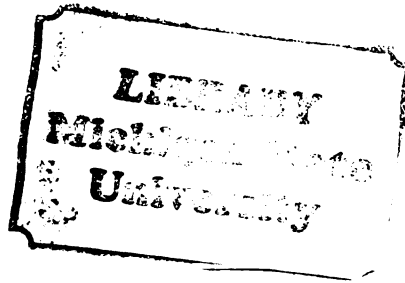




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THE NUCLEAR FREEZE MOVEMENT AS COLLECTIVE ACTION:
A FIELD EXPERIMENT ON THE EFFECT OF REVEALING
THE LOGIC OF FREE-RIDING ON CONTRIBUTIONS

presented by

Bradley Jay Fisher

has been accepted towards fulfillment
of the requirements for

Master of Arts degree in Sociology

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THE NUCLEAR FREEZE MOVEMENT AS COLLECTIVE ACTION:
A FIELD EXPERIMENT ON THE EFFECT OF REVEALING
THE LOGIC OF FREE-RIDING ON CONTRIBUTIONS

By

Bradley Jay Fisher

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

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1983

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ABSTRACT

THE NUCLEAR FREEZE MOVEMENT AS COLLECTIVE ACTION: A FIELD EXPERIMENT ON THE EFFECT OF REVEALING THE LOGIC OF FREE-RIDING ON CONTRIBUTIONS

By

Bradley Jay Fisher

Mancur Olson assumes that people are both rational and self-interested. Hence, he assumes that in the absence of selective incentives, people would prefer to be "free-riders" than to contribute toward large scale collective action. This study tests the hypothesis that one reason people often contribute is that, contrary to Olson's assumption of rationality, they do not understand the logic which supports free-riding. If, as Olson suggests, almost all people already understand the logic of free-riding, then appeals which mask or reveal this logic will generate the same rate of contributions. If, however, many people do not understand this logic, then appeals which do not reveal the logic of free-riding should be more effective than appeals which do reveal it. A sample of the signers and circulators of the petition to get the Nuclear Freeze referendum on the 1982 Michigan ballot were sent a letter asking them to purchase one or more bumper stickers supporting the Freeze. The appeals varied as to whether they stated that the Nuclear Freeze was a public good, i.e. nonexclusive, and whether people were told they had high or low efficacy in bringing about this public good. We found that manipulating the efficacy factor made no statistically significant difference, but manipulating the nonexclusivity factor did. Contrary to our prediction, subjects in the Nonexclusivity Revealed condition were more likely to contribute than subjects in the Nonexclusivity Not Revealed condition. One explanation for this result is that by telling people they could receive the benefits without contributing increased the credibility of the communicators and, hence, increased the effectiveness of the appeals.

Perhaps the closest we ever get to more profound answers
is learning to ask more profound questions!

Dr. Harry Robinson, 1975
Muskegon Community College

This is dedicated to my parents, Ethel and Louis,
and my brother, Gary, who have always provided me with
an encouraging word when I needed it most.
You are more to me than just a great family,
you are good friends as well.

ACKNOWLEDGEMENTS

I wish to extend my sincere appreciation and affection to the chairpersons of my committee, Stan Kaplowitz and Denton Morrison, for their patience, advice, guidance, and good humor throughout the entire course of this study.

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Also, I would like to thank the Department of Sociology for granting me a position as a teaching assistant over the past two years. This position has helped me financially and provided me with a deeper appreciation for the art (and honor) of teaching.

Finally, I would like to express my deep gratitude for my companion, Kathleen Eaton, who has been incredibly tolerant of my moodiness and has shown me an abundance of tenderness and love. I hesitate to think what it would have been like to deal with the stresses and adjustments of the last two years without her. Thank you for being both friend and family to me through times of sadness and times of joy.

PERSONAL FORWARD

During the process of developing and conducting this research project, I was confronted with several of my feelings about the nuclear arms race. Since these feelings served as my basic motivation, as a sociologist and as a person, for researching the Nuclear Freeze movement it seemed relevant and responsible to share them here. In short, I consider the development, production, and deployment of nuclear weapons as a dangerous practice and as a sad commentary on the historical development (social evolution) of the human species. The current policies advocated by the Reagan administration, such as conceptualizing a 'winnable' nuclear war or a nuclear war confined to the European theatre, bring us precariously closer to the brink of a nuclear holocaust. Such a nuclear exchange can remain limited only in the fantasies of military strategists. In actuality, such an exchange has a high probability of ending civilization as we know it. It is my opinion that despite the many flaws of our present stage of civilization, it is still worth preserving as the basis for further change and development. I feel a deep personal commitment to preserve the quality of the natural environment and to enhance the quality of the social environment. The prevalence of nuclear weaponry poses a direct threat to the continuance of both of these environments.

I am greatly disturbed by how the current administration plays with political rhetoric while explaining away nuclear arms escalation. The 'administrators' maintain that we must have more nuclear weapons in order to be in a position to negotiate the reduction of such weapons. The

logic (or illogic) of this argument, simply stated, is that we must have more to have less. My feelings about this argument as well as about the necessity for a Nuclear Freeze can best be expressed with an analogy. In order to get a rolling piano to move in the opposite direction in which it is going, one must first bring the piano to a complete halt. One does not stop a moving piano by increasing its speed (unless one wants an accident) nor can we achieve nuclear arms reduction by producing and deploying more of such weapons.

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* Each has been reduced to 66% of its actual size.

I. THE PROBLEM

Olson's Theory

One theorist, Mancur Olson, Jr., has made a substantial contribution toward understanding the basis of collective action in his work The Logic of Collective Action (Harvard University Press, 1965). His basic assertion is that rational, self-interested individuals will not voluntarily contribute resources toward creating a collective good they desire, especially if a large number of persons share the desire for this collective good. A collective good is defined as any good, which, if made available to one individual in a specified group, cannot be denied to other members of that group. Consequently, the nonexclusivity of collective goods provides an incentive for group members to become 'free-riders,' i.e. group members who do not contribute to the production of collective goods since the goods will be produced by the efforts of others.

According to Olson, there are two main reasons why an individual member in a large organization will not participate to help create a collective good: 1) if the good is created, they can enjoy the benefits of the collective good whether or not they have contributed toward its production and 2) it is highly unlikely that any one person's contribution will make the difference in whether the collective good is created. These are the nonexclusivity and inefficacy features of collective action, respectively. In other words, if an individual cannot be excluded from consuming the goods produced by other members in the group or organization and if an individual perceives his/her contribution toward purchasing the good as inconsequential, i.e. has low efficacy, then, according to Olson, this combination makes 'free-riding' both rational and likely.

The individual member of the typical large organization is in a position (whereby)...his own efforts will not have a noticeable effect on the situation of his organization, and he can enjoy any improvements brought about by others whether or not he has worked in support of his organization. (Olson, p. 6)

It is Olson's conclusion that individuals in such a situation will have no incentive to contribute resources to create a collective good.

Olson maintains that the nonexclusivity and inefficacy features are present in all attempts at collective action where large groups are concerned and that some 'special device' is thus required to motivate group members to act in their common interest. His basic proposition is that collective action in a large group will occur if and only if there are separate and selective incentives offered to those members of the group who contribute.¹ That is, there must be some side payment or private good incentive which is separate from the public good and selectively available only to those individuals who contribute to the creation of the collective good. These incentives may be either positive or negative. Olson's argument suggests that members of a large group must either be offered positive private incentives or coerced to act for the advancement of group goals and objectives.

A central component of Olson's argument is his use of the economic model to represent the rational individual who tries to maximize gains and minimize costs. The rational, self-interested individual is one who calculates the utility and cost of a given action and settles on that behavior which will yield the highest gain for the least cost while ignoring any direct consideration of the utilities of others. This economic model of individual motivation leads Olson to conclude that private good incentives are the necessary and sufficient conditions for individuals in a large group to participate in collective action.

Individuals in a smaller group will have higher efficacy in that they will perceive the acquisition of the collective good as being contingent upon their contribution whereas members in the large organization will have lower efficacy by perceiving that obtaining the collective good is not contingent upon their contribution. Hence, in the small group, members will have a higher incentive to bear the costs of producing the collective good since their contribution is noticeable. In addition, there is more face to face interaction in smaller groups which makes those who attempt to free-ride more visible and, as a consequence, more vulnerable to social sanctions. The larger group offers some degree of anonymity to the individual member, decreasing the probability of identifying the noncontributors. As a result, members in the large group experience less incentive to contribute because their contribution, or lack of contribution, will not make a noticeable difference and because the noncontributor is less vulnerable to negative social sanctions. In short, the large group allows the individual the option of getting something for nothing since there is a high probability of being able to get away with it, i.e. of avoiding the economic cost of contributing and the social cost of group disapproval.²

An Alternative To Olson

While Olson sees selective incentives as crucial for the success of collective action, others have offered different views. Fireman and Gamson (1979) reject Olson's assumption that people are predominantly self-interested. They maintain that Olson's utilitarian logic ignores the importance of people sharing a common interest.

If individuals are thoroughly self-interested and rational, common interests are unnecessary to collective action as well as insufficient--in fact they are irrelevant. (Fireman and Gamson, p. 6)

Olson's argument suggests that all one need do to promote participation in collective action is to provide some private good incentive. This implies that it is a waste of time for the organizers of large scale social movements to demonstrate to potential contributors the worthiness of the collective good sought. Fireman and Gamson point out that such logic suggests that individuals who are indifferent or opposed to the collective good would be just as likely to participate as someone who supports it if a selective incentive is offered that is worth more than the cost of participation. They maintain that self-interest is not the sufficient condition for collective action, but instead argue that such action is also contingent upon developing and building on people's loyalty to a solidary group and on their sense of responsibility to principles. Fireman and Gamson write:

It is useful to think of loyalty and responsibility not merely as attributes of individuals but as properties of cultural codes or belief systems. Individuals exist in a climate with cultural beliefs about one's obligations to those groups with which one identifies and the responsibility to contribute one's share to just causes. (p. 32)

It is not denied that loyalty and responsibility can act as selective incentives, but as such they still involve a direct consideration of the utilities of others, i.e. more than just one's self-interest.

While Fireman and Gamson question Olson's assumption that people are basically self-interested, Kaplowitz (1982) questions whether people are as rational as Olson assumes. Olson suggests that most people already implicitly understand and have their actions guided by the logic of free-riding. Consequently, individual members in a large group recognize that collective action 1) pursues goods which are nonexclusive and 2) involve

a large number of potential contributors thereby making one individual's contribution 'unnoticeable,' thus creating low levels of efficacy. If this is true, then revealing the features of the free-rider problem to people through appeals for contributions will not decrease the level of contributions and masking these features will not increase contributions. This study hypothesizes that people do not implicitly recognize and act according to either or both of the nonexclusivity and inefficacy features of large scale collective action. Therefore, appeals for contributions which mask or explicitly reveal these features will influence the level of response to the appeals.

Hypotheses To Be Tested

As noted above, an individual's perceived level of efficacy is expected to have an effect on his/her participation in collective action. Campbell, et al. (1964) have shown that voter turnout is positively correlated with the strength of the individual's sense of political efficacy. More recent research has substantiated the proposition that as an actor's level of perceived efficacy increases, so does the probability that this actor will participate in collective action (Camilleri and McMahon, 1975; Paige, 1971). In other words, those individuals who feel their efforts will increase the likelihood of attaining a given goal will be more likely to participate than individuals who feel their efforts will make little or no difference in the outcome.

Hypothesis: There will be a higher proportion of contributors among those subjects receiving the High Efficacy appeal than among those subjects receiving the Low Efficacy appeal.

It has been argued that masking and revealing the features of the free-rider problem will have an effect on the level of responses to the appeals. Clearly, it is difficult to imagine that anyone would perceive the Nuclear Freeze as anything other than nonexclusive. For this reason, it is expected that the nonexclusivity of the collective good will have less influence on an individual's response than the individual's perceived level of efficacy. However, it is proposed that appeals which reveal or do not reveal the nonexclusivity of the collective good may affect an individual's perception of the nonexclusivity of the good and, thus, influence the level of response to the appeals.

Hypothesis 2: There will be a higher proportion of contributors among those subjects receiving the Nonexclusivity Not Revealed appeal than among those subjects receiving the Nonexclusivity Revealed appeal.

We may distinguish between those who have already contributed to produce a collective good from those who favor it but have made little or no contribution, e.g. sympathizers. The question to be addressed: Are prior contributors (petition circulators) more likely to make an additional contribution toward collective action than are sympathizers (petition signers) to make a first contribution?³ Clearly, many organizations think so as they are especially likely to solicit donations from prior contributors before appealing to sympathizing noncontributors. In order to predict the behavior of these two groups we must make some assumptions as to the cause of the difference in past levels of contribution. Here are three possible reasons for this difference:⁴

1. The collective good has greater utility for the prior contributors.
2. The prior contributors have a greater sense of loyalty to the group and responsibility to principles.⁵
3. Prior contributors are less aware of the logic of free-riding than the sympathizers.

It is conceivable that the prior contributors place such a high value on the collective good that this becomes their incentive for contributing toward the production of that good. Holding the level of efficacy constant, Olson would agree that the greater the utility of the good to the individual, the greater the probability that an individual will contribute to acquire the good. Thus, if the collective good has greater utility for the prior contributors, then we would expect a higher overall proportion of contributors among the prior contributors than among the sympathizers.

Contrary to Olson's logic, Fireman and Gamson have presented the argument that loyalty and responsibility act as incentives for people to participate in collective action. Loyalty to the group assumes that people are not just concerned with their own interests, but also consider the interests of other members of the group. Hence, the loyalist may have a greater incentive to contribute because he/she is pursuing a good which is desired by the group and will benefit many others in addition to him/herself. Responsibility to one's principles, however, is not necessarily a group phenomena, i.e. it may involve the maintenance of one's self-esteem. Responsibility refers to an individual acting on the basis of his/her values or convictions. This sense of responsibility may serve as an incentive to participate in collective action since the actors will perceive themselves as doing their part, i.e. upholding what they perceive

to be right. Consequently, if prior contributors have either a greater sense of loyalty or have a greater sense of responsibility, then in either case we would expect a higher overall proportion of contributors among the prior contributors than among the sympathizers.

Suppose, on the other hand, prior contributors are less aware of the logic of free-riding, i.e. believe they have high efficacy and/or are not fully aware of the nonexclusivity of the good. This lack of understanding then may cause these individuals to participate in collective action even though, according to Olson, it would not be rational to do so. But suppose a prior contributor and a sympathizer each receive messages specifying the same level of efficacy and providing the same information on the nonexclusivity of the good. Literature suggests that a single discrepant message is never totally effective, i.e. able to change a person's attitude to the position advocated by the message, especially if the person has a strongly held prior view about the issue addressed in the message (Sherif, et al., 1965). Hence, if it is true that prior contributors are less rational⁶ prior to the experimental treatments, then they will also have somewhat less rational responses after the treatments.

All of these explanations for the behavior of prior contributors lead us to the same conclusion:

Hypothesis 3: There will be a higher proportion of contributors among the prior contributors than among the sympathizers.

Sex was also included as a variable in this study to test the differing orientation of men and women toward the Nuclear Freeze movement. This variable was included for the sake of empirical interest rather than as an additional test on Olson's theory. Consequently, we will not examine the effect of sex in terms of the rationality argument raised earlier. There is a limited amount of research available which suggests that women are

more strongly opposed to nuclear energy than men. The explanations for this male/female difference are, at best, tentative. Mitchell proposes that, "...women's child-centered biological and social roles influence their perception of nuclear risks" (1981: 32). He argues that women are more opposed to nuclear energy because of the risk it poses to the welfare of future generations. If this is true, it seems reasonable to assume that women will also be more opposed to the existence of nuclear weapons and, hence, more supportive of the Nuclear Freeze movement. Other things being equal, the higher utility women assign to the public good, i.e. the Nuclear Freeze, will lead them to contribute more toward the creation of the good.

Hypothesis 4: There will be a higher proportion of contributors among female subjects than among the male subjects.

II. METHODOLOGY

Overview of the Field Experiment

The following field experiment uses Nuclear Freeze petition signers and circulators as experimental subjects.¹ The petition signers and circulators were used for this experiment as it seemed logical to assume that such individuals would (a) be more likely to value the collective good of a Nuclear Freeze, (b) have some degree of interest in the Freeze issue since they have already made a small investment by signing the Freeze petition, (c) have some information and understanding of the Nuclear Freeze movement and related issues, and (d) be more likely to respond to the appeal for donations than would the general public. Each of the subjects was sent a flier (see Appendix A) containing an appeal requesting a contribution to the Nuclear Freeze Fundraisers.²

There are two independent variables which are manipulated in this experiment: (1) Nonexclusivity Revealed/Nonexclusivity Not Revealed, and (2) Low Efficacy/High Efficacy. The sex of the subject is an additional independent variable in the first mailing. The dependent variable is the level of response to the appeals, i.e. whether or not the subject contributes in the form of purchasing a Nuclear Freeze bumper sticker and/or makes an additional monetary contribution to the Nuclear Freeze referendum campaign.

The procedure of analysis will be, then, to compare the levels of response to the various appeals and to assess whether there is a difference in the response levels. Since random sampling is used, the test of statistical significance ($p < .05$) is used as the criterion for the differences not being attributable to sampling error.

The Treatments

As mentioned above, the experimental treatments are as follows: Nonexclusivity Revealed, Nonexclusivity Not Revealed, Low Efficacy and High Efficacy.

Nonexclusivity refers simply to the fact that enjoyment of the public good is not restricted, i.e. the good is available to all members of a given group regardless of whether or not they contributed toward the creation of the public good. In this experiment, the public good to be created is viewed as both the passage of the Nuclear Freeze referendum and the implementation of a Nuclear Freeze.

Efficacy is defined as the perception, by the subject, of whether or not his/her contribution will produce the intended effect, i.e. make a difference in a given outcome.

This experiment has a 2 x 2 factorial design with the treatment groups indicated as below:

Table 1: The Treatment Groups

	<u>Low Efficacy</u>	<u>High Efficacy</u>
Nonexclusivity Revealed	I	III
Nonexclusivity Not Revealed	II	IV

Features Common to the Appeals

The fliers mailed to the subjects clearly indicate that the Nuclear Freeze Fundraisers is a legitimate organization working for the passage of the Nuclear Freeze referendum. Bumper stickers were printed and mailed to those subjects who made contributions. The appeal for contributions was genuine since all profits were to be used to support the Freeze movement.

It was decided that openly stating that the fliers were part of a research project might seriously jeopardize the level of response to the appeals. However, we did attempt to represent ourselves as honestly as possible.

Those features common to the appeals³ are presented in Figure 1. The only difference between the fliers occurred in the fourth paragraph (indicated by the asterisk) where the independent variables were manipulated to generate one of four experimental treatment conditions.

The Operationalization of Manipulated Variables

The four treatment conditions are shown in Figure 2 as they appear, in operational form, on the fliers as the fourth paragraph.

In treatments II and IV, Nonexclusivity Not Revealed is operationalized as the absence of the Nonexclusivity Revealed statement as it would be an obvious falsehood to claim that a Nuclear Freeze is an exclusive good which could not be shared by everyone, i.e. contributors and noncontributors.

Prior contributors are operationalized as the petition circulators.

The sympathizers are operationalized as the petition signers.

The Sampling Procedure

The first phase of this research project involved the mailing of fliers to a sample of 1000 subjects⁴ selected from the Nuclear Freeze petition sheets turned in to the Michigan Elections Division (MED) in June, 1982. When it was subsequently decided to initiate a second mailing⁵ (due to the low response rates of the petition signers to the appeals), these same petition sheets were used. The petition sheets (see Appendix B), which are available as public property, contained over 350,000 signatures and addresses of individuals wishing to see the Nuclear Freeze proposal on the November, 1982 Michigan ballot.

Figure 1: Features Common to the Appeals

September, 1982

Dear Citizen of Michigan:

We are three concerned citizens trying various ways to raise funds for the Nuclear Freeze.

We urge you to vote for the Nuclear Freeze Referendum in the general election of Tuesday, November 2, 1982. Vote yes on Proposition 2.

We hope you will make an additional contribution to making the Nuclear Freeze Referendum pass overwhelmingly by purchasing and displaying a Nuclear Freeze bumper sticker. All profits from sales go to promote passage of the Michigan Nuclear Freeze Referendum.

*

Anything that can be done to help bring about a Nuclear Freeze will help reduce the risk of nuclear war. Isn't that reason enough for your contribution?

Thank you,

Bradley Fisher
Stan Kaplowitz
Denton Morrison

East Lansing, Michigan

Print your name and address here for our mailing label	NUCLEAR FREEZE: GIVE "BOMBS AWAY" NEW MEANING VOTE YES ON PROPOSITION 2 NOV. 2	Cut this and tape to your envelope as your mailing label						
	Green on white <table> <tr> <td>1 sticker \$1.00</td> <td rowspan="5"> <u>Make checks out to:</u> Nuclear Freeze Fundraisers </td> </tr> <tr> <td>3 stickers \$2.00</td> </tr> <tr> <td>5 stickers \$3.00</td> </tr> <tr> <td>10 stickers \$4.00</td> </tr> <tr> <td>15 stickers \$5.00</td> </tr> </table> (Write for bulk rate)	1 sticker \$1.00	<u>Make checks out to:</u> Nuclear Freeze Fundraisers	3 stickers \$2.00	5 stickers \$3.00	10 stickers \$4.00	15 stickers \$5.00	NUCLEAR FREEZE FUNDRAISERS DEPT. BOX 1521 EAST LANSING, MI 48823
	1 sticker \$1.00	<u>Make checks out to:</u> Nuclear Freeze Fundraisers						
	3 stickers \$2.00							
5 stickers \$3.00								
10 stickers \$4.00								
15 stickers \$5.00								
If you enclose a stamped, self-addressed envelope there will be more money for the Freeze.								
J12								

Figure 2: Operationalization of the Four Treatment Conditions

TREATMENT I

Nonexclusivity Revealed/
Low Efficacy

If the Nuclear Freeze campaign succeeds you will, of course, realize the benefits whether or not you have contributed to the Freeze. / In a state as large as Michigan, it is very unlikely that one contribution will make the difference in whether or not the Referendum passes. And even if the Referendum passes it may make little difference in whether or not a Nuclear Freeze comes about.

TREATMENT II

Nonexclusivity Not Revealed/
Low Efficacy

In a state as large as Michigan, it is very unlikely that one contribution will make the difference in whether or not the Referendum passes. And even if the Referendum passes it may make little difference in whether or not a Nuclear Freeze comes about.

TREATMENT III

Nonexclusivity Revealed/
High Efficacy

If the Nuclear Freeze campaign succeeds you will, of course, realize the benefits whether or not you have contributed to the Freeze. / Each contribution to the Freeze increases the chances that the Nuclear Freeze campaign will succeed. Your contribution will make a difference.

TREATMENT IV

Nonexclusivity Not Revealed/
High Efficacy

Each contribution to the Freeze increases the chances that the Nuclear Freeze campaign will succeed. Your contribution will make a difference.

It is the responsibility of the MED to receive circulated petitions and to inspect them to ascertain whether enough valid signatures have been gathered to certify a petition for placement on an election ballot. From the 39,800 petition sheets received (15 names possible per sheet) by the MED, 498 were randomly selected by a computer and subsequently copied for the MED staff to inspect for this certification process. For convenience, it was decided to use these same 498 sheets for the initial stage of selecting experimental subjects for the first mailing. Since sex was to be examined as a variable in the first mailing, the subjects were stratified according to sex so as to obtain equal numbers of men and women in each treatment group.

For the purpose of this study, the MED allowed us to use the photocopies of the original 498 sheets which posed several problems listed below.

1. Poor photocopy, i.e. making a petition sheet impossible to read.
2. Illegible signature.
3. Illegible or questionable address (such as Loeb Farm).
4. Duplicated names (two sheets were identical).
5. Unisex names such as Leslie, Kelly, Dana, Robin, etc. which had to be excluded in order to stratify the subjects according to sex.
6. The petition signer used first initials only (prohibiting identification of sex).

Out of the 500 names selected by the MED from the 498 sheets, 91 signatures were rejected for one or more of the reasons listed above. The first stage of selecting subjects provided 409 acceptable names, 164 men and 245 women.

The second stage of the selection process involved going through the sheets again and pulling one additional name from each sheet. However, there were a few additional criteria for acceptability. The name would

naturally be rejected if it had already been selected. A name was also rejected if it appeared to be the spouse of someone already selected or if the individual lived in the same residence as a previously selected subject. When possible, we also attempted to avoid selecting people who might be close neighbors (this occurred only once).

The fifth name of each sheet was used if it was acceptable. If it was not, the procedure was to proceed to the fourth name and then the third until an acceptable name was found. If none of the first five names were acceptable, then we proceeded to the sixth, seventh, etc. until an acceptable name was found. Those sheets which had only one signature or were poorly photostated were skipped. In the case of sheets containing less than five signatures, the last name on the sheet was used if appropriate. This process provided an additional 479 subjects, 224 men and 255 women. During the second stage of selection, enough female subjects had been acquired and, from then on, only acceptable male signatures were sought.

The third stage involved the selection of the remaining 112 male subjects for the experiment. Again, the process began at the beginning of the stack of 498 sheets and each sheet was examined for appropriate male signatures. The remaining 112 names were selected from the first 120 petition sheets bringing the total number of subjects to 1000.

One hundred alternate subjects (50 male and 50 female) were selected as a precaution against incorrect addresses, e.g. "return to sender, address unknown" or "no such number or street," or other problems with the mailing of the fliers. After reviewing the list of selected subjects, some additional questions arose as to the acceptability of some of the names according to the criteria previously employed, e.g. the inclusion of unisex names such as Terry and Marion and some questionable addresses. Consequently,

28 men and 38 women were eliminated as subjects and 66 more subjects were selected as replacements.

The second mailing involved the selection of 600 petition circulators as experimental subjects. The selection of subjects for this mailing also used the original 498 sheets as the initial stage in the selection process. The second mailing did not include a consideration of sex as an additional independent variable and, hence, unisex names were acceptable. Since petition circulators were also potential petition signers, a petition circulator's name was rejected if it had been selected for the first mailing.

From the 498 sheets, 402 names were found to be acceptable. The remaining 198 subjects and 100 alternates were then selected from the remaining 39,300 petition sheets on file at the MED. Every 130th sheet was pulled and the name of the circulator on that sheet was used. If the name was not acceptable, then the sheet prior to the selected sheet was used, i.e. the 129th, the 128th, etc. This same procedure was followed if the circulator's name had previously been selected or if the sheet had already been pulled, i.e. if it was one of the original 498 sheets.

Assignment of the Subjects to Treatment Conditions

Below is a brief outline of the process whereby subjects were assigned to the various experimental treatment groups.

1. Typed mailing labels were put on envelopes.
2. The envelopes were alphabetized.
3. A master list of subjects was typed.

For the first mailing, the envelopes were also separated into alphabetized stacks of men and women so as to be able to assess the effect of a subject's sex upon the rate of response. The assignment of subjects to treatments was as follows:

First man and woman of alphabetized stack were assigned to treatment I.
 Second man and woman of alphabetized stack were assigned to treatment II.
 Third man and woman of alphabetized stack were assigned to treatment III.
 Fourth man and woman of alphabetized stack were assigned to treatment IV.
 Fifth man and woman of alphabetized stack were assigned to treatment I.
 Sixth man and woman of alphabetized stack were assigned to treatment II.
 etc.

The treatment group to which each subject was assigned was then indicated on the master list. The form a subject would mail back to order a bumper sticker also indicated the treatment condition to which he/she had been assigned, i.e. a subject receiving appeal "1" would mail his/her order form back to Department 1.

The assignment of subjects to experimental treatment groups for the second mailing followed the same initial three steps indicated above, however, they were not separated into stacks of male and female subjects. The procedure for assignment was as follows:

First subject of alphabetized stack was assigned to treatment I.
 Second subject of alphabetized stack was assigned to treatment II.
 Third subject of alphabetized stack was assigned to treatment III.
 Fourth subject of alphabetized stack was assigned to treatment IV.
 Fifth subject of alphabetized stack was assigned to treatment I.
 etc.

Again, the assignment of subjects to the various treatment groups was indicated on the master list.

To summarize, for both mailings the subjects were assigned to the various experimental treatment conditions through a systematic random process. Consequently, it is assumed that this process made the groups experimentally "equivalent" (Stanley and Campbell, 1963).

III. FINDINGS

If, as Olson suggests, people are already aware that they can be free-riders, then we would expect to observe no statistically significant difference in the proportion of contributors among those subjects in the nonexclusivity or efficacy treatment conditions. However, we have suggested two alternative hypotheses.

Hypothesis 1: There will be a higher proportion of contributors among those subjects receiving the High Efficacy appeal than among those subjects receiving the Low Efficacy appeal.

The combined data in Table 4 shows that the direction of the results is opposite from the prediction. The overall magnitude of response to the appeals was small so the observed differences between conditions were severely constrained by this. However, a greater proportion of subjects contributed in the Low Efficacy condition (2.13%) than in the High Efficacy condition (1.75%). Moreover, the results are in this same direction for both petition signers and petition circulators (Table 2, Table 3). The three-way ANOVA shows that the effect of the efficacy factor is not statistically significant ($p > .25$).

Hypothesis 2: There will be a higher proportion of contributors among those subjects receiving the Nonexclusivity Not Revealed appeal than among those subjects receiving the Nonexclusivity Revealed appeal.

Table 2: The Effect of Perceived Efficacy and Nonexclusivity
on the Percentage of Contributors by Condition:
Petition Signers, 1st Mailing

		Efficacy		
		High	Low	
Non Exclusivity	Revealed	2.40	2.40	2.40
	Not Revealed	.40	1.60	1.00
		1.40	2.00	1.70

N= Sample size of 250 per treatment condition.

Table 3: The Effect of Perceived Efficacy and Nonexclusivity
on the Percentage of Contributors by Condition:
Petition Circulators, 2nd Mailing

		Efficacy		
		High	Low	
Non Exclusivity	Revealed	4.00	2.70	3.35
	Not Revealed	.667	2.00	1.33
		2.33	2.35	2.34

N= Sample size of 150 per treatment condition.

Table 4: The Effect of Perceived Efficacy and Nonexclusivity
on the Percentage of Contributors by Condition:
Petition Signers and Circulators,
Combined 1st and 2nd Mailing

		Efficacy		
		High	Low	
Non Exclusivity	Revealed	3.00	2.50	2.75
	Not Revealed	.50	1.75	1.13
		1.75	2.13	1.94

N= Sample size of 400 per treatment condition.

Table 5: Three-Way ANOVA for Percentage Contributing:
Nonexclusivity by Efficacy by Petition Signers and Circulators

Source	Sum of Squares	D.F.	Mean Square	F Ratio
Nonexclu. (A)	.1056	1	.1056	5.56*
Efficacy (B)	.0056	1	.0056	.29
Petition Sign. & Circul. (C)	.0150	1	.0150	.79
A x B	.0306	1	.0360	1.61
A x C	.0034	1	.0034	.18
B x C	.0033	1	.0033	.17
A x B x C	.0051	1	.0051	.27
ERROR	30.2307	1592	.0190	
TOTAL	30.3993	1599		

*P < .025

The combined data from Table 4 indicates that the direction of the results is opposite to this prediction. Again, within the given constraints of the magnitude of responses involved, a greater proportion of subjects contributed in the Nonexclusivity Revealed condition (2.70%) than in the Nonexclusivity Not Revealed condition (1.13%). Examining the three-way ANOVA, we find this effect to be significant ($F=5.56$, $df=1$, 1591 $p < .025$).

Aside from the hypotheses dealing with our two experimentally manipulated variables, we also generated two other hypotheses.

Hypothesis 3: There will be a higher proportion of contributors among the prior contributors, i.e. petition circulators, than among the sympathizers, i.e. the petition signers.

Looking at Tables 2 and 3, we see that a higher proportion of petition circulators contributed (2.34%) than did petition signers (1.70%) which is in the direction of the prediction. This result holds for all four treatment conditions. The three-way ANOVA shows, however, that this result is not statistically significant ($p > .25$).

The data in Table 4 suggests that there might be an interaction effect between the nonexclusivity and efficacy factors. That is, the subjects in the Nonexclusivity Revealed condition had a higher proportion of contributors if they were in the High Efficacy condition, while in contrast, those subjects in the Nonexclusivity Not Revealed condition had a higher proportion of contributors if they were in the Low Efficacy condition. However, the three-way ANOVA shows that none of the interaction effects are statistically significant.

Hypothesis 4: There will be a higher proportion of contributors among the female subjects than among the male subjects.

The factor of sex was measured and balanced among conditions only in the first mailing, i.e. for petition signers. Out of 17 responses, eleven (11) were male and six (6) were female which is in the opposite direction of the prediction. A two-tailed t-test was conducted on the data which showed that the results were not statistically significant¹ ($p > .2$).

It is important to acknowledge that the F-test is not completely valid because it makes two assumptions:

1. The variances among conditions are homogenous.
2. The populations are normally distributed.

The variances for each of the treatment conditions are as follows:

$$s_1^2 = .023475, s_2^2 = .017194, s_3^2 = .02910, s_4^2 = .004975.$$

Using the $F_{\max}$ test (see Winer, 1971), we found that the ratio of the largest to the smallest variance to be 5.85. With four variances and 400 observations per variance, this ratio is significant at $p < .01$. Hence, we must reject the null hypothesis of equal condition variances. In addition, using dichotomous data with such a low response rate (31 out of 1600) makes it highly probable that the distribution is skewed.

However, a Chi-square test was conducted on the combined data for the nonexclusivity factor since it is a more conservative test in that it does not make the assumptions associated with the F-test. The data in Table 6 shows that we obtained a Chi-square of 5.56, $df=1$, which indicates that the nonexclusivity factor is statistically significant at $p < .025$.

Table 6: Observed (and expected) Frequencies of Contributing
for Nonexclusivity Revealed and Not Revealed under
the Assumption of No Difference Between Conditions

		Contributors	Non Contributors	Total
Non Exclusivity	Revealed	22 (15.5)	778 (784.5)	800
	Not Revealed	9 (15.5)	791 (784.5)	800
	Total	31	1569	1600

$\chi^2 = 5.559$, $df = 1$, $p < .025$

DISCUSSION

Olson's conceptualization of the rational individual assumes that such a person is aware of the nonexclusivity and inefficacy features of free-riding. If Olson is correct, mentioning these features should have no effect on whether or not an individual participates in the creation of a collective good.

An alternative possibility is that people may not be as rational as Olson thinks (or rational in the same way) in that they may be influenced by revealing or not revealing the nonexclusivity and inefficacy features. It has been hypothesized that raising perceived levels of efficacy will make a difference as well as not revealing the nonexclusivity of the collective good.

The results from the field experiment show that manipulating the efficacy factor was statistically insignificant, but manipulating the non-exclusivity factor did make a statistically significant difference. Contrary to both Olson and the alternative, subjects were more likely to contribute to Nuclear Freeze Fundraisers if they were in the Nonexclusivity Revealed condition. We are now left with the task of speculating as to why we obtained these results. Two explanations come to mind:

1. Revealing the nonexclusivity feature may have produced feelings of inequity in the recipients of the appeals.
2. Revealing the nonexclusivity feature may have increased the credibility of the source of the appeals.

It can be said that an equitable situation exists when the perceived inputs and outcomes of an individual are equal to his/her perception of

the inputs and outcomes of others. For our purposes here, inputs refer to contributions, outcomes refer to rewards, i.e. the availability of the collective good, and others pertains to other contributors. J. Stacy Adams (1965) has argued that when a person perceives a situation as inequitable, this person will experience tension and be driven to reduce the inequity.¹ Burnstein and Wolosin (1968) write:

Inequity has been assumed to have noxious effects. Those who benefit, i.e. those whose rewards increase or whose costs decrease relative to others, are said to experience embarrassment or guilt; those injured, i.e. those whose rewards decrease or whose costs increase relative to others, are said to experience humiliation or anger. As a result, the individual desires to maintain or restore equity and will act to satisfy this desire. (p. 416)

This suggests that a person will perceive a situation as inequitable if he/she is over-rewarded or under-rewarded. By reminding people that they can receive benefits without making sufficient inputs, i.e. get something for nothing, may produce perceptions of being over-rewarded. Some donation appeals attempt to dissuade people from taking advantage of the nonexclusivity of the good by reminding them that such behavior will over-reward them, e.g. "Don't just sit there and let someone do your contributing for you!".² Hence, one explanation is that the subjects in the Nonexclusivity Revealed condition increased their inputs, i.e. contributed in order to reduce feelings of inequity.

One might question the above explanation because the petition circulators, who have already provided an input, i.e. the cost of circulating the petitions, were more likely to contribute (and in larger sums) than the petition signers. If the inequity argument holds that all one need do, in this situation, is to increase inputs, then the circulators have already done so and should, theoretically, contribute less.³ Since the

circulators did contribute more than the petition signers a more plausible explanation is that there are other factors involved besides feelings of inequity.

Research has shown that when a communicator takes a position that the recipient (of the communication) perceives is opposite to the communicator's best interests, the communicator is viewed as more sincere, i.e. more credible, and hence the message is more persuasive (Walster, et al., 1966; Eagly, et al., 1978). If a fundraiser informs people that their contributions will make little difference and/or that they can receive the collective good even if they do not contribute, such a communication would be perceived by the recipients as making statements opposed to the communicator's best interests. Such negative statements have the effect of increasing the credibility of the communicator and, hence, increase the effectiveness of the appeal.

This would explain why the Nonexclusivity Revealed condition generated a higher proportion of contributors than the Nonexclusivity Not Revealed condition. However, if this explanation is valid, why did we not observe a significantly higher proportion of contributors in the Low Efficacy condition than in the High Efficacy condition? We may surmise that telling people that their contributions will not make a difference has a dual effect. Such a statement may increase the credibility of the source of the communication, but it may also decrease the recipients' desire to contribute their resources which may be better spent elsewhere. On the other hand, providing information which openly recognizes the nonexclusivity of a collective good, such as a Nuclear Freeze or public television, may not have a negative effect since people already recognize the nonexclusivity feature.

While the three-way ANOVA indicated that the interaction effect between the nonexclusivity and efficacy factors are statistically insignificant, the results are highly suggestive. Examining the combined data in Table 4, we see that there was a higher proportion of contributors in the Low Efficacy/Nonexclusivity Not Revealed condition (1.75%) than in the High Efficacy/Nonexclusivity Not Revealed condition (.50%). This suggests that when there are no prior negative statements, the harm from telling people they have low efficacy is outweighed by the positive credibility effect of that one negative statement.

Is it the case that if a little honesty is good, then a lot should be better? Comparing the two treatment conditions in which Nonexclusivity is Revealed (Table 4), we find that there was a higher proportion of contributors in the High Efficacy condition (3.0%) than in the Low Efficacy condition (2.50%). In short, while making one negative statement, i.e. Nonexclusivity Revealed, may increase the credibility of the communicator, making further negative statements offers little, if any, further gain to source credibility. Whatever gain is achieved, is more than counteracted by the loss from telling a person they have low efficacy.

It was also hypothesized that the petition circulators would be more likely to contribute than the petition signers. While the results were in the direction of the prediction, the difference was not statistically significant. However, for all four treatment conditions, the circulators did have a higher proportion of contributors than did the petition signers. This strongly suggests that there is a difference between those individuals at the core of a social movement and those who are sympathizers.

The factor of sex was also shown to be statistically insignificant but the logic of the argument remains appealing. The basic problem which

confronted the analysis of this variable was that we had no way of being certain that our listed recipient, e.g. Ms. Doe, responded to the appeal rather than her spouse. In two cases it was clear that it was the spouse and not the designated recipient who responded. We cannot be certain that the person who made the decision about contributing was the original recipient of the appeal. Consequently, we cannot test the differing orientations of men and women toward the Nuclear Freeze movement.⁴

The response rate to the appeals was slightly under 2% which was quite disheartening. Clearly, we expected that individuals who showed some sympathy toward the Freeze movement would respond more strongly than they did to our appeals. It is obvious that we were wrong and several possible explanations have been considered. Before explaining these possibilities, it needs to be acknowledged that the overall response rate does offer some support for Olson's theory in that most of the people who gave utility to the collective good elected not to contribute. However, as indicated, the low response rate may be attributable to several other factors.

The first factor to consider is that both mailings were sent out in close proximity to election day, November 2nd. During this political time of year, people are swamped with a variety of pamphlets and pleas for contributions and, thus, our appeal may have been one among many to get lost in a stack or to hit the trashcan. Secondly, the bumper sticker we advertised solicited a yes-vote for Proposition "E" on November 2nd. Consequently, as that deadline approached, people may not have wanted to purchase and display a bumper sticker which would have been outdated in a matter of weeks. Thirdly, the Nuclear Freeze Fundraisers was not a known organization so people may have been reluctant to contribute their resources without a more convincing guarantee (besides our word) that the funds would, in fact, go to support the Freeze movement. Finally, the Michigan Freeze

proposal was viewed as having a high probability of passage. Our appeals sought to raise funds to promote a collective good rather than to directly produce the good, so people may have felt they could have a more direct effect by simply voting for the Freeze proposal. Since the proposal was likely to pass, the response to our appeals may have been low because people could show their support through a vote and because there appeared to be no urgent need to contribute funds to fight a battle that had already been won, i.e. everybody could be a free-rider.

There are also some possible modifications to this field experiment which may serve to improve the response rate and the general quality of the study. One possible alternative is to mail the bumper sticker along with the appeal which is similar to the American Lung Association's strategy when they mail "personalized address labels" with their donation appeals. This might reassure the recipients that the organization is not a hoax and would eliminate all possibility that the bumper sticker acts as a private good incentive since everyone, including noncontributors, would receive one. Including the bumper sticker would hopefully increase the organization's credibility and facilitate higher response rates.

In addition, follow-up interviews with recipients in each treatment condition (respondents and nonrespondents) might provide useful information as to the actual effect of the communications and shed some light on why subjects choose not to contribute.

Finally, it would seem prudent that similar experiments be conducted well before the election day to avoid competing with other political campaigns. The November deadline became an imposition on rather than an impetus for the facilitation of higher response rates. Consequently, such a mailing might be more successful if it were not associated with a specific

deadline (as well as the bumper stickers) allowing for sufficient time for the recipients to respond.

In conclusion, the field experiment and the one statistically significant result, i.e. the effect of nonexclusivity, suggests that there may be a flaw in Olson's logic of collective action. People may not be as rational as Olson thinks in that revealing and not revealing the non-exclusivity feature of free-riding did make a difference in whether subjects contributed toward collective action. We offered the conjecture that subjects in the Nonexclusivity Revealed condition had a higher proportion of contributors than those subjects in the Nonexclusivity Not Revealed condition because they perceived the source of the communication as more credible and, hence, were more persuaded by the appeals for contributions. Given the low response rate, the generalizations that can be made from the results are limited, which indicates the necessity for further replications of this study. While the results do not conclusively refute the hypotheses of this thesis (nor do they support or refute Olson's economic analysis of human behavior), there is evidence to suggest that revealing the features of the free-rider problem does affect the likelihood that an individual will contribute resources toward collective action.

NOTES

I. Theoretical Background

1. Olson argues that if the collective good is produced it will be at a suboptimal level or below the amount of the good that would be in the best interests of the group to provide. This suboptimizing of goods occurs because the rational, self-interested individual calculates how much of the good he/she needs and once his/her costs exceed his/her gains, then the individual will stop contributing regardless of the needs of other members of the group. As Olson puts it, when one's share of the costs exceeds one's share of the additional benefits, one will stop contributing toward the production of the collective good.

2. This interpretation of Olson draws heavily upon the writing of Denton E. Morrison (1975 and 1977). See bibliography for a complete citation of these sources.

3. Similarly, we could ask if sympathizers will have a higher proportion of contributors than individuals selected from the general public. The only problem I see with such a proposition is that signing a petition is such a minimal cost, as compared with circulating a petition, that there may be no significant difference between the responses of sympathizers and the general public. However, during my experience soliciting signatures for the Freeze proposal, 25% or less of those solicited actually signed the petition sheets which suggests that the sympathizers, i.e. signers, are a special subset within the general public.

4. Some other possible explanations for the differences between prior contributors and sympathizers are:

- Prior contributors are more involved in organizational networks which place greater pressure on them to contribute.
- Prior contributors have a higher level of perceived efficacy as justified by previous experience (circulating petitions did get the Freeze proposal on the November ballot).
- Prior contributors have greater amounts of information than the sympathizers, e.g. pamphlets, newsletters, etc.

5. Explanations 1 and 2 assume that the prior contributors are as rational as the sympathizers in that they are both equally aware of the potential for free-riding.

6. From my own experience as a petition circulator as well as conversations I have had with other circulators, I found no evidence to support this proposition. Other circulators seemed fully aware of the potential for free-riding, yet they contributed their time and resources toward the Freeze movement because they felt it advanced their self-interest and the interests of others. They also contributed because they felt a responsibility to act according to their principles, i.e. they felt they had to get involved and do what they felt was right.

II. Methodology

1. The proposal for this study was presented to and approved by the University Committee on Research Involving Human Subjects in August/September of 1982.
2. The Nuclear Freeze Fundraisers was an organization fully registered and in compliance with guidelines of the Michigan Elections Division.
3. The subjects mailed their contributions to a common address: Nuclear Freeze Fundraisers, Box 1521, East Lansing, Michigan. However, the department varied as to the treatment to which a subject had been assigned. Petition signers mailed their contributions to Department A, B, C, or D. Petition circulators mailed their contributions to Department 1, 2, 3, or 4.
4. The first mailing was sent out on September 27th.
5. By the 11th of October, we had received only 13 responses from the first mailing and it was subsequently decided to initiate a second mailing. This second mailing was sent out on October 14th.
6. The name of a petition circulator appears in the lower right hand corner of the petition sheet and must include the circulator's name and address (see Appendix B).

III. Findings

1. For the two-tailed t-test, $t = 1.2195$, $df = 998$.

IV. Discussion

1. Adams has argued that an individual (Person) is driven to reduce feelings of inequity which may be accomplished in at least two ways. First, the inequity may be reduced if either Person or Other increases (or decreases) their inputs and/or outcomes. Second, Person may alter perceptions of Person's own inputs and outcomes and/or the inputs and outcomes of Other. Hence, feelings of inequity may be reduced if Person actually or perceptually manipulates the inputs and/or outcomes of Person or Other.
2. WKAR, Channel 23, Festival '83 membership drive campaign.
3. One might counter the argument that petition circulators will contribute less by claiming that the collective good has a higher utility for the petition circulators than for the signers. Consequently, the circulators may perceive their inputs as insufficient when compared with the outcome to be gained.
4. While we cannot be sure about the sex of the individual who decides whether or not to contribute, we are sure that each household was in only one treatment condition. Hence, we do not encounter the same problem with interpreting the response rates by condition.

APPENDICES

APPENDIX A:

The Fliers Mailed to the Subjects

APPENDIX A

Nonexclusivity Not Revealed/Low Efficacy Appeal

September, 1982

Dear Citizen of Michigan:

We are three concerned citizens trying various ways to raise funds for the Nuclear Freeze.

We urge you to vote for the Nuclear Freeze Referendum in the general election of Tuesday, November 2, 1982. Vote yes on Proposition E.

We hope you will make an additional contribution to making the Nuclear Freeze Referendum pass overwhelmingly by purchasing and displaying a Nuclear Freeze bumper sticker. All profits from sales go to promote passage of the Michigan Nuclear Freeze Referendum.

In a state as large as Michigan, it is very unlikely that one contribution will make the difference in whether or not the Referendum passes. And even if the Referendum passes it may make little difference in whether or not a Nuclear Freeze comes about.

But anything that can be done to help bring about a Nuclear Freeze will help reduce the risk of nuclear war. Isn't that reason enough for your contribution?

Thank you,

Bradley Fisher
Stan Kaplovitz
Denton Morrison

East Lansing, Michigan

Print your name and address here for our mailing label	NUCLEAR FREEZE: GIVE "BOMBS AWAY" NEW MEANING VOTE YES ON PROPOSITION E NOV. 2	Cut this and tape to your envelope as your mailing label											
d12	Green on white <table> <tr> <td>1 sticker</td> <td>\$1.00</td> <td rowspan="5"> <u>Make checks out to:</u> Nuclear Freeze Fundraisers </td> </tr> <tr> <td>3 stickers</td> <td>\$2.00</td> </tr> <tr> <td>5 stickers</td> <td>\$3.00</td> </tr> <tr> <td>10 stickers</td> <td>\$4.00</td> </tr> <tr> <td>15 stickers</td> <td>\$5.00</td> </tr> </table> (Write for bulk rate) If you enclose a stamped, self-addressed envelope there will be more money for the Freeze.	1 sticker	\$1.00	<u>Make checks out to:</u> Nuclear Freeze Fundraisers	3 stickers	\$2.00	5 stickers	\$3.00	10 stickers	\$4.00	15 stickers	\$5.00	NUCLEAR FREEZE FUNDRAISERS DEPT. 2 BOX 1521 EAST LANSING, MI 48823
1 sticker	\$1.00	<u>Make checks out to:</u> Nuclear Freeze Fundraisers											
3 stickers	\$2.00												
5 stickers	\$3.00												
10 stickers	\$4.00												
15 stickers	\$5.00												

APPENDIX B

The 1982 Michigan Nuclear Freeze Petition Sheet

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