On Choice, Belief, and Distribution: Axiomatic Studies in Behavioural Economics

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Introduction

I study individual behaviour, information processing, and resource allocation.

1. **Universalisation**: what would happen were everyone to behave like me?
   (Alger & Weibull, 2013; Laffont, 1975; Kant, 1785; Roemer, 2019; Van Leeuwen & Alger, 2024)

2. **Meritocracy**: an allocation rule that rewards more meritorious individuals.
   (Cappelen et al., 2020; Fleurbaey, 2008; Kagan, 2014; Sandel, 2020; Sen, 2000)

3. **Belief-dependent tastes**: individuals who "like" having specific beliefs.
   (Bénabou & Tirole, 2016; Geanakoplos et al., 1989; Golman et al., 2017; Legg & Hookway, 2024)

1. A Foundation for Universalisation in Games

An individual i in a game:

- chooses a mixed action α_i;
- has a belief about opponent's actions p_i;
- "universalises" his action α_i to an opponent action $T[\alpha_i] = \alpha_{-i}$.

A **universalisation preference** is

$$U_i(\alpha_i) = \underbrace{\sum_{a_i, a_{-i}} \alpha_i(a_i) p_i(a_{-i}) u_i(a_i, a_{-i})}_{\text{Subjective Expected Utility}}$$

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$$U_i(\alpha_i) = \underbrace{\sum_{a_i, a_{-i}} \alpha_i(a_i) p_i(a_{-i}) u_i(a_i, a_{-i})}_{\text{Subjective Expected Utility}} + \underbrace{\sum_{a_i, a_{-i}} \alpha_i(a_i) T[\alpha_i](a_{-i}) u_i(a_i, a_{-i})}_{\text{Universalisation}}.$$

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$$U_i(\alpha_i) = (1-\kappa) \underbrace{\sum_{a_i, a_{-i}} \alpha_i(a_i) p_i(a_{-i}) u_i(a_i, a_{-i})}_{\text{Subjective Expected Utility}} + \kappa \underbrace{\sum_{a_i, a_{-i}} \alpha_i(a_i) T[\alpha_i](a_{-i}) u_i(a_i, a_{-i})}_{\text{Universalisation}}.$$

1. Universalisation - Discussion and Results

Main Result:
I axiomatise universalisation studying preferences over mixed actions.

Independence is only satisfied between actions universalised "equivalently".

Specifying the function T allows to study different types of universalisation.

I introduce **Equal sacrifice universalisation**.

2. Meritocracy as an End and as a Means

Individuals i in an economy have preferences over outcomes $\succsim_i$.

A preference $\succsim_i$ is more "meritorious" than $\succsim_i'$ if

$$\succsim_i M \succsim_i' .$$

An outcome x is more "rewarding" than x' to individual i if

$$xR_ix'.$$

A social choice function f maps preference profiles to outcomes.

The function f is **meritocratic** if more meritorious preferences are rewarded more.

2. Meritocracy - Discussion and Results

A meritocratic social choice function represents **meritocracy as an end**.

When individuals are in a game their preferences dictate their actions.

I then define meritocracy based on behaviour in a game: **meritocracy as a means**.

I show that meritocracy as an end and as a means are equivalent.

Main Result:
I introduce and discuss **Pareto Meritocracy** and **Proportional Meritocracy**.

3. Identifying Belief-dependent Preferences

An individual in a decision problem:

- has a prior belief p over uncertain states in $\mathcal{S}$;
- observes a likelihood function ℓ_S putting weight only on states in $S \subseteq \mathcal{S}$;
- the Bayesian update of p given ℓ_S is p_{ℓ_S};
- chooses an act f mapping states to outcomes.

A preference with **belief-dependent tastes** is

$$U(f;\ell_S) = \underbrace{\sum_s p_{\ell_S}(s)u\left(f_s;\ell_S\right)}_{\text{Belief-dependent utility}}$$

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$$U(f;\ell_S) = \underbrace{\sum_s p_{\ell_S}(s)u\left(f_s;\ell_S\right)}_{\text{Belief-dependent utility}} + \alpha_{\ell_S} \underbrace{\sum_s p_{\ell^*_S}(s)u\left(f_s;\ell^*_S\right)}_{\text{Utility with distorted likelihood}} .$$

Where ℓ^*_S maximises u under the best possible outcome.

3. Belief-dependent tastes - Discussion and Results

Belief-dependent tastes constitute a significant departure from Savage (1972).

I introduce a novel choice-theoretic primitive: **contingent menus**.

Main Result:
I axiomatise belief-dependent tastes studying preferences over contingent menus.

Belief-dependent tastes **imply** non-Bayesian updating.

Particular commitment devices enhance welfare.

A methodological takeaway

Concepts studied in this thesis explain behaviour in economically relevant settings.

All of these constitute significant departures from theoretical benchmarks.

Lack of focus on the logical relationships between novel concepts and benchmarks.

I attempt to integrate novel concepts in a logically consistent corpus of knowledge.

I argue that generalisation to accommodate novel ideas opens new routes.

References

Alger, I., & Weibull, J. W. (2013). Homo moralis—preference evolution under incomplete information and assortative matching. *Econometrica : journal of the Econometric Society*, *81*(6), 2269–2302.

Bénabou, R., & Tirole, J. (2016). Mindful economics: The production, consumption, and value of beliefs. *Journal of Economic Perspectives*, *30*(3), 141–64.

Cappelen, A. W., Falch, R., & Tungodden, B. (2020). Fair and unfair income inequality. *Handbook of Labor, Human Resources and Population Economics*, 1–25.

Fleurbaey, M. (2008). *Fairness, responsibility, and welfare*. Oxford: Oxford University Press.

Geanakoplos, J., Pearce, D., & Stacchetti, E. (1989). Psychological games and sequential rationality. *Games and economic Behavior*, *1*(1), 60–79.

Golman, R., Hagmann, D., & Loewenstein, G. (2017). Information avoidance. *Journal of economic literature*, *55*(1), 96–135.

Kagan, S. (2014). *The geometry of desert*. Oxford: Oxford University Press.

Kant, I. (1785). *Grundlegung zur metaphysik der sitten*.

Laffont, J.-J. (1975). Macroeconomic constraints, economic efficiency and ethics: An introduction to Kantian economics. *Economica*, *42*(168), 430–437.

Legg, C., & Hookway, C. (2024). Pragmatism. In E. N. Zalta & U. Nodelman (Eds.), *The Stanford Encyclopedia of Philosophy* (Winter 2024 ed.). Metaphysics Research Lab, Stanford University.

Roemer, J. E. (2019). *How we cooperate: A theory of kantian optimization*. New Haven, CT: Yale University Press.

Sandel, M. J. (2020). *The tyranny of merit: What's become of the common good?* London: Allen Lane.

Savage, L. J. (1972). *The foundations of statistics* (2nd rev. ed.). New York: Dover Publications.

Sen, A. (2000). Merit and justice. *Meritocracy and economic inequality*, 5–16.

Van Leeuwen, B., & Alger, I. (2024, November). Estimating Social Preferences and Kantian Morality in Strategic Interactions. *Journal of Political Economy Microeconomics*, *2*(4), 665–706.