

Asymmetric (Libertarian) Paternalism: Explanation Based on Decisions Under Interval Uncertainty, and Possible Applications to Education

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Abstract

In the traditional approach to decision making (see, e.g., [1]), the decision maker's preferences A_1, \dots, A_n can be characterized by their "utility values" $u(A_1), \dots, u(A_n)$, so that an alternative A_i is preferable to the alternative A_j if and only if $u(A_i) > u(A_j)$. So, unless the two alternatives A_i and A_j have the exact same utility value $u(A_i) = u(A_j)$, we have two possibilities:

- either $u(A_i) > u(A_j)$, i.e., the alternative A_i is better,
- or $u(A_j) > u(A_i)$, i.e., the alternative A_j is better.

In the first case,

- if we originally only had an alternative A_i , and then we are adding the alternative A_j , then we stick with A_i ;
- on the other hand, if we originally only had an alternative A_j , and then we are adding the alternative A_i , then we switch our choice to A_i .

Similarly, in the second case,

- if we originally only had an alternative A_j , and then we are adding the alternative A_i , then we stick with A_j ;
- on the other hand, if we originally only had an alternative A_i , and then we are adding the alternative A_j , then we switch our choice to A_j .

Interestingly, in the actual tests of the above experiment, human decision makers do not follow this seemingly rational behavior; see, e.g., [2,6]. Specifically, they exhibit “inertia”, the desire not to change an alternative.

We show that this seemingly irrational behavior can be explained if we take into account that decision makers only know the utility value of different outcomes with interval uncertainty $[\underline{u}(A_i), \bar{u}(A_i)]$. In this case, a decision maker switches to the new alternative A_j only if it is guaranteed that the new alternative is better, i.e., that $\underline{u}(A_j) \geq \bar{u}(A_i)$.

The rationality of inertia under uncertainty can be illustrated on the example of a similar situation: how a mobile robot makes decisions about its motion.

In the traditional control, we make decisions based on the current values of the quantities. Measurement noise leads to random deviations of the robot from the ideal trajectory – shaking and “wobbling”. A natural way to avoid this wobbling is to change a direction only if it is absolutely clear (beyond the measurement uncertainty) that this change will improve the robot’s performance. The idea has indeed been successfully implemented in robotics [3,5].

The inertia phenomenon is behind the *asymmetric (libertarian) paternalism* idea, when, e.g., to encourage schoolkids to eat healthy food, we first restrict their menu to healthy choices, after which, when all the foods are introduced, they will be reluctant to switch [2,6]. In the talk, we explain how this phenomenon can be also used in education.

References:

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