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A Drink from the Group

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A Drink from the Group

Abstract
You're sitting in a bar with eight friends, everyone staring at one hot guy. The only caveat is that you can't get his attention, and neither can anyone else. If you do something to get noticed all your friends will regard you as a traitor and, while the guy might be cute, he's not worth that much. So you and your friends have two options: 1. Sit around and stare at him, on the odd chance that he might come over on his own. 2. Everyone chips in to buy him a drink from the group; then he will definitely notice your group, and he can decide on his own whom he wants to leave the bar with, if anyone.

What the friends would do in such a situation depends not only on each individual girl's confidence in winning the guy, but also on each girl's willingness to risk the cost of the drink, knowing that there is a pretty good chance that she herself will not get the guy.

When other forms of communities make decisions about the functioning of their systems of government, welfare, wealth-management, and trade, they often follow similar lines of thinking. Many internal communal policies are founded upon the amount of risk that the individuals in the community are willing to take, and the discussion between John Rawls and John C. Harsanyi on a democratic politic's moral responsibility is based on the moral riskiness which each attributes to society's members.

Keywords
risk, moral theory, Bayesian decision making, game theory, justice, Rawls, Harsanyi, Skyrms, Brian, Brian Skyrms, Philosophy Politics and Economics, PPE, Philosophy Politics & Econ

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PPE 475
Evolution of the Social Contract
Professor Brian Skyrms
April 2006

A Drink from the Group

You're sitting in a bar with eight friends, everyone staring at one hot guy. The only caveat is that you can't get his attention, and neither can anyone else. If you do something to get noticed all your friends will regard you as a traitor and, while the guy might be cute, he's not worth that much. So you and your friends have two options:

1. Sit around and stare at him, on the odd chance that he might come over on his own.
2. Everyone chips in to buy him a drink from the group; then he will definitely notice your group, and he can decide on his own whom he wants to leave the bar with, if anyone.

Risk and Justice

What the friends would do in such a situation depends not only on each individual girl's confidence in winning the guy, but also on each girl's willingness to risk the cost of the drink, knowing that there is a pretty good chance that she herself will not get the guy. When other forms of communities make decisions about the functioning of their systems of government, welfare, wealth-management, and trade, they often follow similar lines of thinking. Many internal communal policies are founded upon the amount of risk that the individuals in the community are willing to take, and the discussion between John Rawls and John C. Harsanyi on a democratic politic's moral responsibility is based on the moral riskiness which each attributes to society's members.

It is important to recognize that the scope of this discussion applies to a small community, preferably one in which people know each other and have some relationship with one another, such as the nine girls in the bar. While each person is concerned with her own happiness, there is a sense of individual responsibility to assure that the community functions well. The details of why this is necessary will become clear in the discussion of Rawls' and Harsanyi's "veil of ignorance"/ "equiprobability model."

One other general comment before beginning the core of the paper – utility, wealth, and happiness are all different things. One's happiness is not solely dependant upon how much money he has, and his utility for certain things may change despite their dollar value remaining the same. For simplicity, these three terms are conflated into one idea in this paper, all three referring to "How much a person wants something." However it is critical that not as economists or philosophers or political scientists, but as human beings qua human beings, we recognize the importance of happiness as an immeasurable good. That being said, this paper measures all benefit, or utility, as a dollar value stemming from a situation's worth in monetary terms.

Determining Morality: John Rawls

When a society determines its just policies, each individual must, according to John Rawls, consider himself as though behind a "veil of ignorance," where he does not know who he is, what position he has in society, or what his likes and dislikes are. In this "original position," without knowing anything about himself, the person will then have to make a decision for what society should look like. Since he will not be biased to his own

benefit, (since he does not know what his benefit will be,) the individual enters into a contractarian-like system which will be the most just for all of society.

When in this original position, Rawls' man will choose a "democratic idea of justice"[1] that combines two principles:

1. "Each person has an equal right to the most extensive scheme of equal basic liberties compatible with a similar scheme of liberties for all.
2. Social and economic inequalities are to meet two conditions: they must be
    a. To the greatest expected benefit of the least advantaged members of society (the maximin equity criterion) and
    b. Attached to offices and positions open to all under conditions of fair equality of opportunity."[2]

While all of these principles are associated with an unwillingness on behalf of the veiled individual to take risk, the most clear illustration of risk-adversity is 2a – the maximin criterion.[3] For Rawls, a person under the veil of ignorance will choose an idea of justice that, in the circumstance that he ends up at the bottom of the socio-economic ladder, (which he does not know until the veil is removed,) he will be as well-off as he can be. So a person choosing between an environment in which ninety-nine percent of people have $100 each and one percent have $1 each, and a society in which everyone has $20 each, the person under the veil of ignorance will choose the latter, because of the

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[1] John Rawls, "Concepts of Distributional Equity: Some Reasons for the Maximin Criterion," *The American Economic Review* May 1974: Vol. 64 No. 2 pp. 142.
[2] John Rawls, "Concepts of Distributional Equity: Some Reasons for the Maximin Criterion," *The American Economic Review* May 1974: Vol. 64 No. 2 pp. 142.
John Rawls, *A Theory of Justice* (Cambridge, 1999) pp. 72.
[3] Rawls does draw a difference between the maximin principle and the difference principle, based on the levels of risk associated with each. He writes, "The maximin criterion is generally understood as a rule for choice under great uncertainty, whereas the difference principle is a principle of justice." (*A Theory of Justice* (Cambridge, 1999) pp. 72.)

fear that he may belong to that one percent who in the first circumstance have $1 and in the later one have $20. (See appendix A.) According to Rawls, this is what people will choose.

This choice is not obvious though. Some people under the veil of ignorance may wish to ignore the maximin principle, and instead they may be willing to sacrifice whoever receives the lowest utility, (even if it does turn out to be them themselves,) so that the rest of society can have $100 each. This line of thinking is similar to the reaction Harsanyi writes that people will have under the veil of ignorance.

Determining Morality: John C. Harsanyi

John C. Harsanyi writes that in order to determine moral preference, "every individual will have to be guided by certain impartial and impersonal criteria when he is trying to make a moral value judgment. Indeed, by definition, any evaluative judgment based on biased, partial, and personal criteria will not be a moral judgment at all, but rather will be a mere judgment of personal preference."[4] In order to understand and define morality, a person needs to put himself in a position where he does not have a bias towards one outcome over another, but rather is, in a utilitarian sense, vying for the best outcome for society.

The need for impartiality brings Harsanyi to a concept similar to Rawls' veil of ignorance,[5] albeit with a more mathematical definition.

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[4] John C. Harsanyi, "Bayesian Decision Theory and Utilitarian Ethics," *The Amecian Economic Review* Vol 68 No 2 pp. 226.

[5] Harsanyi claims that this concept appeared in his analysis of morality before it was published by Rawls. John C. Harsanyi, "Can the Maximin Principle Serve as a Basis for Morality? A Critique of John Rawls's Theory," *The American Economic Review* Vol 68 No 2 pp. 595.

> Now, a value judgment on the distribution of income would show the required impersonality to the highest degree if the person who made this judgment had to choose a particular income distribution in complete ignorance of what his own relative position (and the position of those near to his heart) would be within the system chosen. This would be the case if he had exactly the same chance of obtaining the first position (corresponding to the highest income) or the second or the third, etc., up to the last position (corresponding to the lowest income) available within that scheme.[6]

Each person has to choose a societal system from a perspective in which not only does he not know where he will be in society (as in Rawls' theory,) but also one in which he does know that he has an equal chance of any of the possibilities.

Thus Harsanyi describes how we should expect the moral individual to determine whether situation A or situation B has greater morality, assuming that he is one individual in a society of n number of people:

> He would certainly satisfy our impartiality and impersonality requirements if he did not know how his choice between A and B would affect him personally and, in particular, if he did not know what his own social position would be in situations A and B. More specifically, let us assume he would think that in either situation he would have the same probability 1/n to occupy any one of the n possible social positions and, indeed, to be

[6] John C. Harsanyi, "Cardinal Utility in Welfare Economics and in the Theory of Risk-taking," *The Journal of Political Economy* Vol 61 No 5 pp. 434.

> put in the place of any one of the n individuals in the society... I will call this assumption the **equiprobability model** of moral value judgments.[7]

While there is a slight difference between Rawls' "original position" and Harsanyi's eqiprobability model, it is mostly in their semantics; the notion of making a decision for society without the individual knowing who he is, is alike in both philosophies. "But the usefulness of this concept crucially depends on its being combined with a satisfactory decision rule."[8] The real difference between their outcomes is how, while under the veil of ignorance, the individual chooses principles for the basis of moral institutions – What decision rule does a person use when he is removed from bias?

Harsanyi, using principles of Bayesian decision theory, disagrees with the use of Rawls' maximin principle in this situation, claiming that "It is extremely irrational to make your behavior wholly dependent on some highly unlikely unfavorable contingencies regardless of how little probability you are willing to assign to them."[9] Harsanyi does not want the individual to maximize the benefit to the person who is least well-off, because if there is a very small chance that the individual will become that person, he will be willing to take that chance and to risk being worse-off in favor of having a possibility of doing better if he is in a different position. In the example given above, a person would be willing, according to Harsanyi, to risk having $1 if he has a

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[7] John C. Harsanyi, "Bayesian Decision Theory and Utilitarian Ethics," *The Amecian Economic Review* Vol 68 No 2 pp. 227.
[8] John C. Harsanyi, "Can the Maximin Principle Serve as a Basis for Morality? A Critique of John Rawls's Theory," *The American Economic Review* Vol 68 No 2 pp. 595.
[9] John C. Harsanyi, "Can the Maximin Principle Serve as a Basis for Morality? A Critique of John Rawls's Theory," *The American Economic Review* Vol 68 No 2 pp. 595.

good chance of receiving $100, and is willing to take that risk rather than settle for the assured $20.

To illustrate this point, Harsanyi gives an example of someone who resides in New York and is offered a great job in Chicago. The person will take the job, even though going from New York to Chicago means risking the small chance of a plane crash, because the probability of such an accident is small, and the reward if there is no accident is great.[10] Harsanyi is recommending that when people make decisions they do not base them on the worst thing that could happen to them. Rather, people make life choices based on reasonably weighing the probabilities and benefits of possible outcomes to their decisions.

This utilizes Bayesian decision theory, in which the utility one expects to receive from a circumstance is the addition of the utility from various situations, each one multiplied by the probability of that situation occurring given the circumstance. (See appendix B.) For example, if when you wear a blue shirt, there is a twenty percent chance that you will get $100 and an eighty percent chance you will get $500, and if you wear a red shirt there is a ten percent chance of receiving $10,000, and a ninety percent chance of receiving nothing, then you will calculate your decision based on the following:

Expected utility from blue shirt = [20% * $100] + [80% * $500] = $420

Expected utility from red shirt = [10% * $10,000] + [90% * $0] = $1,000

One thousand is greater than 420, so you will choose to wear the red shirt.

[10]John C. Harsanyi, "Can the Maximin Principle Serve as a Basis for Morality? A Critique of John Rawls's Theory," *The American Economic Review* Vol 68 No 2 pp. 595.

In Harsanyi's words, "The main conclusion of Bayesian theory is that a rational decision maker under risk and under uncertainty will act in such a way as to maximize his expected utility."[11]

If this is the way people make choices in their own lives, then the individual making decisions for society in the equiprobability model will make his decisions the same manner. Thus the unbiased decision of the individual will take into account the probabilities and expected utilities from possible outcomes of various social possibilities. Each person will maximize his expected utility based on his having 1/n probability of having any of n social positions. The resulting decision will be a moral value judgment which maximizes social welfare[12] in a utilitarian manner.

Risk

One of the crucial differences between Rawls' contractarian approach and Harsanyi's utilitarian view is their perspective on risk. Harsanyi assumes that people in the equiprobability condition are rational and therefore risk-neutral to a certain extent, while Rawls considers people behind the veil of ignorance to choose a risk-averse strategy.

In other words, for Rawls, people who do not know what their fate will be will choose a strategy where in the worst-comes-to-worst situation, they will be the best they can be, thereby avoiding any potential for being in a horrific situation; these people are avoiding that risk. Although Rawls claims that part of the veil of ignorance includes that

[11]John C. Harsanyi, "Bayesian Decision Theory and Utilitarian Ethics," *The Amecian Economic Review* Vol 68 No 2 pp. 224.
[12] John C. Harsanyi, "Bayesian Decision Theory and Utilitarian Ethics," *The Amecian Economic Review* Vol 68 No 2 pp. 228.

"The parties do not know… special features of his psychology such as his aversion to risk or liability to optimist or pessimism,"[13] it is clear from the choices that people make under the maximin principle that Rawls assumes that they are *all* considerably risk-averse. However Rawls himself puts this notion in a different way, trying to escape the extreme riskiness which he seems to assign to the people in the original condition:

> The essential thing [in justice as fairness] is not to allow the principles chosen to depend on special attitudes toward risk. For this reason the veil of ignorance also rules out the knowledge of these inclinations: the parties do not know whether or not they have an unusual aversion to taking chances. As far as possible the choice of a conception of justice should depend on a rational assessment of accepting risks unaffected by peculiar individual preferences for taking chances one way or the other… What must be shown is that given the unique features of this situation, agreeing to these principles rather than the principle of utility is rational for anyone whose aversion to uncertainty in regard to being able to secure their fundamental interests is within the normal range.[14]

However, it is still clear that Rawls' justice-finders are risk averse, when we consider the following definition of risk: A person who is risk-neutral considers his expected utility from various possibilities and probabilities, as described before. A

[13] John Rawls, *A Theory of Justice* (Cambridge, 1999) pp. 118.
[14] John Rawls, *A Theory of Justice* (Cambridge, 1999) pp. 149.

person who is risk-averse considers not only his expected utility, but also weighs heavily the probability of a negative result.[15]

In his 1974 article, Rawls addresses this form of risk-aversion and admits that "From the standpoint of the original position, the parties will surely be very considerably risk-averse; if we ask how risk-averse, we might say not less than that of most any normal person."[16] Rawls supports his view of the maximin criteria because he believes that this amount of risk-aversion is "normal."[17] Rawls even considers that the "normal" risk-aversion is so high that even utilitarians would need to take it into account, and would, if placed in the original condition, come up with a result similar to his maximin principle. As he writes in *A Theory of Justice*, comparing the utilitarian view with his own difference principle:

> Risk and uncertainty from a suitably general perspective leads both views to weight more heavily the advantages of those whose situation is less fortunate. In fact, reasonable risk aversion may be so great, once the enormous hazards of the decision in the original position are fully appreciated, that the utilitarian weighting may be, for practical purposes, so close to the difference principle as to make the simplicity of the latter decisive in its favor.[18]

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[15] Thus, in the example given earlier on page 7 an individual who is risk-neutral will wear the red shirt, whereas a risk-averse person may not want to risk receiving nothing and will opt for the blue shirt despite the lower expected utility.

[16] John Rawls, "Concepts of Distributional Equity: Some Reasons for the Maximin Criterion," *The American Economic Review* May 1974: Vol. 64 No. 2 pp. 143.

[17] Rawls himself writes, "I have noted several reasons that support the maximin criterion: very considerable normal risk-aversion…" (John Rawls, "Concepts of Distributional Equity: Some Reasons for the Maximin Criterion," *The American Economic Review* May 1974: Vol. 64 No. 2 pp. 142.)

[18] John Rawls, *A Theory of Justice* (Cambridge, 1999) pp. 144.

Harsanyi rejects Rawls' view of "the high level of risk aversion that it seems any normal person would have in the original position,"[19] and instead assumes people to be rational, with almost no risk-aversion. He writes, "It is natural to expect that, in making important policy decisions, responsible decision makers will take a result-oriented attitude toward risk taking… A rational decision maker under risk and under uncertainty will act in such a way as to maximize his expected utility."[20] Harsanyi thinks of the policy makers – the same characters who are featured in the eqiprobability model – to be rational and therefore risk-averse in the following way:

> In the case of risk and of uncertainty, an individual's choices can be modeled as choices among different lotteries whose "prizes" are situations… A rational individual will be indifferent between two risky lotteries if these yield him the same prizes with the same probabilities… The decision maker will take a purely result-oriented attitude toward lotteries, and will derive all his utility and disutility from the prizes he may or may not win through these lotteries, rather than from the act of gambling itself.[21]

Here Harsanyi is not allowing for any risk-aversion to enter into the mindset of the policy maker in the uncertain state of the eqiprobability model.

However Harsanyi's view is not of complete risk-neutrality, but rather of a limited risk-aversion that is taken into account under von Neumann-Morgenstern utility functions, which account not for preferences of the value of the outcome itself, but for

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[19] John Rawls, *A Theory of Justice* (Cambridge, 1999) pp. 144.
[20] John C. Harsanyi, "Bayesian Decision Theory and Utilitarian Ethics," *The Amecian Economic Review* Vol 68 No 2 pp. 225.
[21] John C. Harsanyi, "Bayesian Decision Theory and Utilitarian Ethics," *The Amecian Economic Review* Vol 68 No 2 pp. 223-4.

preferences regarding lotteries of outcomes.[22] In other words, a von Neumann-Morgenstern utility function is not the expected dollar payoff, but rather the expected utility value of the game.[23] This value includes diminishing marginal utility of wealth – that a poor person values $1 more than a rich person – and includes the value or disvalue of risk. (A gambler adds additional value to risky situations, while many people consider risk itself to be a disutility.) Thus the von Neumann-Morgenstern utility function takes into account a certain amount of risk-aversion, which one would expect from a person. "Neumann-Morgenstern utility functions have a completely legitimate place in ethics because they express the subjective importance people attach to their various needs and interests."[24] Using this function, Harsanyi's individual in the eqiprobability model can decide on policies that will not be completely risk-averse, but will take into account some amount of disutility from risk.

Risk and Evolutionary Dynamics

When discussing evolutionary dynamics risk needs to be looked at from a different perspective. According to the theory of evolutionary dynamics, decisions are not based on immediate payoffs, but rather on the multiplication of those payoffs over generations; thus the Bayesian model, as well as the risk-averse model, need to be modified in order to understand them in the context of evolutionary dynamics.

First the dynamic itself must be explained. Imagine that in each generation person A receives wealth related to the situation he is in, as well as his choices in that

[22] Martin J. Osborne, An Introduction to Game Theory (Oxford U.P. 2004) page 102.
[23] Zvi Bodie, et al., Investments (McGraw-Hill/Irwin 2005) page 192 note.
[24] John C. Harsanyi, "Can the Maximin Principle Serve as a Basis for Morality? A Critique of John Rawls's Theory," *The American Economic Review* Vol 68 No 2 pp. 600.

situation. If he is wealthy, then people in the next generation will want to be just like him, and therefore A will multiply by a large number. If he is poor, people will not mimic him, and he will be multiplied by a small number.

Thus if a person is in a situation where wearing a green shirt will get him a lot of money, then in the next generation there will be 10 people who wear green shirts. If they continue to make money due to their shirt color then in the next generation there will be 100 green-shirt wearers. On the other hand, if a person in that situation wears a brown shirt, and is therefore poor, then in the next generation only two people will be wearing brown shirts, four in the following generation, and so on.

The important aspect for the decision under uncertainty is the risk of being in different situations. First we will consider a situation where there will be a consistent environment, but where there is uncertainty regarding which environment it will be. (See appendix C.) There are two possibilities – from here on the world will be in situation X or situation Y, with an equal chance of each. The individual has a decision to take action B or C. If he chooses B and there is situation X, then he will be multiplied by two in each following generation. (For simplicity, I assume that there are four total generations, including the original individual. However this will work the same way with any number of generations.) If he chooses B and there is situation Y then he will be multiplied by 6 in each generation. If he chooses C then he will be multiplied by four, regardless of the situation.

If this was a discussion of standard decision theory then the outcome would be as follows:

$B \rightarrow (1/2)2 + (1/2)6 = 4$

C → (1)4 = 4

So for the risk-averse individual, the choice would be C, and for the risk-neutral Bayesian decider, B and C would be equally good choices.

However in evolutionary dynamics, the decisions would be quite different.

B → (1/2)[1*2*2*2] + (1/2)[1*6*6*6] = (1/2)*8 + (1/2)*216 = 112

C → (1)[1*4*4*4] = 64

Here the risk-neutral individual will certainly decide on B, with an expected utility of 112, as opposed to 64. The risk-averse individual will have to make a decision as to whether it is worthwhile for him to take the chance that he may, after four generations, have a total of 8 in the worst-case scenario that situation X arises. According to Rawls' way of looking at man's decisions, the "normal" risk-adversity would utilize the maximin rule, minimizing potential losses, and choosing C.

There is another type of evolutionary dynamic regarding this issue. (See appendix D.) The above example assumes that there will be a consistent environment; there the choice a person makes depends on his risk-adversity. However it is possible that the environment itself is inconsistent, and instead of remaining either X or Y for all four generations, the environment may change, and each year has a fifty percent chance of being either situation, regardless of what it was the year before. C will yield the same (1)[1*4*4*4] = 64 as before, because it is not contingent on either situation X or Y. B's yield is dependant upon the environment:

If the environment is X, X, X, then B → 1*2*2*2 = 8

If the environment is X, X, Y, then B → 1*2*2*6 = 24

If the environment is X, Y, X, then B → 1*2*6*2 = 24

If the environment is X, Y, Y, then B → 1*2*6*6 = 72

If the environment is Y, X, X, then B → 1*6*2*2 = 24

If the environment is Y, X, Y, then B → 1*6*2*6 = 72

If the environment is Y, Y, X, then B → 1*6*6*2 = 72

If the environment is Y, Y, Y, then B → 1*6*6*6 = 216

There is an equal chance that any of these situation will occur, so the expected utility for B is (1/8)*8 + (1/8)*24 + (1/8)*24 + (1/8)*72 + (1/8)*24 + (1/8)*72 + (1/8)*72 + (1/8)*216 = (1/8)*512 = 64

This concludes with the same results as the simple decision theory; for the risk-averse individual, the choice would be C, and for the risk-neutral Bayesian decider, B and C would be equally good choices.

Therefore, when discussing situations of uncertain circumstances where each generation's environment is unknown, even in relation to the previous one, evolutionary dynamics and rational choice game theory will both result in the same model. Since communities are usually unsure of what cultural, social, and economic environments they will face in the long-term, the rational-choice game-theory model is a good way to look at the risky decisions these communities make.

Buying the Drink? A Community's Adoption of Justice Principles

To gain a perspective on how a community in uncertainty makes decisions under the veil of ignorance/equiprobability model, reconsider the group of women in the bar, and assume the following parameters: (See appendix E.)

- There are 9 women in the group.
- The man will only choose one woman.
- Each women values the man's choosing her at $100.[25]
- A drink costs $9. (If all of the women buy one drink together, it costs each woman $1.)
- Being a traitor against the group costs $500 in friendship-value.[26]
- If they sit and stare, there is a 10% chance that he will come over to the group.
- If they buy him a drink, there is a 100% chance that he will come over.
- If he comes over, there is a 10% chance of his choosing each individual, and a 10% chance that he does not choose anyone.

Under Rawls' veil of ignorance, each woman, not knowing whether she had a better chance than the other at winning the man (thereby assuming her chances are 10% as stated above,) would consider the following possibilities:

Strategy 1 – Sit & Stare: If she is chosen, she will have the value of **$100**.

If the man does not come to the group, or if he comes over and does not choose her, then she has **$0**.

Strategy 2 – Buy a Drink: If she is chosen, she will have the value of $100 - $1 (value of being chosen minus her share of the drink) = **$99.**

[25] In reality the value to each women is likely to be different, however for simplicity we assume that all the women are identical. This makes an interesting point about communities – they will function in a way similar to the one described here if they are more or less homogeneous.

[26] This indicates that there is some form of community pre-existent in the situation. The question discussed at present is whether they will form a "community" with the specific aim of catching the man's attention by buying him a drink.

If she is not chosen, she will have the value of $0 - $1 (value of not being chosen minus her share of the drink) = **-$1.**

According to Rawls' theory of justice, in this situation each woman will look at the possible payoffs to her – either [0,100] or [-1,99]. Using Rawls' maximin strategy, each woman will only consider what will happen to her in the worst-case-scenario – when she is not chosen. Thus she is choosing between $0 and -$1, where she will choose $0, which is the Sit & Stare strategy. For Rawls the risk of $1 for an increased probability of winning the man is not worthwhile to the individual, so the women will not form a coalition to catch the man's attention by buying a drink.[27]

Harsanyi's women, however, would consider not their worst-case-scenario, but rather their probabilities for *each* situation. Thus, the following thoughts are going through each of their heads:

Strategy 1 – Sit & Stare: There is a 10% chance that he will come over, and if he does, there is a 10% chance that he will choose me, giving me a value of $100 and a 90% chance that he will not choose me, giving a value of $0. There is also a 90% chance that he will not come over. Thus my expected utility is 10% * [(10% * $100) + (90% * $0)] + 90% * $0 = **$1**.

Strategy 2 – Buy a Drink: There is a 100% chance that he will come over, and when he does, there is a 10% chance that he will choose me, giving me a value of $100 and a 90% chance that he will not choose me, giving

[27] Under Rawls' theory, even if the women each receive a benefit from watching the man choose their friend (which assumes a strong friendship,) they will still not buy the drink because the worst-case-scenario is if he chooses no one, in which case the women each remain with -$1. Only if they get a benefit of at least $1 from his coming over, even if he does not choose any of them, will they buy the drink according to Rawls' theory.

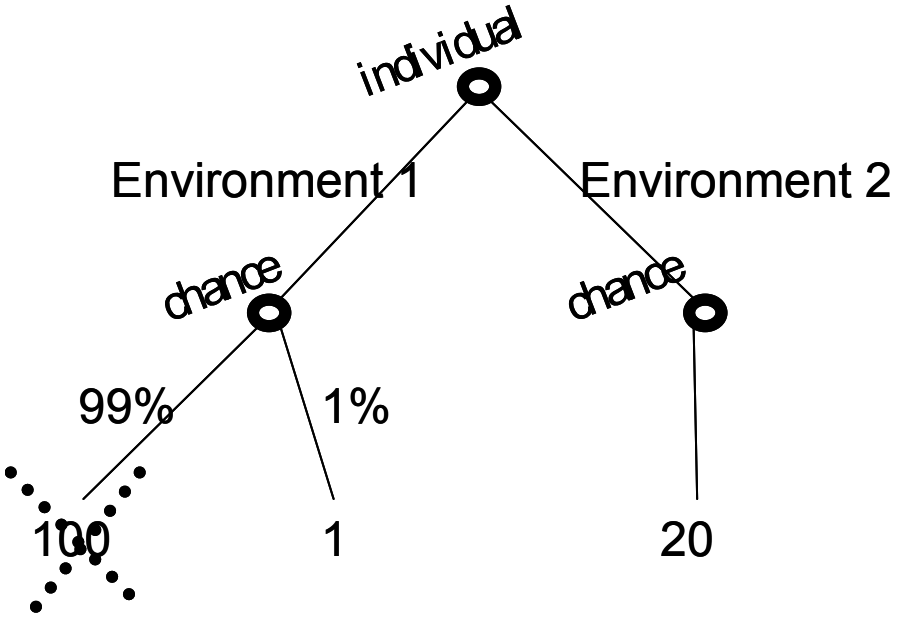
a value of $0. Regardless, I will be loosing $1 by buying the drink. Thus my expected utility is 100% * [(10% * $100) + (90% * $0)] - $1 = **$9**.

According to Harsanyi's analysis, the women will choose to buy a drink for the man, since each individual's expected utility is higher under strategy two ($9) than under strategy one ($1).[28] Thus the women will form a community of sorts, each chipping in to buy the drink. For a risk-averse individual, it is worthwhile to "bet" $1 in order to win $100. And a group of people betting together in such a way forms them into a community, each acting morally according to Harsanyi's theory.

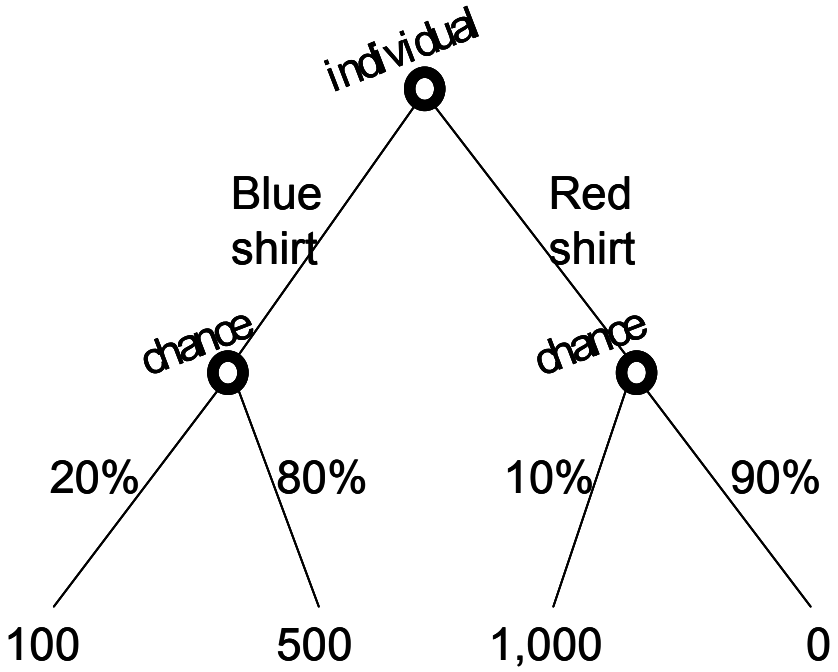
This example of a moral community is particularly appropriate because this is the choice the women are likely to make even in the absence of a true veil of ignorance, indicating that at times, if there is enough uncertainty (in this case, uncertainty about who the man will choose,) people can consider themselves as being in an equiprobability model. Hence even under normal real-life circumstances, people may act "morally" out of self-interest. Of course, this is not always the case, but it does show that Harsanyi's principles are not merely theoretical, but actually have some meaning towards situations where a community is structured around people making decisions based on their rational choices.

[28] Notice that this is also the utilitarian approach, as the group as a whole results in a 90% chance of his choosing one of the women, giving the group an expected utility of 90% * $100 - $9 = $81, whereas strategy one gives the group an expected utility of 10% * 90% * 100 = $9.

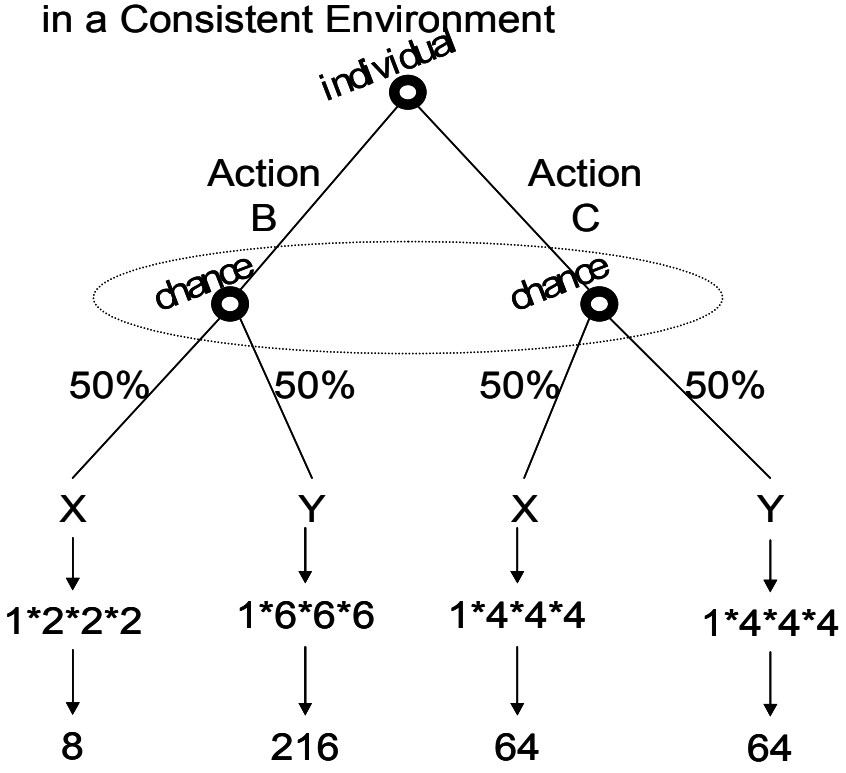
Appendix A – Rawls' Decision



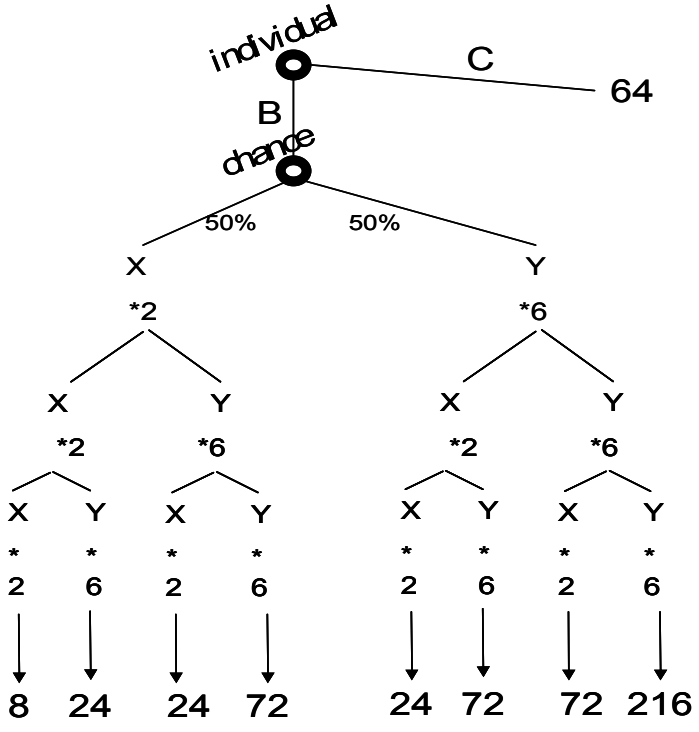
Appendix B – Bayesian decision



Appendix C – Evolutionary Dynamics in a Consistent Environment

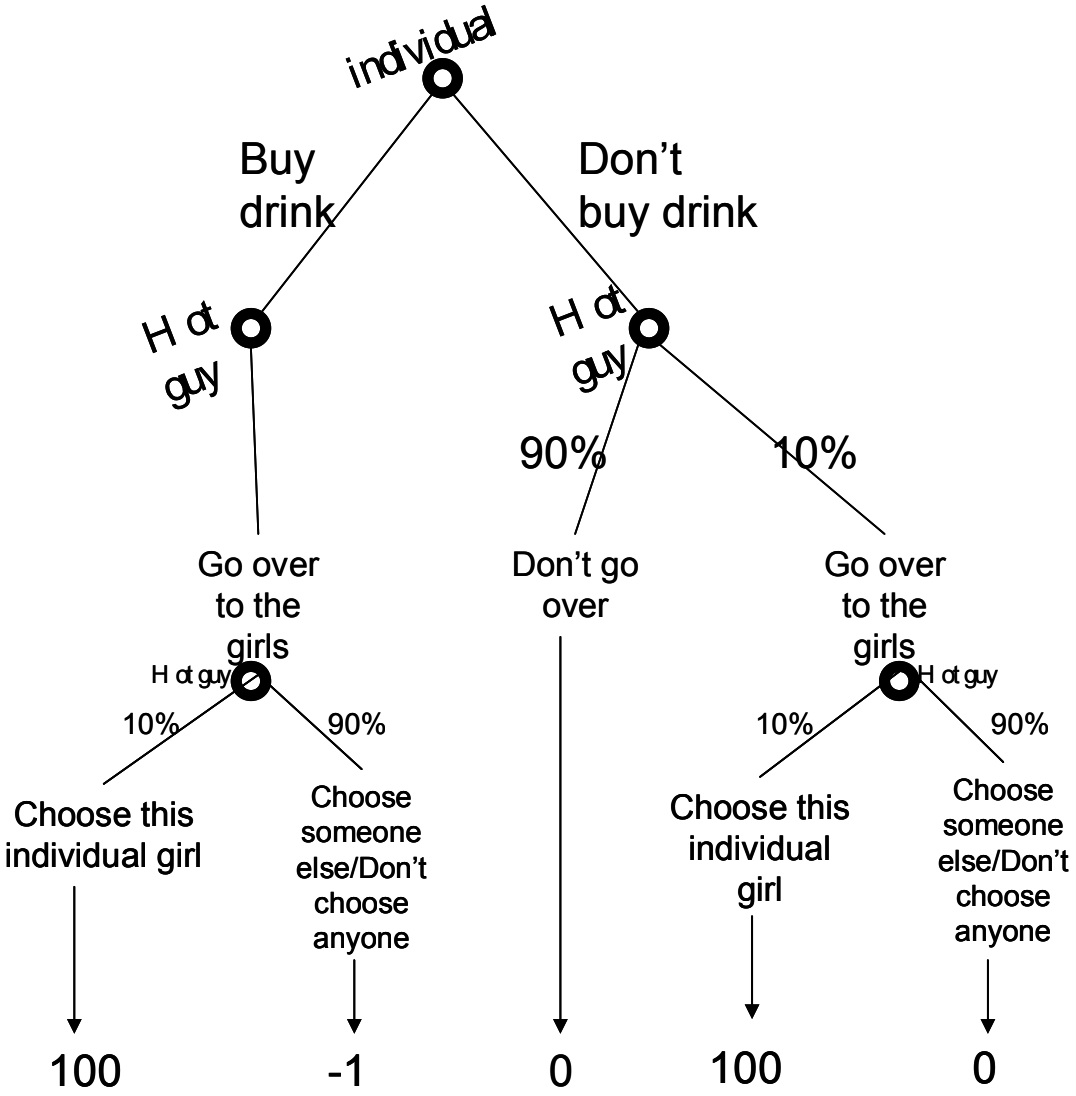


Appendix D – Evolutionary Dynamics in an Inconsistent Environment



Appendix E – A Drink from the Group

(payoffs are for the individual girl)



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