

Paradox of love and how religion seems to avoid it

Christina A. Carreon-Jimenez, Claire MacDonald, James Newson,
Olga Kosheleva, and Vladik Kreinovich

University of Texas at El Paso, 500 W. University, El Paso, TX 79968, USA
cacarreonji@miners.utep.edu, cemaconnald2@miners.utep.edu,
jnewson@miners.utep.edu, olgak@utep.edu, vladik@utep.edu

What is paradox of love. The utility u_i of each person is determined both by this person's circumstances – we will denote this part by c_i – and by the utilities u_j of others. In the first approximation, the dependence of u_i on u_j can be described by a linear function, with coefficients a_{ij} describing positive or negative empathy – i.e., in effect, degrees of love and hate: $u_i = c_i + \sum_j a_{ij} \cdot u_j$.

In particular, perfect Romeo-and-Juliet-type love means that the person i cares about the person j as much as they care about themselves – or even more: $a_{12} = a_{21} > 1$. In this case, we have $u_1 = c_1 + a_{12} \cdot u_2$ and $u_2 = c_2 + a_{21} \cdot u_1$. Multiplying the second equation by a_{12} and plugging in the resulting expression for $a_{12} \cdot u_2$ into the first equation, we get $u_1 = c_1 + a_{12} \cdot c_2 + a_{12} \cdot a_{21} \cdot u_1$, hence $u_1 \cdot (1 - a_{12} \cdot a_{21}) = c_1 + a_{12} \cdot c_2$, and $u_1 = \frac{c_1 + c_{12} \cdot c_2}{1 - a_{12} \cdot a_{21}}$. Even when $c_i > 0$ – i.e., when circumstances are perfect – for $a_{12} = a_{21} > 1$, we get $u_1 = u_2 < 0$ – i.e., both are unhappy. And when $a_{12} = a_{21} \approx 1$, this unhappiness can be as large as possible. This is not just a mathematical trick – Romeo and Juliet are just one of the many examples of how great love can lead to tragic unhappiness.

The situation is even worse if we consider n people feeling good each other, with some $a_{ij} = a > 0$. If circumstances are similar, i.e., if $c_1 = \dots = c_n = c$, then, due to symmetry, all utilities are the same $u_i = u$, and the equation becomes $u = c + a \cdot (n-1) \cdot u$, hence $u = c/(1 - a \cdot (n-1))$. So, for $a > 1/(n-1)$, everyone in this group is unhappy. For large n , this is true already for small a – so even small good feelings towards each other make the whole community unhappy.

How to avoid this paradox? For two people, a natural solution to this paradox seems to be limiting one's emotions, letting reason to be more in control of one's behavior. A natural solution for large n is to focus more on families (and other small groups) than on humanity as a whole. However, somehow, religious communities seem to avoid this paradox – and resulting unhappiness – without limiting their emotions and without limiting the focus to a family.

What they seem to do is to focus positive feelings on the divine being (D) – who, in turn, has positive feelings towards human beings. In this talk, we explain how this focus helps to avoid the negative feelings associated with the paradox of love.

Analysis of the problem and the resulting explanation. In the first approximation, let us consider n people with similar circumstances c_H , similar level of love-to-Divine-Being a_{HD} , and similar levels of love-from-Divine-Being a_{DH} . In this case, since we ignored the differences between human beings, the utility of all human beings will be the same u_H . So, the above equations for determining utilities u_H and u_D take the following form: $u_H = c_H + a_{HD} \cdot u_D$ and $u_D = c_D + n \cdot a_{DH} \cdot u_H$. If we multiply the second equation by a_{HD} and replace the term $a_{HD} \cdot u_D$ with the resulting expression, we conclude that $u_H = c_H + a_{HD} \cdot c_D + a_{HD} \cdot n \cdot a_{DH} \cdot u_H$. If we move all the terms containing the unknown u_H to the left side, we get $u_H \cdot (1 - a_{HD} \cdot n \cdot a_{DH}) = c_H + a_{HD} \cdot c_D$, so $u_H = \frac{c_H + a_{HD} \cdot c_D}{1 - a_{HD} \cdot n \cdot a_{DH}}$. For an appropriately selected a_{DH} , the denominator of this expression will be positive and close to 0 – which will lead to high happiness. Commonsense explanation: *we often cannot control our emotions well, but D can select an appropriate a_{DH} that makes everyone happy.*