Appendix 1: Experimental Procedures

(not intended for publication)

This appendix documents our experimental procedures. It is divided into two sections. The first section shows the instructions about sending and receiving offers, as they appeared on the computer screen. It then shows how the screen looked when subjects submitted final offers and/or received arbitrated settlements. Finally, it shows some examples of how the screen would have looked to our subjects as they actually participated in the experiment. The second section shows the descriptions we gave to our subjects about the behavior of arbitrators.

shift-next to skip instructions

Welcome

This is an experiment in the field of economics. For your participation, you will receive three dollars, regardless of the outcome of the experiment. However, through your actions in this experiment, you will be given the opportunity to earn additional money. This project is being funded by a grant from the National Science Foundation.

Press 'NEXT' key to begin the instructions.

round:

Your last offer:

If accepted you earn:

Opponent's last offer:

If accepted you earn:

accept

Your new offer:

send

In this experiment you will be bargaining with another person over a number, that can range from 100 to 500, inclusive. Your earnings will depend on the number you and the person you are bargaining with agree upon.

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

round:

Your last offer:

If accepted you earn:

Opponent's last offer:

If accepted you earn:

accept

Your new offer:

send

If no agreement is reached during the time allotted for that period, you will receive a payment of zero Plato dollars. At the end of the experiment you will receive one dollar for for every 600 Plato dollars that you earn.

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

round:

Your last offer:

If accepted you earn:

Opponent's last offer:

If accepted you earn:

accept

Your new offer:

send

You have been given four sheets of paper labeled 'Payoff Schedule', if you do not have all four please notify one of the people running the experiment before continuing with the instructions.

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

round:

Your last offer:

If accepted you earn:

Opponent's last offer:

If accepted you earn:

accept

Your new offer:

send

In order to come to an agreement with the person you are bargaining with you will need to communicate offers and your desire to accept offers. This is accomplished through the screen in front of you.

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

round:

Your last offer:

If accepted

you earn:

Opponent's last offer:

If accepted

you earn:

accept

Your new offer:

send

To submit an offer, simply type it in using the keyboard. Your offer will appear on the screen in front of you next to the line that reads 'Your new offer'. When you are ready to send your offer simply press the box marked 'send' on the screen.

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

round:

Your last offer:

If accepted

you earn:

Opponent's last offer:

If accepted

you earn:

accept

Your new offer:>

send

At this point you should try entering
a number between 100 and 500.

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

round:

Your last offer:

If accepted

you earn:

Opponent's last offer:

If accepted

you earn:

accept

Your new offer:> 100

send

You must press the send box. The
'next' key will not work.

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

round:

Your last offer:

If accepted you earn:

Opponent's last offer:

If accepted you earn:

accept

Your new offer: 100

send

During the experiment if you accidently try to enter an offer that is not between 100 and 500 the computer will reject the offer by erasing it from the screen. The computer will then be prepared to receive an acceptable response.

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

round:

Your last offer:

If accepted

you earn:

Opponent's last offer:

If accepted

you earn:

accept

Your new offer: 100

send

After you press the send box the computer will ask you for the first of two confirmations. The instructions are continued at the top of the screen.

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

At this point the computer will display, on the bottom of the screen, how much you will earn if you send your offer and if it is subsequently accepted, along with the confirmation message printed below.

Your last offer:	Opponent's last offer:
If accepted you earn: [ ]	If accepted you earn: [ ] [accept]

Your new offer: 1ØØ [send]

If this offer is sent and accepted you will earn: 3Ø

press yes to confirm, no to abort [no] [yes]

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

Now if you still wished to send your offer, you would touch the box, on the screen labled 'Yes'. Alternatively, if you no longer wished to send your offer you would touch the box labled 'No'. Now touch the 'Yes' box.

Your last offer:	Opponent's last offer:
If accepted you earn: [ ]	If accepted you earn: [ ] [accept]

Your new offer: 1ØØ [send]

If this offer is sent and accepted you will earn: 3Ø

press yes to confirm, no to abort> [no] [yes]

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

Finally, to be absolutely certain that you wish to submit your tentitive offer the computer will ask you for one more reconfirmation. The new message displayed below will appear.

Your last offer:	Opponent's last offer:
If accepted you earn:	If accepted you earn: [accept]

Your new offer: 100

[send]

If this offer is sent and

Press send to reconfirm and send offer
Press abort to recind offer

[abort]

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

To reconfirm and send your offer, you would now touch the send box. After you touch the send box the computer will display your offer to the person with whom you are bargaining, and will similarly display your offer on your screen.

Your last offer:	Opponent's last offer:
If accepted you earn: [ ]	If accepted you earn: [ ] [accept]

Your new offer: 1ØØ [send]

If this offer is sent and

Press send to reconfirm and send offer
Press abort to recind offer [abort]

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

The reconfirmation message will now be erased, and your offer will be displayed to the other bargainer. The computer will also display your offer at the top of your screen.

Your last offer: 100	Opponent's last offer:
If accepted you earn: [ ]	If accepted you earn: [ ] [accept]

Your new offer: 100 [send]

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

Below, where your offer is displayed, the box will show how much you will earn if your offer is accepted by the person with whom you are bargaining with.

Your last offer: 100	Opponent's last offer:
If accepted you earn: [30]	If accepted you earn: [ ] [accept]

Your new offer: 100 [send]

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

The procedure for accepting the latest offer from the person with whom you are bargaining is similiar. First press the accept box, when the 'Yes' and 'No' boxes appear press the 'Yes' box, and finally when the second reconfirm message appears press the accept box again.

Your last offer: 100	Opponent's last offer:
If accepted you earn: [30]	If accepted you earn: [ ] [accept]

Your new offer: 100 [send]

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

After the second reconfirmation of your acceptance the round will end, and the contract you accepted will determine your payoff. For example, suppose the person you are bargaining with made an offer of 100. That offer would appear next to the message 'Opponent's last offer'.

Your last offer: 100	Opponent's last offer: 100
If accepted you earn: [30]	If accepted you earn: [ ] [accept]

Your new offer: 100 [send]

In the box next to the message 'If accepted you earn' and below 'Opponent's last offer' will appear what you will earn if you accept your opponent's offer. In this case you would earn 3Ø.

Your last offer: 1ØØ	Opponent's last offer: 1ØØ
If accepted you earn: [3Ø]	If accepted you earn: [3Ø] [accept]

Your new offer: 1ØØ [send]

WARNING! It is possible that while you are in the processes of accepting an offer, the other bargainer will change his offer. In that case the new offer will be displayed and you will no longer be able to accept the old offer.

Your last offer: 100	Opponent's last offer: 100
If accepted you earn: [30]	If accepted you earn: [30] [accept]

Your new offer: 100 [send]

However if you wish to accept the NEW offer, you do not need to restart the acceptance proceedure. Simply finish accepting the offer as you would normally. You will then be paid in accordance with the number you agreed to in the new offer.

Your last offer: 100	Opponent's last offer: 100
If accepted you earn: [30]	If accepted you earn: [30] [accept]

Your new offer: 100 [send]

The round number and the amount of time remaining in the round will appear in the uppermost row of the screen.
As stated earlier, if time should run out before an offer is accepted, both bargainers will earn zero Plato dollars.

Your last offer: 100	Opponent's last offer: 100
If accepted you earn: [30]	If accepted you earn: [30] [accept]

Your new offer: 100 [send]

However this will only be true for the first 10 rounds. After the 10th round if no offer is accepted the dispute will be submitted to arbitration. The details of which will be explained prior to 'Arbitration'.

Your last offer: 100	Opponent's last offer: 100
If accepted you earn: [30]	If accepted you earn: [30] [accept]

Your new offer: 100 [send]

If you wish to review the instructions press the -LAB- key. If you have any questions concerning the experiment please feel free to ask one of the people running the experiment. Press -DATA- if you are ready to begin the experiment.

Your last offer: 1ØØ	Opponent's last offer: 1ØØ
If accepted you earn: 3Ø	If accepted you earn: 3Ø accept

Your new offer: 1ØØ send

-NEXT to con't, BACK to review, SHIFT-BACK to redraw-

The next page shows a sample screen print which illustrates what happened in the event of no agreement after ten rounds in the conventional arbitration case.

round: 11

Your last offer: 200

If accepted you earn: 525

Opponent's last offer: 375

If accepted you earn: 236

accept

Your new offer:>

send

The arbitrator has decided on a value of
361. You have therefore earned 259

** Waiting for the next round to start. Please be patient. **

The next four pages show sample screen prints which illustrate what happened in the event of no agreement after ten rounds in the final-offer arbitration case.

round: 11

Your last offer: 200

If accepted you earn: 525

Opponent's last offer: 375

If accepted you earn: 236

accept

Your new offer:>

send

round: 11

Your last offer: 200

If accepted you earn: 525

Opponent's last offer: 375

If accepted you earn: 236

accept

Your new offer:

send

Please submit your final offer.
Note: The arbitrator will choose between the two final offers submitted.

round: 11

Your last offer: 200

If accepted you earn: 525

Opponent's last offer: 375

If accepted you earn: 236

accept

Your new offer: 250

send

If this offer is sent and accepted you will earn: 442

press yes to confirm, no to abort⟫ no yes

round: 11

Your last offer: 200

If accepted you earn: 525

Opponent's last offer: 375

If accepted you earn: 236

accept

Your new offer: 250

send

If this offer is sent and accepted you will earn: 442

The arbitrator has decided on a value of 325. You have therefore earned 319.

** Waiting for the next round to start. Please be patient. **

The next five pages show sample screen prints which illustrate what happened in the event of no agreement after ten rounds in the tri-offer arbitration case.

round: 11

Your last offer: 200

If accepted you earn: 525

Opponent's last offer: 375

If accepted you earn: 236

accept

Your new offer:>

send

The first half of the round is over and no agreement has been reached. The first arbitrator will therfore suggest an agreement.

round: 11

Your last offer: 200

If accepted you earn: 525

Opponent's last offer: 375

If accepted you earn: 236

accept

Your new offer:

send

The first arbitrator has decided on a value of 375. If accepted by both bargainers you will earn 236 Do you wish to accept this decision? (Note, if you or the person you are bargaining with reject this settlement the second half of the round will commence.) Please type in 'yes' or 'no'. no (and press -NEXT-)

round: 11

Your last offer: Ø

If accepted you earn: Ø

Opponent's last offer: Ø

If accepted you earn: Ø

accept

Your new offer:>

send

Both parties have not agreed to the arbitrator's decision. The second half of the round will begin shortly.

round: 11

Your last offer: 225

If accepted you earn: 484

Opponent's last offer: 325

If accepted you earn: 319

accept

Your new offer:

send

Please submit your final offer.
Note: The arbitrator will choose between the two final offers submitted and the previous arbitrator's decision of 375.

round: 11

Your last offer: 225

If accepted you earn: 484

Opponent's last offer: 350

If accepted you earn: 278

accept

Your new offer: 250

send

If this offer is sent and accepted you will earn: 442

The other bargainer has made a final offer of 300.

round: 11

Your last offer: 225

If accepted you earn: 484

Opponent's last offer: 325

If accepted you earn: 319

accept

Your new offer: 250

send

If this offer is sent and accepted you will earn: 442

The arbitrator has decided on a value of 375.

The next three pages show examples of how the screen would have looked to our subjects as they participated in the experiments.

round: 1

293

Your last offer: Ø

If accepted you earn: Ø

Opponent's last offer: Ø

If accepted you earn: Ø

accept

Your new offer:»

send

round: 1

156

Your last offer: Ø

If accepted you earn: Ø

Opponent's last offer: Ø

If accepted you earn: Ø

accept

Your new offer: 35Ø

send

If this offer is sent and accepted you will earn: 442

press yes to confirm, no to abort» no yes

round: 1

92

Your last offer: 35Ø

If accepted you earn: 443

Opponent's last offer: Ø

If accepted you earn: Ø

accept

Your new offer: 4ØØ

send

If this offer is sent and accepted you will earn: 525

press send to reconfirm and send offer
press abort to recind offer

abort

The next three pages show the descriptions that our subjects received about arbitrator behavior. These descriptions did not appear on the computer screen, but were passed out. The first page was passed out to the high variance conventional arbitration subjects. It shows 100 draws from a normal distribution with mean 350 and variance 50. Subjects were told that:

"From now on if no agreement is reached by the end of the round the dispute will be submitted to binding arbitration. An arbitrator will decide on what the contract will be. This contract will be binding and your earnings will be calculated accordingly."

"Please remember that if you reach a contract before the end of the round, no arbitration will occur. You are under no obligation to ever reach an agreement, nor are you under any obligation to not reach an agreement. You should do whatever you deem appropriate."

"Here are the arbitrator's last 100 decisions. You can expect future decisions to be similar to past decisions."

The instructions given to low and medium variance conventional arbitration subjects were similar.

The second page is one of four pages that were passed out to the final-offer arbitration subjects. Each page showed 10 pairs of final offers and 45 arbitral decisions about each pair. The final offers were drawn from a uniform distribution with a range between 100 and 500. The arbitrator's "decision" was the offer closest to a draw from a normal distribution with mean 350 and variance 50. Subjects were told that:

"From now on if no agreement is reached by the end of the round, the dispute will be submitted to binding arbitration. At this point, both parties will be asked to submit a final offer. After the parties have submitted their final offers, an arbitrator will select one of them. This contract will be binding and your earnings will be calculated accordingly."

"Example: No agreement is reached. The first bargainer's final offer is 165. The second bargainer's final offer is 275. Now the arbitrator will select either 165 or 275 and the selection will be binding."

"Please remember that if you reach a contract before the end of the round, no arbitration will occur. You are under no obligation to ever reach an agreement, nor are you under any obligation to not reach an agreement. You should do whatever you deem appropriate."

"Here is a list of past offers and how various arbitrators selected among them. You can expect similar decisions in the future."

The third page is one of four pages that was passed out to the tri-offer arbitration subjects. Each page shows 6 triplets consisting of two final offers and the fact-finder's offer. The final offers were drawn from a uniform distribution with a range between 100 and 500. The fact-finder's offer was drawn from a uniform distribution with a mean of 350 and a variance of 50. The arbitrator's "decision" was the number in the triplet closest to another draw from the same normal distribution. Subjects were read the following

instructions:

"From now on rounds will have two parts, each consisting of 165 seconds. If during the first half of the round no agreement is reached, an arbitrator will suggest an agreement. However this arbitrator's decision is not binding and either party may refuse to accept it. If either party rejects the arbitrator's decision, the second half of the round will begin. If no agreement is reached during the second half of the round, the dispute will be submitted to binding arbitration. At this point, both parties will be asked to submit a final offer. After the parties have submitted their final offers, a new arbitrator will select either one of the final offers or the previous arbitrator's decision. This contract will be binding and your earnings will be calculated accordingly."

"Example: No agreement is reached in the first half of the round. The first arbitrator suggests 195. One party does not accept the decision so the second half of the round begins. Again, no agreement is reached. The first bargainer's final offer is 165. The second bargainer's final offer is 275. Now the second arbitrator will select 165, 195 or 275 and the selection will be binding."

"Please remember that if you reach a contract before the end of either half of the round, no arbitration will occur. You are under no obligation to ever reach an agreement, nor are you under any obligation to not reach an agreement. You should do whatever you deem appropriate."

"Here are two lists. The first contains the initial arbitrators last 100 suggestions. The second lists past offers and shows how various arbitrators selected among them."

Arbitrator's Past 100 Decisions

275	383	312	397	363	381	340	310	411	398
328	268	332	310	385	350	380	337	410	349
288	326	336	351	366	347	393	366	293	273
390	253	319	287	327	359	309	380	285	395
388	416	360	355	266	372	348	343	368	381
257	378	353	450	441	302	322	426	305	329
322	460	418	253	338	366	363	342	418	364
361	361	293	338	378	348	370	348	353	295
421	442	328	347	343	315	391	268	302	394
297	294	399	283	289	262	458	302	410	313

fo	Each 'x' represents which final offer, in each pair, was selected by a particular arbitrator
251	x xxxxxxx x x xxxxxxx x xxxx xx x x xxxxx
496	xxx x x x x x x x x x xx x
359	x xxxx xxx x xx x xx xxxx xxxxxxx x x xxxx
282	x xx x x xx x x x x x x x
226	xxxxxx

fo	Each 'x' represents which final offer, in each group, was selected by a particular arbitrator
159	
195	xx
330	xxxx