拉姆齐.

我们用关于某个命题A的赌注，“我们付你Y美元；如果A是真的，这Y美元就是你的了；但是反之，如果A是假的，那么你要还回我们100美元”，通过某人，X，愿意接受赌注的Y的限度，来定义X对命题A的主观概率（Y/100）

“大弃赌”论证：

假设X，对不相容的命题 A、B ，给 “A或B” 赋予的主观概率小于对A的主观概率和对B的主观概率之和，这违反了概率相加的规律。假设X对A的概率是⅕，对B的概率是3/10，而对“A或B”的概率是 49/100，尽管概率规则要求它是1/2。首先，我们以49美元的价格向X购买一个关于“A 或B”的赌注（如果我们赢了，则X要支付100 美元）——也就是说，我们现在给ta 49 美元，就可以得到X的保证，如果“A或B”被证明为真，ta将支付我们 100 美元。这个赌注的价格 49 美元小于对 A 下注（20 美元）和对 B 下注的价格（30 美元）之和。在从 X 处购买对 A 或 B 的赌注后，我们接下来向 X 出售对 A 和 B 的单个赌注，一个 20 美元，一个 30 美元。根据我们的假设，我们能做到这一点。但现在，无论 A 为真、B 为真、还是 A 和 B 都不为真，X 都会输掉：(i) 如果 A 和 B 都不为真，X 在两个赌局中输掉 50 美元，而在他卖给我们的那个赌局中赢了 49 美元，X 净输 1 美元。(ii) 如果只有 A 为真，X 在 A 的赌注上获利 80 美元，在 B 的赌注上损失 30 美元， X 在卖给我们的 A 或 B 的赌注上损失 51 美元，同样使 X 净损失 1 美元。 (iii) 如果只有 B 为真，X 净损失 11 美元。

这一结果可以推广，如果你的主观概率赋值违反了任何概率法则，那么总是可以做出对你不利的“荷包蛋”赌局。如果你的概率分配符合概率法则，那么就不可能出现对你不利的“荷兰赌”。

Dutch Book Argument:

Suppose X’s estimate of the probability for a disjunction, A or B, of incompatible disjuncts A, B, is less than the sum of X’s probabilities for A and B, in violation of the law that such probabilities are additive. Imagine that X’s probability for A is ⅕, for B is 3/10, and for A or B is 49/100, even though the rule for A or B requires it to be 1/2. To ensure X’s loss, we can proceed as follows. First, we buy a bet (paying $100 if we win) from X on A or B for $49— i.e., we can, by giving him $49 now, obtain X’s assurance to pay us $100 if the disjunction proves to be true. The price of this bet, $49, is less than the sum of the price ($20) for a bet (paying $100) on A and the price ($30) of a bet (paying $100) on B. So, after buying the bet on A or B from X, we next sell X individual bets on A and B, one for $20 and one for $30. We can do all this because, given X’s credences on the disjunction and the two disjuncts, X is willing to take either side of each of the bets. But now, X will lose no matter whether A alone, B alone, or neither A nor B is true: (i) If neither is true, X loses $50 on his two bets, while gaining $49 on the one he sold us, leaving X with a net loss of $1. (ii) If only A is true, X has a gain of $80 on bet A, a loss of $30 on B, and a loss of $51 on the bet X sold us on A or B, again leaving X with a net loss of $1. (iii) If only B is true, X has a net loss of $11. The result generalizes. If your probabilities violate any laws of probability, a Dutch book against you can always be made.Skyrms (1994) If your assignments of probabilities are consistent with the laws, it’s not possible to make a Dutch book against you.Kemeny (1955)

Soames, pp. 167-168

拉姆齐通过如下的方式从每个人的简单偏好（只是一个偏序）中得出数量关系：

先从某人X的简单的偏好排序开始，

定X对那些ta持中立态度的命题B的相信程度为1/2，所谓“持中立态度”，是指X对于“如果B为真，则得到结果α；如果B为假，则得到β”和“如果B为真，则得到结果β，否则得到结果α”这两个赌局中的某一个没有特殊的偏好，

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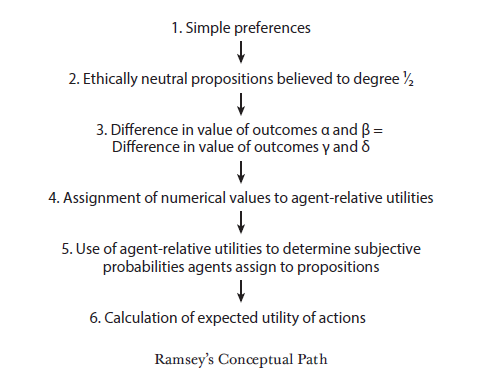
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The particular outcomes A, B, and C are chosen so that the agent is indifferent to receiving U(A) for certain versus accepting U(B) if p is true, and U(C) if p is false.

That is how Ramsey defines the subjective probability of p for the agent— provided, we set up the crucial gamble with U(B) greater than U(C) ... So, when the agent would take either side of a bet on p at odds of, say, 7 to 3, we do our computations on the equivalent bet with odds of 3 to 7 on the truth of ~p. Here we set U(B) at 7 and U(C) at 3. So, if ~p turns out to be true (and p is false), the agent gets value 7, while if ~p is false (and p is true), the agent gets value 3. This translates into a B subjective probability for ~p and a G subjective probability for p, which means that U(A) = (B × 7) + (G × 3) = H. Given this as U(A), we see that [U(A) minus U(C)] / [U(B) minus U(C)] = I × ¼ = B. Since this is the probability of ~p, the probability of p is G.

given the utilities of A, B, C, we can always construct a bet that mea sures the agent’s subjective probability of a proposition as [U(A) minus U(C)] / [U(B) minus U(C)]. pp. 173-4