increased the amount given to the worst group member at the expense of the best group member when they were instructed either to 1) try to avoid internal conflicts in the group or 2) try to avoid conflicts between the group and the allocator. Similarly, when group members would know each member's share, the allocations were less extreme than when secrecy was maintained.

More strongly than Sampson, one could argue that mastery is generally a prior concern to justice. Members of a group (be it a dyad or an organization) worry first about securing rewards from the environment, then about how those rewards should be divided internally. Experimental evidence for

this proposition has been presented by Wiggins (1966). He showed that the reward distribution of a group (egalitarian or differential) was determined by the external consequences for the group resulting from the distribution, not by prior differences in contributions (both monetary and performance). Meeker sees rationality as dominant, and the extension of Sampson's argument sees, in Meeker's terms, group-gain (securing the largest outcomes for the sum of the participants) as dominant over distributive justice.

Both Meeker and Sampson, then, see distributive justice as an important exchange rule or norm, but place it in the context of one-of-many, rather than the sole or even the main rule for the distribution of outcomes and contributions among participants in a social relationship. Thus, there are theoretically cogent arguments which question the utility of treating distributive justice as the rule.

Let us now turn to some related empirical work, which, while not always couched in terms of distributive justice, addresses the subject matter of that rule: the distribution of outcomes and contributions in a relationship. In particular, we will discuss evidence that suggest that the rules of exchange Meeker calls rationality, group-gain, competitiveness, and the egalitarian rule added by Sampson occur with sufficient frequency that they merit discussion as important in their own right, rather than as "failures" of distributive justice.

The clearest evidence in support of the group-gain rule has already been mentioned; it is that of Wiggins (1966). Another experiment reported by this investigator (Wiggins, Dill, and Schwartz, 1968) is interpretable as evidence of the existence of a rule of group-gain. These investigators were interested in the effects of a group member's status upon the level of punishment delivered to him when he interferes with the achievement of the

group goal. The investigators expected to find an interaction between status and level of interference such that high status persons would be punished less than low or medium status persons under low or medium interference, but would be punished more under high interference. It is important for our purposes that the status manipulation was based on the prior contributions of the interferer to the group score on a series of tasks, and that his interference (failure to obey instructions and a consequent group penalty delivered by the experimenter) was manipulated by the effect of the experimenter's penalty upon the chances of the group to win a \$50.00 prize. Under low interference the penalty had little impact upon the groups' chances of winning, under medium interference, a moderate effect, and severe interference constituted a penalty which was "... virtually impossible to make up ..." (p. 540). We must keep in mind that there are many rewards in social interaction, and that while this experiment measured only two of them (liking for the interferer and the amount of the \$50.00 he should receive if the group won the prize), most reward distribution experiments examine only one reward. For both these rewards, the predicted interaction occurred. The authors do not find distributive justice a persuasive explanation for all of their data, and argue that in this instance the "protection" afforded by high status at low levels of interference may occur because the high status (= high contribution) individual might retaliate for a severe punishment by withdrawing his "contributions" on the subsequent task, thus endangering the group's chances for mastery. In the case of severe interference, however, all chance for mastery is lost, and high status is punished more than low status. Severe punishment falls upon the "great" who fail - those of whom we come to expect much simply should not fail. When they do, our reactions are stronger than when someone of whom we do not have high

expectations seriously fails. The members of the groups in this study seem to have surrendered any attempt to "play-fair" at low and medium levels of interference in order to maintain the high status interferer's potential contributions to the group good.

Evidence that the egalitarian rule is frequently followed is much more plentiful, perhaps because this distribution rule is more frequently considered as a possible counterpart to distributive justice (Sampson, 1969). Consequently, where they do occur, they are noted and catalogued as such.

In the first Wiggins experiment discussed above it is noteworthy that on the first play of the experimental game all groups divided the winnings equally - this occurred before the external consequences took effect, but after differential contributions had been manipulated. That is, group-members risked different sums on the play, they differed in terms of decision power, and they differed in terms of a scarce resource (knowledge about the experimenter's likely move). Wiggins (1966) attributes this to the strong egalitarian norm prevalent among college students. Moreover, a number of distributive justice studies examine situations in which the participant's contributions are equal (Leventhal, Weiss, and Long, 1969; Leventhal, Allen and Kemelgor, 1969). In this case, of course, distributive justice and egalitarian rules coincide in predicting a 50-50 reward distribution; but the data may be taken as support for an egalitarian rule as well as for distributive justice and may not be used to argue that one is more prevalent than the other. In fact, some equity research in which contributions such as performance were varied offer more impressive support for an egalitarian rule than for distributive justice.

Leventhal and Anderson (1970), for example, found that kindergarten age children whose performance inputs on a star-pasting task were manipulated to be 75%, 50%, or 25% overwhelmingly elected to divide their rewards equally. Of eight groups only males with 75% contribution took more than half, and they took 12.70 of 20, which is reported to differ at the .01 level from a 50-50 split. It should also be noted that the t value for the difference of 12.70 from 15.00 (the theoretical expectation under the distributive justice model) is -3.52 which, with 19 df , differs from distributive justice at the .01 level.¹ Here we have a case where 7 of 8 groups reveal support for an egalitarian distribution rule, and one group "splits the difference" between egalitarian and distributive justice rules. Yet the interpretation claims general support for distributive justice's proportionality between rewards taken and contribution, arguing that self-interest led low contributors to cognitively distort inputs. Parsimony would dictate seriously considering the possibility that the distributions were simply egalitarian. Leventhal and Lane (1970) examined a similar experimental situation utilizing college age subjects. Here males with both superior and inferior performance allocated a monetary reward in line with distributive justice. Females, however, did not. Those with superior performance allocated the reward in line with the egalitarian rule, while those with inferior performance took reliably less than distributive justice would allow -- Meeker's altruistic rule was perhaps operative here. Clearly if females do not allocate rewards in line with distributive justice, but rather follow an egalitarian or altruistic rule, our theory should allow for this as more than simply an aberrant case.

Another rule posited by Meeker is competitiveness, a rule which assigns maximum value to the difference between person's and other's reward such that person's is higher. Consider a non-zero sum experimental

game such as Prisoner's Dilemma (or its many variants) in which if each player cooperates both receive a small joint payoff, if one defects while the other cooperates, the defector wins more than a joint cooperative play, but if both defect they both do poorly. Clearly, individual rationality leads to joint loss, and the only way to ensure long-term gain is to jointly cooperate. Yet in this situation, the rule seems to be competitiveness — players will maximize the differences between themselves, even at an absolute cost. Hartford and Solomon (1967) report data which show that for 23 trials in which a "partner" follows a strategy of playing cooperatively after each cooperative move of the subject elicited a cooperation rate of 39.2%, even though any particular motive set was avoided in the instructions. Bixtenstine and Wilson (1963) report that an initial strategy of 95% cooperative choice elicited a cooperative response rate of 29.2%, while a strategy of an initial 5% cooperative choice moving to 95% cooperative choice elicited a cooperative response of 48.6% for the final stage. This experiment, too, avoided a cooperative or competitive instructional set. Komorita (1965) used a variable probability cooperative response to a subject's cooperative move. These probabilities were .25, .50, and .75, and the highest cooperation response probability, in response to .75, was less than .3 for females, and less than .10 for males. In a second study reported in the same article, the strategy simply matched a subject's response. When the instructional set was to avoid competitiveness, the probability of females choosing cooperatively was .56, for males .47.

Minas, et. al. (1960) used a series of seven different matrices, all of which maximized joint gain in the cooperative cell. One matrix had the same individual value for joint cooperative and defector choices, zero for joint defection. Another matrix had a higher individual value for joint

cooperation then for defection. For three of the initial five games with male subjects, the cooperation rate averaged about 37.5%; for the remaining two, female subjects averaged about 52% cooperative choice. The games with equal or higher payoff for cooperation were played by females, and elicited 48% and 53% cooperative choices, respectively. It is worth noting that these investigators went to great lengths to avoid introducing competitive sets in their instructions.

These studies, then, indicate that in spite of our best efforts to avoid competitiveness, either by instructions or the matrix structure, the structure of a task such as Prisoner's Dilemma, and its variants produces a high rate of competitiveness in the choices. Competitiveness seems to overcome rationality, and to be about as robust as group-gain, even when rationality of group-gain are structurally congruent.

One cannot argue that these "games" should not be considered exchanges, and thus are not covered by distributive justice proposition. They are exchanges (Homans, 1961; 35ff). Moreover, much of the behavior "exchange theory" purports to explain is probably flavored by competitiveness: the neophyte agent and the old-hand may exchange advice for approval or deference, but there frequently are tones of competitiveness and feelings of superiority, at least for the old-hand.

The rule of rationality (maximizing one's own outcome) is covered last because it naturally comprises part of the second theme of this paper: that the evidence produced to date does not support the assumption that distributive justice is a reward in itself or a strong social norm. Before examining the evidence that rationality is an exchange rule, we shall examine the critical role of this assumption in the distributive justice proposition.

The Reward Value of Distributive Justice

Much of the theoretical, if not the empirical, doubt this paper has attempted to cast upon the centrality of distributive justice in governing social relationships becomes meaningless if we assume that the observance of distributive justice becomes a reward in itself and its violation a cost, as Homans does (1961: 77).² Recall Meeker's hypothesis that rationality will be the exchange rule chosen unless there is no consistently rational choice and there is a consistent choice congruent with another exchange rule, or there are long run costs associated with rationality. If observing distributive justice is a reward and its violation a cost, then one could argue that 1) because of its added reward value, distributive justice is the rational choice or 2) that there are always costs associated with the use of rationality unless it is congruent with distributive justice. With either argument, distributive justice becomes the most probable choice, and retains its central place in an exchange perspective. In Adams' work, too, the maintenance of equity becomes a reward and its violation a cost. The underlying motive for following an equity rule for Adams is that a state of inequity arouses cognitive dissonance -- an aversive motive state (1965). The discomfort aroused by dissonance is aversive, and therefore a cost, and as such its avoidance is reinforcing. Blau (1964) and Walster, Berschied, and Walster (1973) both assume that the violation of distributive justice will result in punishment by some relevant social community, and Blau explicitly adds that its observance will bring social approval. So all the major varieties of distributive justice make the assumption that distributive justice is the standard or norm for distributions. Homans and Adams argue that its observance becomes a reward in itself, and its cost a violation, while Blau and Walster, *et. al.*, argue that the behavior

of an allocator is sanctioned contingent upon its meeting or violating distributive justice. But are these assumptions reasonable?

Perhaps the most clear evidence suggesting that this assumption is tentatively acceptable is Adams' own work on the effects of over-payment upon performance (Adams and Rosenbaum, 1962; Adams and Jacobson, 1964). Briefly, Adams showed that workers who are told that their qualifications are not as high as their co-workers, while their pay is equal, will increase their inputs to restore distributive justice. This evidence is appealing because it is a situation in which establishing distributive justice forces the person to incur extra costs. Clearly, then, under any form of rationality assumption, there must be reward value attached to establishing distributive justice, otherwise the person is choosing a lower outcome level than he need under the structure of the relationship. This evidence is not totally persuasive, however. The response of increased effort (either quality or quantity) may be instrumental to other rewards in addition to whatever its reward value in establishing distributive justice may be. The behavior may well have been an attempt to increase job security (the least qualified are the first fired) or to improve the subjects' presentation of self to the experimenter (I'll show you who's not qualified) or ego-defensive (I know I'm better than that).

These alternative explanations suggest a useful way to consider distributive justice. Might it not simply be one of many possible instrumental responses available to people in exchange situations? If that is the case, then we can accept Meeker's general perspectives and hypotheses as more useful, and treat distributive justice as one optional exchange rule, like the others in that its choice depends upon 1) whether there is a dominant rational choice and 2) how congruent with long-term rationality it may be. Rather than being the one central rule which is rewarding or rewarded, it is one of many, and the theoretical task is to determine the conditions which will produce a reliable preference for one over the other.

The key here is probably the notion of long term rationality, and the problem is to assess what conditions make the differing exchange rules congruent with long-term rationality. The solution of this problem is beyond the scope of this paper, which seeks to identify the problem and present some data bearing upon it. The matching of behavior to long-term rationality will be called modified rationality, and the general expectation is that exchange rules will be adopted which are congruent with modified rationality. This removes the expectation that any one short-term rule will dominate the others -- even self-interest is enlightened by the constraints of the situation.

Is there evidence, then that rewards and contributions will be distributed in accordance with a rule of modified rationality? There is, and some of the most interesting comes from the distributive justice literature itself. Much of Leventhal's recent work has examined the behavior of allocators from a perspective which, while still couched in terms of meeting or violating distributive justice, is much broader in its implications. He has examined the effects of the allocator's motive set upon his distributive behavior, and has begun to examine the factors which determine an allocator's attribution processes, and thus his motives and use of rewards.

Leventhal and Whiteside (1973) demonstrate that in line with distributive justice, students assigned higher grades to students with "C" aptitudes than to students with "B+" aptitudes for equal examination performance although the discrepancies were small. [The assumption here is that the lower aptitude student has a higher contribution because of greater effort]. However, the discrepancies were greater when the student was to assign the grade so as to elicit high performance than when

instructed to be fair. Moreover, the discrepancy was maximum when the examinees had supposedly been forewarned to perform maximally. These results are not as clear as one might like (there was no decrease in the grade allocated to high aptitude examinees who were forewarned), but they do suggest that behavior in line with distributive justice may well be more a function of some motive other than establishing distributive justice. Similarly, Leventhal, Weiss, and Buttrick (1973) shows that allocators may well violate distributive justice, by allocating higher rewards to an exchange participant who is more likely to use them, in spite of equal task inputs. This effect was even stronger when allocators thought that the rewards would spoil relatively quickly. This result suggests that yet another exchange rule is needed: we can call it maximum resource utilization, and describe it as that rule which assigns maximum pay-off to the distribution which allocates rewards so as to maximize their value to the recipient. Finally, Leventhal, Michaels, and Sanford (1972), as mentioned earlier, shows that allocators who were instructed to distribute rewards so as to minimize possible intra-group conflict or conflict between themselves and the group decreased the distributively just discrepancy between the highest and lowest performers in a four-man group.

This author collaborated with Michael Kruger on an experiment designed to extend the work of Leventhal, Weiss, and Buttrick. A fuller report of this experiment will appear elsewhere, but some of the results relate to our concern here. This experiment asked subjects to divide rewards among participants in a market research study. When the study was described as complete, and the reward as an unanticipated bonus, subjects allocated the reward in line with participant's need and the value of the

reward to the participant. When the reward was used to elicit future participation, however, both the pattern and the motives changed. In fact, where the reward allocations failed to precisely meet the theoretical expectations for inducing an equal probability of participation by each candidate which had been requested, the allocators reflected this in their own differential estimates of the actual probability of participation for each individual. Clearly, then, these allocators varied the "rules" they used depending on the situation.

Shapiro (1972) reasoned that subjects could choose between following distributive justice or equality in a reward distribution situation, and that subjects who expected no further interaction would simply choose the "norm" which gave them the largest pay-off -- a modified rationality strategy. Thus high contributors would opt for distributive justice, which would give them roughly 60% rather than 50% of the joint reward, while low contributors would opt for equality, which would yield them 50% rather than the 40% of distributive justice. These results were obtained. Shapiro further argued that when future interaction with a partner similar to themselves is expected, then allocators will opt for the rule which yields their partner a larger share. This proposition was couched in terms of impression-management. The results here were less clear: the high performer did take 50% rather than 60%, but the low performer continued to take 50%, rather than the expected 40%. The results, none the less, do suggest that there is a decision made concerning the instrumentality of the exchange rule followed. As in the later work of Leventhal and his colleagues, this decision appears to be made upon instrumental grounds -- what are the consequences in each case -- rather than a simple observance of distributive justice because to do so is rewarding. In all of these studies, the congruence of the exchange rule with long-term rationality seems a more adequate explanation of choice

than any inherent value of a particular rule. [This assumes that the involved allocator finds it rewarding to accomplish the goal the experimenter sets for him.]

The intention here is not to argue that rationality is the dominant choice in all circumstances, but rather that when exchange rules coincide they are more likely to be observed. Thus a structure in which modified rationality and distributive justice are congruent render behavior we call distributively just more likely, whereas one which makes modified rationality and equality congruent under behavior we call egalitarian more likely.

If the assumption is made that some form of modified rationality determines the behavior of exchange partners and third party allocators, then distributive justice becomes one of many possible allocation patterns to be explained, and not an explanation of the distribution pattern. One might well ask why rationality need ever be modified, why one does not simply exploit his exchange partner to the fullest. If one views distributive justice as the result of internalized control of egoism or the sanctions delivered by some social community, then one is subject to the criticism Wrong (1961) levelled: either norms are so well internalized, or the need to manage self-image so as to receive approval is so strong, that we answer the question by denying the validity of its premises. A much more satisfactory answer is suggested both in Homans (1961: 55-61) and Thibaut and Kelley (1959: 21). These suggestions recognize that exchanges take place in social situations which normally provide alternative exchanges to both parties. One can only exploit another to the point that the exploited party's alternatives become more attractive to him — until the third man becomes a better exchange partner in terms of his own rationality, or his outcomes fall below his CL_{ALT} . If this argument is accepted, then the various exchange rules or "norms" affect our behavior,

but do not determine it, and it becomes important to understand what factors produce the varying frequency of the establishment of the different rules.

Komorita and Chertkoff (1973) have formalized the assumption that alternatives affect the choice of reward allocations in a theory of coalition formation. They assume that a high contributor to a winning coalition will expect, under distributive justice, that his share of the winnings be proportional to his high contribution, whereas the low contribution will expect that the winnings be divided equally. Here, as in Shapiro's work, the individual selects the exchange rule which provides him with a larger share. Reviews of the empirical research in this area indicate that a typical result is that the members of the winning coalition split the difference between the two rules -- each receives a share about mid-way between what he would receive under each rule (Gamson, 1964; Chertkoff, 1970). The interesting point is that neither exchange rule dominates, and the members bargain to a mid-way point determined by their available alternative coalition partners. This makes it extremely difficult to argue that one rule dominates the other, and is in-and-of itself rewarding to follow.

These two sections indicate that there are a number of exchange outcomes theoretically possible, and that all of them occur with some frequency. Moreover, at least four of them - modified rationality, competitiveness, equality, and group-gain -- occur frequently enough to cast doubt upon the assumption that distributive justice is the most frequent choice, and certainly challenge the assumption that it is the central or dominant exchange rule, with the result that the occurrence of others are treated as cases of the failure of distributive justice, or simply ignored. More

generally, we should try to address the question of when each of them is likely to occur and why. A general answer to this problem is beyond the scope of this paper, although interesting initial suggestions are contained in some of the work reviewed, and will be discussed later.

It should also be clear that the assumption that the observance of distributive justice is a reward in itself is at best tenuous and at worst misleading. This view has probably contributed to the tendency to treat the many instances of outcome and contribution distributions within a social relationship which do not fulfill distributive justice as somehow outside the realm of the theory. Thus, there have been no systematic attempts to integrate empirical findings within the areas of distributive justice, stratification research, experimental games, coalition formation, etc. To be sure, they may all be integrated at the general level of a social exchange perspective (Homans, 1961; Thibaut and Kelly, 1959), but at the empirical level, or a more middle-range theoretical level, they are more likely to be treated as distinct and non-overlapping categories of behavior. This has hindered integrative theoretical and empirical work. Rather than constituting a general theory of behavior, the distributive justice proposition has probably hampered the development of a general integrated theory of reward distributions, and has achieved a centrality both theoretically and empirically far beyond that ever intended by its first systematic proponent.³

Let us now turn to an experiment which was designed to examine some of the hypotheses which this paper has questioned or proposed. This experiment is one of a series reported in the author's dissertation (1972) and some of the hypotheses will be restated here in language conforming to Meeker's usage for the sake of clarity. The theoretical questions the

experiment addresses will be briefly stated, and the operational hypotheses will be stated after the experiment is described. The first question is whether subjects will choose an exchange which minimizes their costs (rationality) or one which meets distributive justice. If a way exists to simultaneously meet both, will the subjects adopt this option? If subjects do not opt for a distributive justice choice, indicating it has a relatively low reward value, will they cooperate with a partner who indicates a preference for this choice, thus indicating that distributive justice possibly is a norm which can be activated? If accommodation of an insistent partner occurs is it due to the norm of justice being activated, or it is due to the costs associated with refusal? Does variation in the absolute level of costs associated with a series of choices affect exchange decisions, or is the important factor their levels relative to each other?

An experimental situation similar to the minimal social situation (Kelley, Thibaut, Radloff, and Mundy, 1962) was created to address these questions. The subject was placed alone at a work console. The console allowed her to choose among three buttons. Quite simply, pushing these buttons in coordination with another (fictitious) subject would enable her to earn money. However, each button required her to complete a different number of presses to earn the same reward (.8¢ per sequence). Moreover, each button represented a different cost imbalance between herself and her partner. These imbalances were 6:1, 4:1, or 2:1. As Table 1 indicates, since distributive justice exists when one person's ratio of Profits [(R-C) less (R-C) of the next best available relationship] to Investments equals the other's, then the 2:1 imbalance represents distributive justice. (It is assumed that subjects who do not see each other will treat their investments as equal). At the same time, the 2:1 imbalance represents the

highest cost for each member of the dyad. The 6:1 imbalance, on the other hand, minimizes the number of button presses required to earn the reward for each subject. The subject, then, must choose between meeting distributive justice or minimizing costs. A third resolution is, of course available. The subject can choose the 6:1 rate, and if the member with the lower cost voluntarily presses more than the requirement, distributive justice can be met. This resolution is in line with Adams' work on equity, which exists when one partner's Rewards to Costs ratio equals the other's.

The subject's console also included a lighted matrix (always controlled by the actual subject) by which she could "communicate" to the "other subject" her choice of buttons. Additionally, double score counters for each button reminded her that both subjects earned the same, and that each jointly completed sequence on any choice earned that amount.

Each experimental period lasted for 11 trial blocks of four minutes each; hence time was allowed for the subjects to become aware of the continuing "injustice" in choosing the 6:1 rate. In the high cooperation condition, the subject's choice of buttons was unconditionally agreed to by the fictitious subject. In the low cooperation condition, however, for 20 of the 44 minutes, the fictitious subject only agreed to work on the 2:1 choice, thus insisting upon distributive justice. This allowed the examination of the subject's response to a cueing of the distributive justice choice, and of course changed the structure of the game. Three different sets of exchange ratios were utilized; these differed in absolute cost level, but not in relative cost between the high and low cost participants.

Method

Subjects

Thirteen female subjects were recruited from classes and through notices left on dorm bulletin boards. It was explained before recruitment that participation might require as many as nine sessions of approximately one hour each, but that the subjects could expect to earn roughly \$2.00-\$2.50 per session.

Task

The task selected for the subject is in the tradition of the minimal social situation (e.g., Kelley, Thibaut, Radloff and Mundy, 1962). The subject's console contains three buttons, each of which requires a different amount of work to earn a reward, and each of which represents a different imbalance vis a vis the other subject. In addition to the three work buttons, the console contains a lighted stimulus array, ostensibly for communicating initial choices and subsequent changes to the other subject. This array displays the reward which could be earned by each subject, and the number of button pushes required of each subject for each of the three work buttons. Finally, each console displays three double score counters which register the number of rewards won by each subject on each work button. The subjects were simply instructed that they could work on any button they preferred, and would receive the reward for each completed sequence, provided they both worked on the same button. Thus the pay-off is presented as being contingent upon their joint behavior.

Preliminary procedure

Before actual participation in the experiment it was necessary to establish that the monetary reward utilized for the subjects was in fact

rewarding (Sidman , 1960). This was done by having the subject work at a console with the choice of three panels presenting the high cost position requirements for the ratio set to which she had been randomly assigned. The subject worked alone and the console labels for the other subject were removed.

To establish the money as a reinforcer, the subject has to meet two criteria. The first criterion was that during a twelve minute period the subject work on the cheapest button 90% of the time. The second criterion was that she then work on the second Cheapest button 90% of a twelve minute period, after the cheapest button was no longer available. If these criteria were not met within three sessions of 44 minutes each, she would cease participation in the experiment. After the criteria were met, the subject participated in a ten minute practice session to make sure she understood the instructions. Her partner for this practice session was a graduate student, whom she met, and he failed to cooperate during the third and seventh one-minute trials unless she worked on the 2:1 ratio.

One subject failed to meet either of the criteria, and so was eliminated from the experiment. In fact, throughout 132 minutes spent on the task, she earned an equal amount of reward on each button. She explained during debriefing that the monetary pay-off was not that important; she was mainly interested in balancing the amount won on each of the three buttons.

General procedure

Upon the arrival of the subject at the designated waiting area, the experimenter presented himself and conducted her into a room where she was seated at a work console labelled appropriately for "subject two." The experimenter then checked another waiting area for the other subject. Upon returning, he reported that the other subject had not yet arrived, but that the initial experimental procedures would begin on the assumption

that she had been delayed a few minutes. Within the subject's view the experimenter shook a plastic tube containing three dice, summed the faces and announced that since the sum was odd (or even), the subject would be number one. The subject was escorted to a second room and seated at a console labelled appropriately for "subject one". The experimenter left again, returning a few minutes later to report the arrival of the other subject. The subject then received the experimental instructions and after an appropriate time lag to deliver the instructions to the other subject, the experiment began. Since there was no other subject, the time lags and presence of another console were designed merely to reinforce the belief that there was in fact another subject.

Subjects were instructed that they would be able to earn points during the experiment if they and the other subject pushed coordinated buttons a specified number of times. At the start of the experiment either the subject or the other subject (actually the experimenter) would select a panel to work on, and by pushing the appropriate button under the stimulus array matrix indicate this choice to the other. [The actual subject always chose first]. Whichever button was pushed would turn off the lights behind the other two columns of the matrix. Subjects were told that this was strictly a communication device. That is, they could earn points on button II even though the stimulus array matrix still indicated a preference for button I -- the only requirement for earning points was that they both work on the same button. Periodically, however, the stimulus array would relight, and they could avail themselves of it to more quickly communicate a preference for either continuing or changing a previous choice. The relighting marked the trials.

Subjects were instructed that as long as they worked on the same

button, a red light would flash upon the appropriate counter when the first subject finished and a red flash and the registering of points would accompany the completion of the work requirement by the second. The red lights were meant to high-light the discrepancy between the amounts of work required of the two subjects, real and imagined. The simultaneous registering of rewards for each was due to the interdependence requirement.

The subject with a higher number of required presses for a sequence is in the High Cost condition; one with the lower number is in the Low Cost condition. The subject's fictitious partner either responded on whatever choice the subject made for all eleven trial blocks, or would respond only on the 2:1 choice during the second, fifth, seventh, eighth, and eleventh trial blocks, while responding to the subject's choice on the other six trial blocks. The former constituted the High Cooperation, the latter the Low Cooperation condition. The subjects were presented one of the three ratio sets (the rows of Table 1). The cost and cooperation conditions were within-subject, the ratio sets, between-subjects.

The major dependent variables are the rates at which the subjects work on each choice, and a post-session item evaluating the fairness of the partner.

Operational Hypotheses

- H₁: Based upon the assumption that establishing distributive justice is a reward in itself, at least some tendency to choose the 2:1 imbalance should be evidenced.
- H₂: Based upon the simpler equity model, subjects who elect the 6:1 choice and who have low cost should voluntarily increase their costs, i.e. make more presses than the exchange structure requires.
- H₃: Based upon the structure of the game, both the rules of rationality

and group-gain (or mastery) predict the choice of the 6:1 imbalance; the low cost subject should not voluntarily increase her costs.

- H₄: Based upon the assumption that distributive justice is a norm, and that behavior to elicit compliance to it will succeed, subjects in the low cooperation condition should quickly switch to the 2:1 choice and remain.
- H₅: Based upon the assumption that long-term costs associated with rationality will lead to the abandonment of the rationality choice, and the adoption of a nonrational dominant choice, subjects in the low cooperation condition should eventually switch to the 2:1 choice.
- H₆: In line with hypothesis 4, the attempts to elicit behavior in line with distributive justice in the low cooperation condition should not affect the subject's ratings of her partner's fairness.
- H₇: In line with hypothesis 3, and the assumption that all exchange rules can become normative, the structure of this exchange suggests that the 6:1 choice should become normative. Consequently, a subject in the low cooperation condition will have a lower evaluation of their partners fairness than subjects in the high cooperation condition.
- H₈: In line with distributive justice's suggestion that exchange behavior will be a result of comparison with partner, one would expect that the Ratio Sets will have no effect on exchange choice or rate; contrary to this, it is expected that the differing levels of absolute and opportunity cost varied in the Ratios Sets will lead to 1) a decrease

in the exchange rate of higher absolute cost Ratio Set subjects, and 2) an increase in the exploration of the 4:1 choice by higher cost Ratio set subjects.

Hypotheses 1, 2, and 4 are expected to be rejected, while hypotheses 3, 5, 7, and 8 should be supported by the data.

Results

Figure 1 displays the mean response rates for the three exchange choices for the 11 trial blocks. The associated t-tests (Table 2) reveal a reliable preference for the 6:1 choice, thus supporting the hypothesis that exchange partners will opt for the rationality choice rather than the distributive justice choice (2:1). These means are for the entire sample, without regard to experimental condition, and thus constitute a "hard" test of this hypothesis. Recall that half of the subjects are prevented from earning a reward on any choice but 2:1 for trials 2,5,7,8, and 11. Rapid shifting to the 2:1 choice and maintenance of the rate of response by these subjects should lead to similarity of response rate between the 6:1 and 2:1 choices for these trials. While for trials 7 and 11 the difference between 2:1 and 6:1 is not reliable at an acceptable level ($p < .20$, two-tailed), in the three initial "restricted" choice trials, there still exists a strong over-all preference for the 6:1 choice.

This experimental situation allows subjects to meet the demands of justice while still working on the most efficient choice for earning rewards. Justice can be met on the 6:1 rate if the low cost person increases her number of button presses above the minimum requirement to match the higher requirement of her partner. If this mode of meeting justice is used, then we expect no differences in the response rates of high and low

cost subjects on the 6:1 choice. The results of the analysis of variance of response rates on the 6:1 choice are presented in Table 3. Clearly the low cost subjects ($\bar{X} = 100.90$) did not increase their rate to match their high cost partner ($\bar{X} = 556.73$), ($F = 140.46$, 1, 9df, $p < .001$). Even though matching does not occur, it is still possible that low cost subjects will increase their rates above the minimum requirement. A separate analysis of "surplus" button presses was performed, and this revealed no reliable differences. Low cost subjects do not increase their rate above the minimum required of them under the rules of rationality or group-goal. These subjects clearly behave in accord with hypothesis 3, and contrary to hypotheses 1 and 2.

Hypotheses 4 and 5 both predict that the subject faced with a partner who insists upon a 2:1 choice on certain trials will switch to that choice; they differ in the speed with which this is expected. Hypothesis 4 predicts that on trial 2, the subjects in the low cooperation condition will switch to the 2:1 choice and remain. Hypothesis 5 expects an eventual switch to the 2:1 choice, after repeated uncooperative trials raise the cost level of continuing on the 6:1 choice. Both predict an interaction of Cooperation by Trials, but the expected pattern of means is quite different. The Cooperation x Trials effect is present in the rates on the 6:1 choice ($F=17.61$, 10, 90 df, $p < .001$), and the pattern supports Hypothesis 5 (Figure 2). Low Cooperation subjects return to the 6:1 choice on cooperative trials, although the rate drops in later trials, contrary to the relatively stable rate in the High Cooperation condition. The 2:1 choice also shows a Cooperation by Trials interaction ($F=4.17$, 10, 90 df, $p < .001$). The pattern here shows a general increase in the

rates of Low Cooperation subjects, such that by trials 9 and 10 (two cooperative trials) the subjects in the Low Cooperation condition are working on the 2:1 choice reliably more than subjects in the High Cooperation condition (Trial 9, $t = -2.78$, $df = 1, 9$, $p < .025$; Trial 10, $t = -1.68$, $df = 1, 9$, $p < .10$, both tests one-tailed).

There are Cooperation and Trial main effects on the 6:1 choice. Both of these reflect the structure of the exchange: the subjects who could not earn money (low cooperation) on 6:1 for certain trials (2,5,7,8,11) moved elsewhere, as revealed by the complimentary main effects in the 2:1 choice (Cooperation, $F = 14.97$, $1, 9$ df , $p < .01$; Trials, $F = 4.05$, $10, 90$ df , $p < .001$). Subjects moved quite rationally to the choice which allowed them to make money.

The remaining effects are all interactions involving the Cost Manipulation, and as such are of more interest collectively than individually. Recall that the Cost Manipulation imposes different required numbers of button presses between the exchange partners. Contrary to distributive justice, subjects distributed their contributions in line with their structural guidelines, and so these interactions are more technical than theoretically interesting individually. Table 4 displays the interaction between Cost and Cooperation. The ratio between the Cost conditions are approximately 6:1, regardless of the Cooperation condition, and the ratios between the Cooperation condition is about 2:1 regardless of the Cost condition. But we observe a highly reliable statistical interaction ($F = 53.04$, $1, 9$ df , $p < .001$) because the absolute differences-of-differences are large due to the differences in the over-all rates. These interactions occur because of the observance of the minimal requirements of the exchange structures by the subjects, but have no clear meaning beyond this. Subjects are clearly sticking

to the "rules" of the exchange, and differ in the costs they incur by following rationality and group gain.

If we examine these data by looking at completed exchange sequences, this point may be clearer. Quite simply: we divide a subjects rate by the number of presses required for a reward appropriate to the Cost and Ratio Set Manipulations. Here then we can examine the effects of our manipulations independent of the differences so clearly structured by the Cost requirements. All the interaction effects involving Cost disappear. But the effects of Cooperation, Trials, and the Cooperation Trials interaction for both the 6:1 and 2:1 choices remain (all F values reliable beyond the .001 level, except Cooperation in the 2:1 choice, which is reliable beyond the .01 level).

The only effect on the 4:1 choice which is reliable for both the rates and the completed sequences is Ratio Set ($F=5.87$, 2,9 df , $p < .05$ for rates; $F=4.39$, 2,9 df , $p < .05$ for completed sequences). The means for Ratio Sets I, II, and III, were 18.45, 5.47, and 33.28, respectively, for the rates; the same pattern held for the completed sequences. This is contrary to Hypothesis 8. We might expect such a main effect if the means increased linearly, arguing that as the absolute level of costs required by a shift to 2:1 increases, the subjects interest in exploring the "compromise" 4:1 choice would increase. Or we might expect a Ratio Set by cooperation by trials interaction such that the higher the absolute cost of the Ratio Set, the less likely a subject would be to explore the 4:1 after a number of trials, as the efforts to work on 4:1 went unrewarded. Both of these expectations are based on the notion that the subject must complete a sequence or two with no lights flashing to indicate completion and no reward being delivered before being sure that the other subject is not working on the choice. But these patterns do

not appear, and the non-linear pattern which does admits of no clear interpretation.

Finally, Hypotheses 6 and 7 predict different effects of the Cooperation Condition upon the subject's rating of her partner's "fairness". Hypothesis 6 expects that attempts to elicit behavior in conformity with a norm should not lead to a reaction of "unfair" by one's exchange partner. Hypothesis 7, on the other hand assumes that the relevant distributive norms in this exchange are rationality and group-gain, and that attempts to impose the distributive justice choice will in fact be norm-violating and lead to a reaction of "unfair". The data clearly support Hypothesis 7. On a scale from -10 (labelled "totally unfair") to +10 (labelled "totally fair"), the High Cooperation partners were rated +9.08, while the Low Cooperation partners were rated -1.06 ("somewhat unfair"). This difference is highly reliable ($F = 35.02, 1, 9 \text{ df}, p < .001$).

Discussion

These results suggest that distributive justice is not a universal norm. Subjects do not choose a distributively just exchange rate. Neither do those advantaged by the structure of the game voluntarily increase their costs, nor do they consent to the attempts of an exchange partner to elicit a distributively just exchange rate, and, in fact, they react to those attempts as a violation of fairness. They choose an exchange rate which jointly maximizes rationality (through individual cost minimization) and group-gain (through dyadic cost minimization), and react to a partner's violation of this choice (in favor of distributive justice) as unfair. This suggests that for this exchange structure the "rules" are rationality and group-gain, and not distributive justice.

Some comments are in order concerning the selection of a "minimal social situation" for this experiment. If distributive justice is a central generalized social norm the observance of which is a reward in itself⁴, then it should be operative in any interaction situation, and the minimally social aspects of the interaction should not be a major factor in its violation. The necessary aspects of the social relationship are present: there is an exchange between partners, and they are quite aware of their outcomes and contributions relative to each other. On the other hand, the minimally social aspects of the situation (no face-to-face interaction, no knowledge of partner other than sex, no anticipation of future interaction) would rule out a variety of alternative explanations of the behavior we call distributive justice, had it occurred. This interaction, by the way, was quite consequential for the subjects (during the experimental portion they earned an average of \$22.47 for under four hours of work). This was not simply a meaningless "game." The consequences of their behavior were quite important to them.

The selection of the minimal social situation, then constitutes a "hard" test of distributive justice. Its failure to be observed here does not mean that it never occurs, or that it is an unimportant exchange rule. It rather indicates that in this exchange structure it is not a norm of exchange. But certainly the centrality of distributive justice both theoretically and empirically demands a hard test of the basic assumption that it is the central norm governing exchanges.

These data also provide some interesting insights into the value of distributive justice vis a vis another reward, money. Subjects in the High Cost condition in Ratio Set III were willing, when nothing else was available, to work steadily at a rate of .8¢ per 50 presses. On the other

hand, subjects in Ratio Set I, regardless of cost condition, were unwilling to increase their costs by 12 presses in order to establish distributive justice. Clearly, then, in this situation distributive justice has little value, and we must question its universal reward value to participants in a social exchange. If it has universal reward value, it is low enough to be situationally overcome easily, and thus of questionable value as a core explanation of the varieties of social behavior to which it has been applied.

One could argue quite reasonably that this exchange setting really involves the exchange partners playing against the experimenter, and thus the distribution of contributions and outcomes between the partners is of secondary concern. This is an acceptable description of the processes, but it implies that mastery (group-gain) takes precedence over justice, and in fact changes the rule of justice. This offers little comfort to distributive justice as the central distributive rule. In fact, it could be argued that this very aspect makes this experiment relevant to many social situations, which are not of the zero-sum nature of so many experimental investigations of distributive justice. As Simpson has observed "Interaction between A and B aimed at facilitating outcomes provided by someone else is especially prevalent in complex social systems, such as that of a large organization or a national society" (1972: 14).

This paper has attempted to cast doubt upon the centrality of distributive justice as the rule governing the allocation of rewards, and the assumption that it is rewarding in itself. The argument proceeds in two ways. First, relevant literature indicating the frequency with which other exchange rules are followed was reviewed, concluding that they occur frequently enough to be considered as important in their own right, and

not merely as violations of distributive justice. A number of studies indicated further that the distributions we call distributive justice may be the result of motives other than simply establishing justice in exchange. Secondly, data was presented indicating that in a minimally social exchange of a certain structure, distributive justice had little reward value, and that the norms or rules of the exchange seemed to be rationality and group-gain, the violations of which produced reactions consistent with treating them as "norms." What direction should be followed in developing a general theory of outcome and contributions distributions is less clear.

It is clear that the motives of an allocator must be taken into account. It is equally clear, from Meeker's hypotheses, and the support for them discovered in the data reported here, that the structural constraints are extremely important. They may, after all, make it impossible for the allocator to fulfill a major motive and force retreat to secondary motives. If Komorita and Chertkoff (1973) are correct that high contributors demand distributive justice, while low contributors demand equality in reward distributions, then intransigence on the part of these parties may render it impossible for the allocator to behave in accord with a motive of conflict avoidance. On the other hand, if the allocator wished to follow distributive justice, but the alternative opportunity structure of all members is quite high, he simply may not have enough rewards to allocate so that all are above their CL_{ALT} proportionally to their investments. Moreover, in the review of the non-zero sum exchanges above, the structure of the exchange seemed to have elicited a strong competitive motive, despite instructions and pay-off values which ought to have promoted cooperation. Minas et. al, (1960) examined at least one exchange in which the congruent rationality and group-gain cell produced

only a 53% rate of choice, whereas the experiment reported here elicited a much higher rate of choice for the same congruent exchange rules (Figure 1, choices for trial 1). Other aspects of the social situation clearly produced differences, although it is less clear exactly what those aspects may be - the higher consequences here, or the game-like aspects of matrix exchange. Kelley and Stahelski (1970, a, b), moreover, show that the structure of the Prisoner's Dilemma results in not only a change of behavior (cooperators become competitive) but affect a partner's perception of one's motive (cooperators thought to be competitors). Clearly structure affects the behavior and perceptions of an exchange participant, as well as his motives.

The structure of the exchange, the motives of the allocator, and the relationship between them, thus, seem to be factors which merit serious theoretical and empirical investigation if a theory of reward distribution more general than is presently available in "distributive justice" is to be developed.

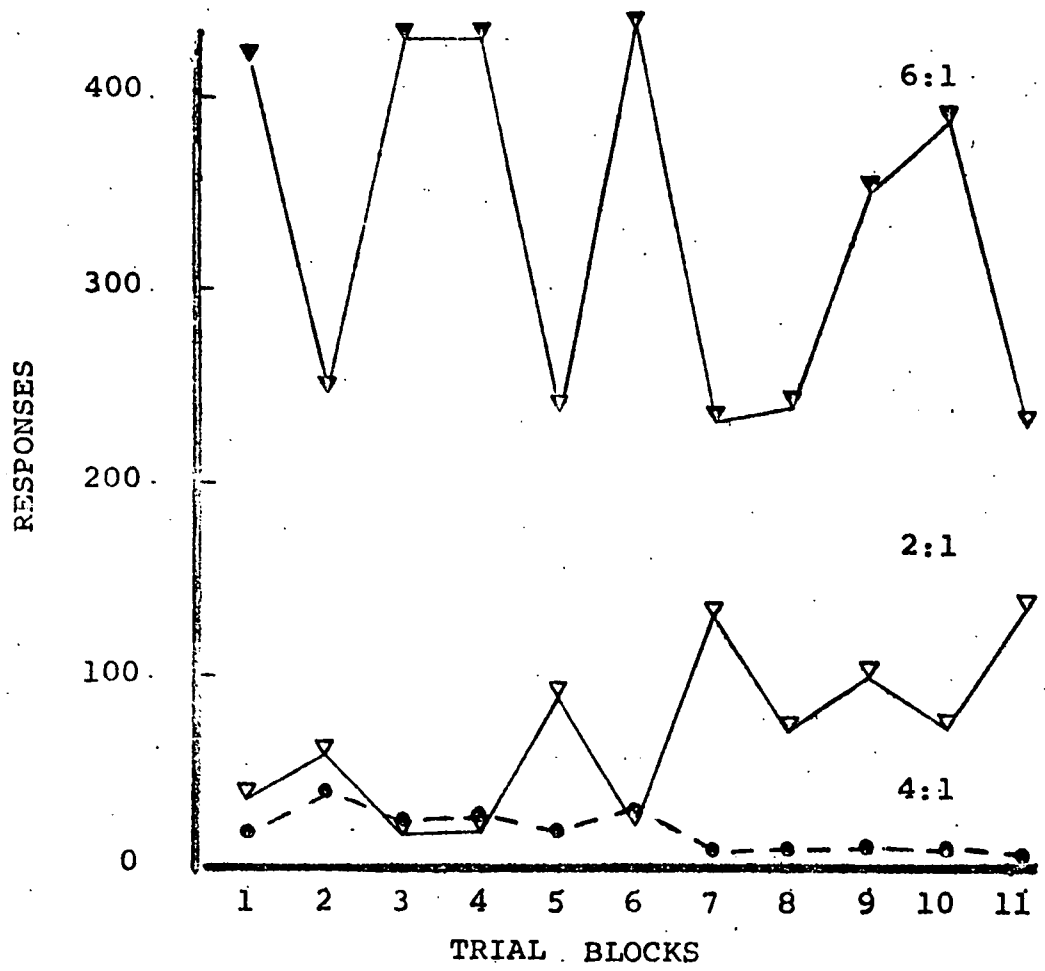


Figure 1. Mean response rates for the three choices regardless of condition.

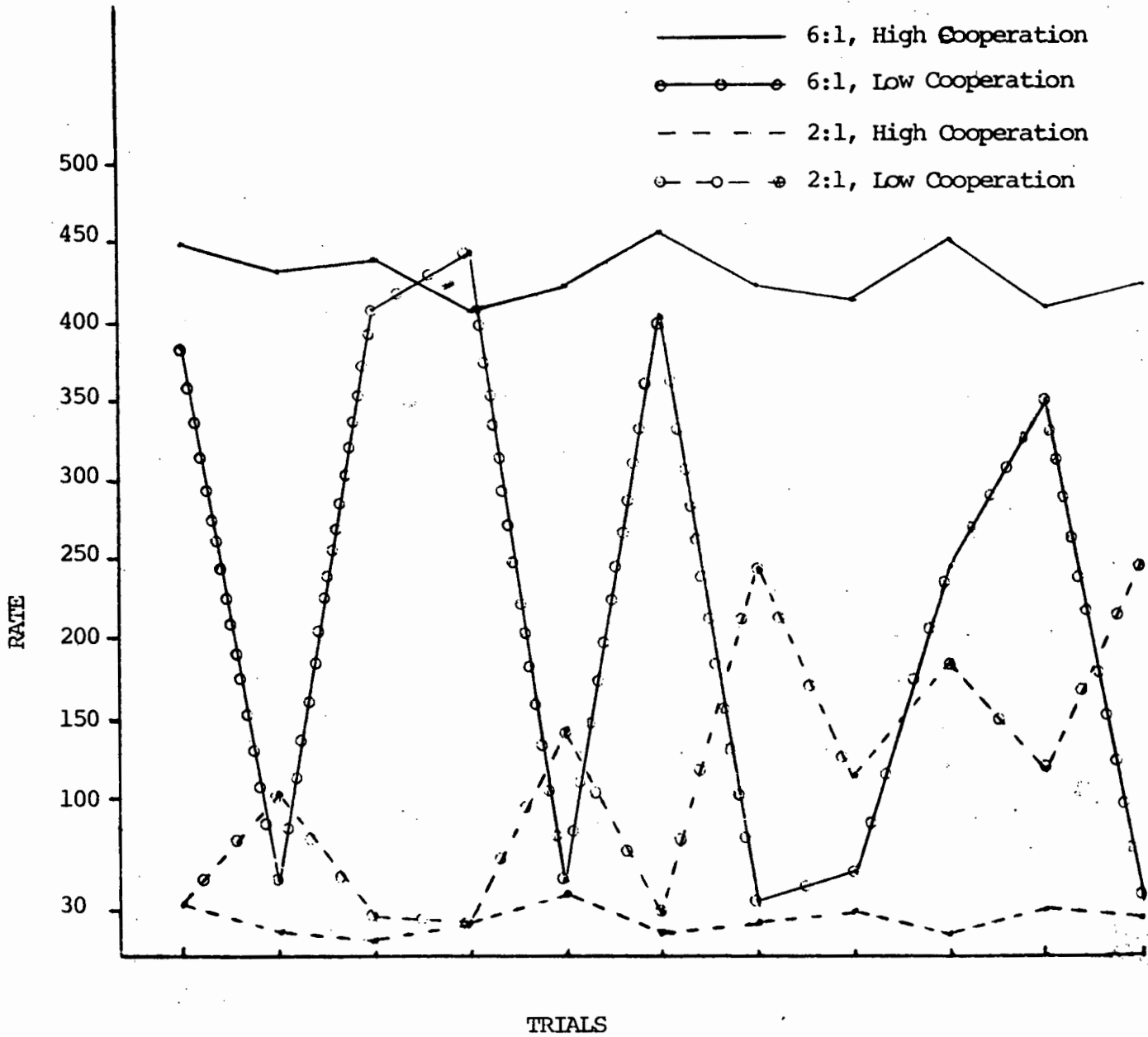


Figure 2: Cooperation X Trials for 6:1 and 2:1 choices

TABLE 1

PROFIT OF HIGH AND LOW COST PARTNERS¹

CHOICES

		<u>6:1</u>	<u>4:1</u>	<u>2:1²</u>
COST		18:3	24:6	30:15
I	High	P= X-(18+X-24) =+6	P= X-(24+X-18) =-6	P= X-(30+X-18) =-12
	Low	P= X-(3+X-6) =+3	P= X-(6+X-3) =-3	P= X-(15+X-3) =-12
		24:4	32:8	40:20
II	High	P= X-(24+X-30) =+8	P= X-(32+X-24) =-8	P= X-(40+X-24) =-16
	Low	P= X-(4+X-8) =+4	P= X-(8+X-4) =-4	P= X-(20+X-4) =-16
		30:5	40:10	50:25
III	High	P= X-(30+X-40) =+10	P= X-(40+X-30) =-10	P= X-(50+X-30) =-20
	Low	P= X-(5+X-10) =+5	P= X-(10+X-5) =-5	P= X-(24+X-5) =-20

RATIO SETS

¹Based on $P=[(R-C)-(R_f-C_f)]$, where reward = $X(.8¢$, constant throughout), for each choice.

²These profits are negative only if one does not assume 1) that violations of distributive justice are noxious and 2) following distributive justice is rewarding. If these assumptions are met, then under 1) the 6:1 and 4:1 choices have costs associated with them other than the button presses; and, under 2) the reward value of the 2:1 choice is greater than the constant monetary reward. Since these assumptions do not result in calculable values, and should not differ by cost position, these calculations suffice to show the equivalence of the 2:1 choice for each person in Homans' use of "profit."

TABLE 2

VALUES OF T FOR DIFFERENCES IN MEAN RESPONSE RATES
 DISPLAYED IN FIGURE 1

		TRIALS					
		1	2	3	4	5	6
DIFFERENCES	$\bar{X}_{6:1} - \bar{X}_{2:1}$	6.47 ^a	3.28 ^b	7.17 ^a	7.26 ^a	2.38 ^c	7.21 ^a
	$\bar{X}_{6:1} - \bar{X}_{4:1}$	6.88 ^a	3.83 ^b	6.85 ^a	6.85 ^a	4.43 ^b	6.73 ^a
	$\bar{X}_{6:1} - \bar{X}_{2:1}$	1.48 ^d	2.83 ^c	3.46 ^b	4.49 ^a	1.47 ^d	
	$\bar{X}_{6:1} - \bar{X}_{4:1}$	4.65 ^a	4.79 ^a	6.24 ^a	6.72 ^a	4.88 ^a	

^a $t \geq 4.437$, 11 df, two-tailed, $p < .001$

^b $t \geq 3.106$, 11 df, two-tailed, $p < .01$

^c $t \geq 2.201$, 11 df, two-tailed, $p < .05$

^d $t \geq 1.363$, 11 df, two-tailed, $p < .20$

Table Three

Summary of Analysis of Variance for Rates on the 6:1 Choice

Source of Variance	df	MS	F
Between Ss			
Ratios (R)	2	797,789.16	2.00
Ratios X Ss within groups	9	398,233.02	
Within Ss			
Cost (C)	1	27,523,756.82	140.146**
RxC	2	580,533.39	2.96
CxSs within groups	9	195,961.02	
Cooperation (Cp)	1	5,600,110.09	44.93**
RxCp	2	4,281.76	1
Cp x Ss within groups	9	124,639.54	
Trials (T)	10	404,778.26	18.35**
R x T	20	12,028.84	1
T x Ss within groups	90	22,055.10	
C x Cp	1	2,693,693.88	53.04**
RxCxCp	2	9,625.68	1
CxCpCpSs within groups	9	50,787.33	
C x T	10	218,715.60	17.22**
RxC x T	20	17,560.09	1.38
C x TxSs within groups	90	12,701.61	
Cp x T	10	369,369.86	17.61**
RxCp x T	20	30,119.55	1.44
Cp x TxSs within groups	90	20,974.87	
C x Cp x T	10	235,703.30	18.68**
RxCxCp x T	20	23,628.79	1.87*
CxCp x TxSs within groups	90	12,617.32	

* $p < .05$

** $p < .001$

Table Four

The Interaction of Cost and Cooperation for
the Rate on the 6:1 Choice

		COST	
		High	Low
COOPERATION	High	731.14	131.66
	Low	382.32	68.54

Cx Cp $\underline{F} = 53.04$, $\underline{p} < .001$

Footnotes

1.
$$\underline{t} = \frac{12.70 - 10.00}{\sqrt{s / n-1}} = 4.13 \quad \text{for equality (Leventhal and Anderson, 1970)}$$

Solving, $\sqrt{s / n-1} = .654$.

Then the \underline{t} value for Distributive Justice would be

$$\underline{t} = \frac{12.70 - 15.00}{.654} = \frac{-2.30}{.654} = -3.52,$$

A $\underline{t} = -3.52$, 19 df, is also reliable beyond the .01 level.

2 Homans' 1974 treatment, while not as strongly stated as the earlier treatment, still treats distributive justice as a norm. The violation of which is punishing, the observance of which is rewarding. (See pp. 250; 96-97).

3 Homans in a just released revision of Social Behavior: Its Elementary Forms (1974), for example, no longer treats distributive justice as a major proposition, but treats it as derivable under certain (non-universal) conditions.

4 In Homans (1974), although distributive justice is treated as less central theoretically, it is treated as no less universal, and in fact is given a flavor of inevitability (p. 249).

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