DISCUSSION NOTE

CHANCE, EPISTEMIC PROBABILITY AND SAVING LIVES: REPLY TO BRADLEY

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JOURNAL OF ETHICS & SOCIAL PHILOSOPHY

DISCUSSION NOTE | JANUARY 2010
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Chance, Epistemic Probability and Saving Lives: Reply to Bradley*

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IN "SAVING PEOPLE AND FLIPPING COINS," Ben Bradley offers an intriguing counterexample to the principle of equal greatest chance (EGC).[1] The principle of equal greatest chance is designed to apply in contexts of moral equivalence. Let A and B be *morally equivalent* just in case there is no greater moral reason to save A than there is to save B and vice versa.[2] Suppose a lifeguard can save A and can save B, but she cannot save both A and B. Bradley's formulation of the principle states the following:

> EGC. One must give each person the greatest possible chance of survival consistent with everyone else having the same chance.

If the greatest equal chance of surviving that the lifeguard can give to each is .5, then EGC requires that the lifeguard give A and B each a .5 chance of surviving.[3] Perhaps she can discharge this obligation by flipping a fair coin and acting on the outcome "heads save A," "tails save B."[4]

The problems for EGC arise in cases where three morally equivalent agents require rescue. Suppose you are in a situation where you can save both A and B and you can save C, but you cannot save all A, B and C. Since A, B

* My thanks to Clayton Littlejohn and the JESP referees for helpful comments.

[1] *See* Ben Bradley, "Saving Lives and Flipping Coins," *Journal of Ethics and Social Philosophy*, www.jesp.org, Vol. 3, No. 1, (2009) 1-13.

[2] This is meant to entail that saving A is not preferable from the moral point of view to saving B, and vice versa. So saving A does not produce more overall value, or satisfy more rights, or fulfill more prima facie obligations, or better satisfy the requirements of justice, etc. In situations where we have exhausted the moral considerations and the agents are morally equivalent, EGC urges that we use a randomizing device to give each the greatest equal chance of survival.

[3] It is worth noting that on an alternative formulation of the principle of equal greatest chance, we are required to give each person the equal greatest chance unless we can do better.

> EGC1. One must give each person the greatest possible chance of survival consistent with everyone else having his greatest chance.

It might be true that .5 is the greatest *equal* chance of surviving for A and B, and also true that, alternatively, the lifeguard could give A a .6 chance of surviving and give B a .8 chance of surviving. The lifeguard might be in a position to invoke the help of a more experienced lifeguard who is in a position to attempt to save B (but not A) while she attempts to save A. This would give each his greatest chance of surviving consistent with everyone else getting his greatest chance, but the chances would obviously not be the same.

[4] In addition to flipping a coin, suppose it is open to the lifeguard to send two guards – one to A and one to B, each of whom has a .5 chance of succeeding. This would offer the additional .25 chance that both are saved (and of course a .25 chance that neither is saved). From the point of view of A and B, this might seem preferable to flipping a coin. For what it is worth, it does to me.

and C are morally equivalent, there are equally good moral reasons to save each A, B and C. If EGC is properly applicable in contexts of moral equivalence, then you should give each A, B and C the greatest equal chance of surviving. If the greatest equal chance of surviving that you can give to each is .5, then EGC requires that you give A, B and C each a .5 chance of surviving.

The recommendation that we ought to give each of A, B and C a .5 chance of surviving strikes many as counterintuitive.[5] If A, B and C were each on separate islands, or drowning in separate parts of some body of water, and the greatest equal chance of surviving we could give each were .5, it would seem perfectly reasonable to do so.[6] But in the case Bradley describes, we give each a .5 chance of surviving if and only if we give A and B together a .5 chance of surviving and we give C a .5 chance of surviving.[7] Fortunately, Bradley urges, this uncomfortable conclusion is avoidable. The principle of equal greatest chance is false. If Bradley is right, then we have made a very significant advance in assessing moral principles in contexts of moral equivalence. Bradley offers the following "decisive counterexample" to EGC entitled *Bureaucracy and EGC*.[8]

Imagine that the Joker has captured three hostages – Alice, Bob and Carol – and plans to randomly divide them into two groups, a larger group and a smaller group. The Joker informs Batman that he will kill all members of the group Batman does not select. Batman endorses EGC and indicates his decision to save the larger group by completing a form. Choosing the larger group gives each of Alice, Bob and Carol a two-thirds chance of surviving. Batman thereby gives each the greatest equal chance of surviving.

> At noon, Batman checks the box indicating that the larger group should be saved. The Joker proceeds to divide the hostages randomly into two groups. Alice and Bob are in one group, Carol is in the other. At 1:00, the Joker realizes he has lost the form. "I'm sorry, Batman, but you'll have to fill out another form," he says. If Batman is to follow EGC, at 1:00 he must flip a coin to decide which box to check, since that gives each hostage an equal greatest chance of survival.

[5] It strikes many as counterintuitive since it seems to conflict with the principle of saving the greatest number. The literature on this aspect of EGC is large, but it is not central to the issue I take with Bradley's reasons for rejecting EGC.

[6] It might be that we can give each a .5 chance of surviving by sending three lifeguards to A, B and C respectively, each with a .5 chance of success.

[7] Of course, many others have discussed this case and structurally similar cases. Most notably, perhaps, is John M. Taurek, "Should Numbers Count?" *Philosophy and Public Affairs*, Vol. 6, No. 4 (1977), pp. 293-316. But *see also* Thomas Scanlon, *What We Owe to Each Other* (Cambridge: Harvard University Press, 1998); Michael Otsuka, "Scanlon and the claims of the many versus the one," *Analysis* (2000) 288-93; Raul Kumar, "Contractualism on Saving the Many," *Analysis* (2001): 165-70; and Rob Lawlor, "Taurek, Numbers, and Probabilities," *Ethical Theory and Moral Practice* (2006): 149-66.

[8] *See* Ben Bradley, "Saving People and Flipping Coins," *Journal of Ethics and Social Philosophy*, (2009) 1-13.

> This is a decisive counterexample against EGC. No plausible principle entails that Batman should fill out the form differently at 1:00. He knew at noon that this was one way things might turn out. By 1:00 he has gained no new information that could be relevant to his decision. . . [T]he point is that it cannot be the case that Batman should fill out the form differently at the two times. [9]

But Bradley is mistaken in claiming that Batman has *no relevant information* at 1 p.m. that he does not have at noon. At noon it is false that Alice, Bob and Carol have been divided into two groups. But at 1 p.m. it is true that Alice, Bob and Carol have been divided into two groups. And that information critically affects the greatest equal chance of surviving that can be afforded to each. In fact, the greatest equal chance of surviving that Batman can afford each at noon is significantly greater than the greatest equal chance of surviving that Batman can afford each at 1 p.m.

Chance is time-dependent. The greatest equal chance of surviving at one time need not be equal to the greatest equal chance of surviving moments later.[10] At noon the greatest equal chance of surviving that can be given to Alice, Bob and Carol is two-thirds. But at 1 p.m. Alice, Bob and Carol have already been divided into two groups, so Batman simply cannot give each a two-thirds chance of surviving. We can suppose without loss of generality that at 1 p.m. Alice and Bob are in the larger group and Carol is in the smaller group. If Batman approaches Carol at 1 p.m., for instance, and informs her that he is going to give her a two-thirds chance of surviving by choosing the group that includes Alice and Bob, he utters an obvious falsehood. By choosing the group that includes Alice and Bob, he gives Carol no chance of surviving. What has gone wrong?

There is an important difference between giving each person the greatest equal *epistemic probability* of surviving and giving each the greatest equal *chance* of surviving. Your chance of surviving is your objective probability of surviving. But your epistemic probability of surviving is your subjective probability of surviving. It is your probability of surviving relative to some (perhaps importantly limited) body of information.

In the case Bradley describes, Batman can afford each person a two-thirds epistemic probability of surviving at 1 p.m., but he cannot afford each

[9] Ibid. p. 3 ff.

[10] Compare David Lewis, "A Subjectivist's Guide to Objective Chance," *Philosophical Papers II* (Oxford: Oxford University Press, 1986):

> We ordinarily think of chance as time-dependent, and I have made the dependence explicit. Suppose you enter a labyrinth at 11:00 a.m., planning to choose your turn whenever you come to a branch point by tossing a coin. When you enter at 11:00 a.m., you may have a 42% chance of reaching the center by noon. But in the first half hour, you may stray into a region from which it is hard to reach the center, so that by 11:30 your chance of reaching the center by noon has fallen to 26%. But then you turn lucky; by 11:45 you are not far from the center and your chance of reaching it by noon is 78%; At 11:49 you reach the center; then and forevermore your chance of reaching it by noon is 100%. (91)

a two-thirds objective probability of surviving at 1 p.m. Suppose that, at 1 p.m., Batman declines an offer to observe who is in the larger group and who is in the smaller group. If Batman observes who is in the larger group and who is in the smaller group, then he can no longer afford each person – Alice, Bob and Carol – a two-thirds epistemic possibility of surviving. He cannot afford each person a two-thirds epistemic possibility of surviving, since it is no longer true that each has a two-thirds probability of being in the larger group. He knows that Carol is certainly in the smaller group and Alice and Bob are certainly in the larger group. In that case the greatest equal epistemic probability of surviving he can afford each is one-half. Given the limitation on what he knows, Batman correctly assigns a two-thirds epistemic probability that each person is in the larger group. So, if Batman chooses the larger group at 1 p.m., he thereby gives each the greatest equal epistemic probability of surviving.

But if Batman chooses the larger group at 1 p.m., whether or not he has observed who is in the groups, he does not give each person the greatest equal *chance* of surviving. And of course Batman knows that choosing the larger group at 1 p.m. does not give each person the greatest equal chance of surviving, since he knows that Alice, Bob and Carol have already been divided into larger and smaller groups. Someone is now in the smaller group and others are now in the larger group. At 1 p.m. it is true that Carol is in the smaller group and Alice and Bob are in the larger group. If Batman chooses the larger group at 1 p.m., the chance – that is, the objective probability – that Carol survives is zero and the chance that Alice and Bob survive is one. So, choosing the larger group at 1 p.m. gives Carol no chance of surviving and gives Alice and Bob a certain chance of surviving.

Batman does not know at 1 p.m. that Carol is in the smaller group. So, he does not know that choosing the larger group at 1 p.m. gives Carol a zero chance of surviving. But he does know that someone is in the smaller group and someone is in the larger group. If Batman chooses the larger group at 1 p.m. he knows that some person is thereby given a zero chance of surviving and some, morally equivalent, person is thereby given a certain chance of surviving. Batman's choice at 1 p.m. is either to give each the greatest equal epistemic probability of surviving or to give each the greatest equal chance of surviving.

What should Batman do at 1 p.m.? The smaller and larger groups are already constituted. He knows that choosing the larger group will give some person a zero chance of surviving. In fact the objective probability of Carol surviving is zero if Batman chooses the larger group. But of course it does not matter to Batman's moral decision who is in the smaller group. We have assumed that Alice, Bob and Carol are morally equivalent. There is no greater moral reason to save one than to save another. So it does not make any moral difference that it happens to be Carol in the smaller group. Suppose Batman dubs the person in the smaller group "C," and the persons in the larger group "A" and "B." He thereby knows for certain that C is in the smaller group, and A and B are in the larger group, and he knows that they are all moral equals. Certainly he knows all he needs to know to make his moral decision.

EGC prescribes that we provide each person with the greatest equal objective probability of surviving. And that certainly appears to be what Batman ought to do.[11] It would be an odd moral position for Batman to take that it is permissible to knowingly afford C no objective probability of surviving a particular situation, so long as he gives Alice, Bob and Carol a reasonable epistemic probability of surviving. In order to give each person the greatest equal chance of surviving at 1 p.m., Batman should flip a fair coin.

It is easy to let the intuition that Batman ought to save the larger number mislead you into thinking that he ought to provide each the greatest epistemic probability of being saved. Consider a two-person case including just Alice and Bob. Suppose both Alice and Bob have each been given a two-thirds chance of being in group A and a one-third chance of being divided into groups B and C. The Joker may have used a simple randomizer such as three playing cards – the 2, 3 and 4 of hearts, say – and placed Alice in group A if she drew 2 or 3, and similarly for Bob. Suppose the cards have been drawn and Alice and Bob are divided into groups B and C.[12] Batman gives *each* the greatest equal epistemic probability of surviving by saving the members of group A. Of course, Batman knows that the chances that someone is not in group A are pretty good, almost 60 percent, and he knows that perhaps no one is in group A. Still, the fact is that he offers each the greatest epistemic probability of surviving by saving the members of A. Now suppose he is given an opportunity to see where Alice and Bob are located. It is obvious that Batman is morally required to take the opportunity to observe where Alice and Bob are located – as it happens neither is in A – though he knows that failing to save the members of group A – with or without the new information – must decrease the greatest equal epistemic probability of surviving he can now afford each.

It is also easy to conflate the demands of rational self-interest with the demands of morality in this case. Return to our initial example where Carol is in the smaller group, and Alice and Bob are in the larger group, and stipulate that no hostage knows which group she is in. It is true from the epistemic position of each hostage that the epistemic probability of surviving is greatest

[11] Suppose it is urged that, at 1 p.m., Batman ought to give each person the greatest equal epistemic probability of surviving. If so, then Batman ought to decline the opportunity to observe the smaller and larger groups. If he learns who is in the larger and smaller groups, he thereby reduces the greatest equal epistemic probability of surviving from two-thirds to one-half. But that does nothing to increase anyone's chances of surviving. Refusing relevant information does not make anyone's objective probability of surviving greater.

[12] So the chances are as follows (rounding): .44 both are in A; .22 Alice is in A and Bob is in B or C; .22 Bob is in A and Alice is in B or C; 0 both in B; 0 both in C; .11 Alice and Bob are divided over B and C. Batman can save everyone in A, B and C (or everyone in A and B, or everyone in A and C, or everyone in B and C).

if Batman chooses the larger group. But it is false that the objective probability of surviving is greatest for each if Batman chooses the larger group. It is true, in short, that choosing the larger group gives someone a zero objective probability of surviving and gives others a certain objective probability of surviving. Amoral rational agents might not care that *someone* is given a zero chance of surviving so long as they have good reason to believe it is not them. But this hardly gives us moral reason to maximize the equal epistemic probability of surviving. Change the assumptions so that each hostage knows which group she is in. Rational self-interest would then have members of the larger group urging that their group be saved and it would have the member of the smaller group urging that her group be saved. Neither request gives the slightest indication of what is morally required of Batman.

The counterexample that Bradley advances against EGC does not constitute a decisive objection to the principle. The counterexample shows that epistemic probability and objective probability can pull apart in cases such as *Bureaucracy and EGC*. What Batman is required to do, according to EGC, is to ensure that each person is given the greatest equal objective probability of surviving. And that seems like the morally right recommendation. In order to do that, he must use a randomizing device such as flipping a fair coin. That is the only way to ensure, at 1 p.m., that every morally equivalent person is afforded the same chance of survival.

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