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An Interdisciplinary Re-Perspectivation of the Study of Heuristics, Biases, and Nudges

Till Neuhaus

Bielefeld University, Germany

and

Lee John Curley

The Open University, Milton Keynes, United Kingdom

Abstract: The following text starts with an assumption that current psychological research is primarily quantitative in nature and – despite its great contributions – misses out on the potentials lying in an interdisciplinary and thereby multi-methodological approach. To highlight these potentials, this text does three things: Primarily, it looks at the study of heuristics and biases, a much debated and researched field, to illustrate the pitfalls awaiting in a one-sided approach as the study of heuristics and biases has been mostly motivated by the inadequacies of the prior paradigm. Secondly, this text presents scholars from outside of mainstream thinking that have also discussed decision-making and – although in a more abstract form – and arrived at similar results. This, in result, highlights the potential of a historically minded interdisciplinary approach towards decision-making. Lastly, these insights are brought forward as valuable future research objects by further contextualizing them with current problems in decision-making science, these problems stem from the field of legal decision-making. The text overall raises awareness for alternative and interdisciplinary approaches towards psychological research questions.

Key Words: Heuristics, Biases, Psychology, History, Nudges, Methodological Pluralism, Interdisciplinary Psychology



1. Introduction

A majority of contemporary psychology researchers “regard their subject as a natural science” (Brock 2016, 184). This self-positioning of the field “manifests itself in the strict adherence to the quantitative empirical method. This uniformity certainly conveys strength because of its methodological rigor and scientific respectability” (Mayrhofer & Hutmacher 2020, 3) – an approach which has its origins in the 1960s and is tightly knit to the biological-medical conceptualization of the world as a web of interacting systems (cf. Bertalanffy 1972; Tröhler 2014; Neuhaus 2023a). As said, this worldview and its associated methodology with its origin in biological and medical research, expanded into the social science, most prominently into psychology and economics (cf. Porter 1995, 90). The power of this systems approach and the attached idea of evidence-based science cannot be overestimated as clinically controlled trials (CCT) and randomized controlled trials are considered “the gold standard” (cf. Thaler 2015; cf. Gore 1981) of empirical research, only to be topped by systematic reviews/meta-analyses (cf. Murad et al. 2016, 126). While quantitative-minded, evidence-based science has resulted in a plethora of valuable research insights across different disciplines, it can currently be observed that this methodological uniformity has partly resulted in “brittleness” (Schmidt & Stenger 2021, 3) when being confronted with complex real-life settings. Or, in other words: measures and politics based solely on evidence-based science produce sub-par results as quantitative methodology can only identify “critical indicators” (Coombs 1968, 8) (i.e. correlations), yet it fails to explain the relationship between these (cf. Neuhaus & Großjohann 2022) and, as such, cannot determine which factors may become critical in the dynamic future. Mayrhofer and Hutmacher (2020, 3) on the issue: “[I]t hampers psychology by preventing it from exploring other avenues which might yield additional insight into mental and behavioral processes or even human nature”.

Based on these observations and the implications of the so-called replication crisis, parts of the scientific community (i.e. Mayrhofer & Hutmacher, 2020; Hutmacher & Mayrhofer, 2021) advocate methodological pluralism as well as a re-vitalization of social science perspective regarding psychological research (cf. Teo 2017). Such tendencies could manifest themselves in an emergence of historical psychological research (cf. Muthukrishna et al., 2021), a demand, which has been verbalized multiple times in the past (cf. Danziger 2003; Gergen 1973; van den Berg 1961), yet it has barely been adopted by psychology at large. For necessity and for the chances of cementing a historically minded psychological research: “It enables us to understand how we have become the societies and the human beings that we are today, that is, to understand how certain ways of thinking, feeling, and behaving have changed and developed over the course of time” (Hutmacher & Mayrhofer 2022, 2). History is not the only open gateway. The term *psyche* has held multiple meanings in the past (cf. Claus 1983) and even more recent concepts, which describe psychology’s research interest, such as the question of “What is human nature[?]” (Gerrig 2012, 2), shows “that the exact subject matter of psychology is hard to pinpoint or to distinguish from other disciplines which also deal with behavior and mental processes, such as anthropology, history, cultural and literary studies, or philosophy” (Mayrhofer & Hutmacher 2020, 2).

This article pursues the premise that current psychological research could benefit from an interdisciplinary, methodological pluralistic, as well as historically-minded approach; not to replace the evidence-based paradigm but to enrich, inspire, and further improve it. Of course, this enrichment works both ways as this article also assumes that philosophical, political,



sociological, historical, and literary scholarship – just to name a few – could greatly benefit from the insights generated by psychological research.

As stated earlier, such demands have already been verbalized in the past, yet they have not attracted mainstream following and/or recognition. This paper posits that this failure stems from a lack of positive and successful approach in scholarship and a lack of wide real-life application in case studies. Therefore, this paper presents a case in which interdisciplinary scholarship is engrained into the subject itself, the study of heuristics and biases. To illustrate the case accordingly, the paper covers three things: primarily, it defines the object of interest and shows that the study of rational and irrational behavior should be considered an interdisciplinary project (section 2.1.). Secondly, this article examines key researchers and historical developments of the field and argues that they have been influenced by interdisciplinary inputs; this section can be read as an attempt to approach psychology historically (also section 2.1.). Thirdly, the paper presents insights from interdisciplinary sources – primarily from the religious, philosophical, and political domain – which also negotiate irrational behavior, are in line with or anticipated current research insights, and thereby hint at potential for both/all involved fields (section 2.2.). The article closes with a summary of its key findings as well as an outlook on potential future research (section 3); this outlook focuses on different potentials, which lie in an interdisciplinary study of heuristics and biases.

2. Heuristics, Biases, and Systematic Irrationality – An Interdisciplinary Re-Perspectivation of the Heuristics and Biases Program

2.1. Heuristics and Biases – Historical Developments and Definitory Aspects

The key question around which the following discussion circles is how people make decisions. While this question has been negotiated by multiple epistemological systems – section 2.2. exemplarily illustrates past contributions of some disciplines. Decision-making used to be a field of study within economics, which gained wide-spread popularity after World War II, when mathematically minded approaches advocating logic and numbers-based rationality dominated the field (cf. Neuhaus & Thomas [in print])¹. Even in the early days of what should later be known as decision sciences, dissent from within the field could be heard. More specifically, the question of how people make decisions and whether these are based on rationality or not was discussed regarding hiring practices in the *American Economic Review* of 1946. Based on marginal analysis, the *theory of the firm* was established according to which companies “keep hiring workers until the cost of the last worker equals the increase in revenue that the worker produces” (Thaler 2015, 44). Following the theory of the firm, wages and a product’s price should inform a company/manager regarding hiring decisions. Richard A. Lester conducted a survey, in which he isolated relevant factors in the field of hiring decisions and later stated that neither price nor wage was reported as influencing these decisions (cf. Lester 1946, 81/82). “Instead, they [the managers] reported trying to sell as much of their

¹ Chase, Hertwig & Gigerenzer (1998, 206) on the matter: “Most researchers of inference share a vision of rationality whose roots trace back to the Enlightenment. This now classical view holds that the laws of human inference are equivalent to the laws of probability and logic” (Chase, Hertwig & Gigerenzer 1998, 206)



product as they could, and increasing or decreasing the workforce to meet that level of demand” (Thaler 2015, 45). Lester concludes that this finding results in “grave doubts as to the validity of conventional marginal theory and the assumptions on which it rests” (Lester 1946, 81), namely rational decision-making. In the same year, Fritz Machlup replies to Lester’s finding. Even though Machlup regards the theory of the firm as imperfect – he admits that costs and revenue are evaluated on a subjective basis (cf. Machlup 1946, 521) and that a plethora of business decisions are driven rather by routine than rationale (cf. *ibid.*, 524) –, he still argues that the rational choice-based approach holds true as the following quote (1946, 522) illustrates:

Yet, one must not assume that all producers ‘really’ know their cost in the sense in which an efficiency expert would determine it; several of them may lack the interest or experience; they may not find it worth their while to dig too deeply into the mysteries of their business. (After all, we know that there are good business men and bad, and that the majority is somewhere between good and bad.) But this does not invalidate the proposition that the producer is guided by marginal cost.

Machlup compares economic theory to driving a vehicle and then attacks Lester based on methodological grounds by imaging a survey study on overtaking another vehicle (Machlup 1946, 535):

Would he not obtain the most hopeless assortment of answers? Would not these answers support the conclusion that the assumptions of the theorists had been wrong and that one must look for other explanations? Yet I can hardly believe that any sensible person would deny the relevance of the enumerated variables and would contend, for example, that speed and distance of the approaching automobile could not have been taken into account by the driver passing the truck, because he was not good in mathematics.

What can be observed here is the emergence of an argumentative pattern which should haunt later attempts to criticize rational choice approaches: the *as-if* rationality (cf. Thaler 2015, 44/45). According to this line of argument, real-life actors act as if they were rational agents even if they cannot verbalize or explain their behavior themselves. This position has been advocated by Milton Friedman, who closed the debate for a while by a series of very persuasive essays. Friedman (1953, 157/158) on the issue:

Consider the problem of predicting the shots made by an expert billiard player. It seems not at all unreasonable that excellent predictions would be yielded by the hypothesis that the billiard player made his shots as if he knew the complicated mathematical formulas that would give the optimum directions of travel, could estimate accurately by eye the angles, etc., describing the location of the balls, could make lightning calculations from the formulas, and could then make the balls travel in the direction indicated by the formulas. Our confidence in this hypothesis is not based on the belief that billiard players, even expert ones, can or do go through the process described; it derives rather from the belief that, unless in some way or other they were capable of reaching essentially the same result, they would not in fact be expert billiard players.

Friedman settled the debate in favor of rational-choice approaches and “economists returned to their models free from worry whether their assumptions were ‘realistic’. A good theory, it seemed, could not be defeated using survey data, even if the defenders of the theory presented no data of their own” (Thaler 2015, 46). From the mid-1950s onwards, developments and offspring of rational-choice theory – significantly defined by the six von Neumann and Morgenstern’s axioms (cf. 1944) – dominated the discourses on decision-making. While some of these axioms have been contested and refuted on empirical and mathematical grounds (for oppositions see Allais 1953; Ellsberg 1961), these pillars of rational decision-making were still considered steppingstones of the study of decision-making. These axioms argue that actors have well-ordered preferences (Transitivity, cf. Loomes, Starmer & Sudgen 1991, 425), choose –



according to their preferences – the best option independent of the choices’ presentation (Invariance, cf. Tversky & Kahneman 1986, 6), and that in markets goods end up where they are valued the most (Dominance also known as the *Coase Theorem*, cf. Cooter 1989). As argued earlier, a group of researchers – primarily from the field of psychology – questioned the validity of the rational-choice paradigm as it “is grossly inadequate as a descriptive model of individual choice behavior” (Tversky 1975, 163). Apart from just criticizing rational-choice approaches as inadequate, advocates from this emerging school of thought have also suspected systematic patterns in irrational behavior as these “deviations of actual behaviour from normative models [rational choice models] are too widespread to be ignored, too systematic to be dismissed as random error, and too fundamental to be accommodated by relaxing the normative system” (Tversky/Kahneman 1986, 3).

In the following pages, this paper illustrates three cases/studies, which have been employed to refute rational-choice’s powerful axioms (e.g., invariance, transitivity, and dominance) (see also Neuhaus 2022a). These should be read as historical documentations but also as an attempt to define the playing field of behavioral economics/decision-science. It should be noted that these studies and experiments have all been driven by the idea of setting up a descriptive theory of decision-making (later known as *Prospect Theory*), which – in contrast to normative rational choice theory, dictates how people should act, should be able to describe and predict how real-life actors decide. These selected cases will later be enriched in perspective when introducing the rather application-based system of *Nudging*.

Regarding invariance – the idea that people will select the best option available –, Tversky and Kahneman (cf. 1981, 453) argued against this through introducing the concept of framing. In a fictional epidemic, 600 people had been infected and the study participant were confronted with two choices: either option A – 200 people survive, 400 die – or option B, in which there is a 33% probability that everybody survives and a 66% probability that all infected die. 72% of participants selected Option A. In the second round of this experiment, the same scenario had been proposed, yet it was presented in an alternative framing: option C, 400 people die (200 survive) or option D, in which there is a 33% probability that nobody dies and a 66% probability that every infected person dies. Surprisingly, the choices almost reversed with 78% selecting option D and just 22% taking option C. This “framing effect” (Tversky/Kahneman 1979), the way information is presented and provided, has tremendous influence on decision outcomes (cf. McNeil et al. 1982) and directly violates the axiom of invariance and thereby logical, rational decision-making.

Regarding transitivity, the assumption “that preference ordering of the individual is consistent” and that these “preferences do not contradict one another” (Heukelom 2007, 7), psychological research tested this axiom in a rather creative way. Slovic and Lichtenstein (1983) confronted participants with two bets from which one could be selected. The participants could either (A) select a small probability, big win bet or (B) take a high probability, low pay-off bet. However, the expected utility of A was higher than B, ergo – following the axiom of transitivity – majority of participants should select A. Yet, the majority choose the high probability, low pay-off bet, a phenomenon Slovic and Lichtenstein (1983) decided to call “preference reversal phenomenon”. This observation has been discussed extensively and Loomes and Sudgen (1983) argue that regret aversion should be cited as the main cause for this irrational behavior as anticipated and/or imagined future emotional states are consulted when being confronted with alternating decision scenarios (cf. Neuhaus 2021). Such behavior not just



violates the axiom of transitivity but also illustrates that decision-scenarios must be approached more holistically as “[p]references that are inconsistent in this manner challenge the notion of human rationality and suggest the need for theories based more on psychologically descriptive assumptions to replace rational-choice models” (Regenwetter, Dana & Davis-Stober 2011, 43).

Regarding the discussed axioms (and thereby a certain understanding of rationality), dominance remains untouched as “[d]ominance is both simpler and more compelling than transitivity, and it serves as the cornerstone of the normative theory [that is rational choice theory] of choice” (Tversky & Kahneman 1986, 6). Dominance describes the fact that if two options exist (A and B), which are equal apart from one aspect where A is better than B, the better option is selected (cf. *ibid*, 5). This axiom has been put to the test by Kahneman, Knetsch, and Thaler (cf. 1990 & 1991), who have found out that ownership (i.e. of items) results in a premium that is added to the objective value – a phenomenon they called the endowment effect. Similar tendencies can be observed in status quo and/or default biases (Johnson & Goldstein 2003), in which people identify with a given status quo and are thereby more reluctant to change. This constitutes a clear violation of the rational choice axiom but simultaneously hints at the underlying processes, which govern real-life decision-making.

As illustrated above, Prospect Theory – the study of heuristics, biases, and mental shortcuts, whose origin lie at the cognitive level – has produced and still produces a range of studies and insights which not just question the paradigm of rational choice but also hint at the mental systems, availabilities, and heuristics, which are applied in real-life decision-making. Prospect Theory primarily focuses on the mode of presentation, such as information, and the related influences, like comparative groups/frameworks, in their role of making certain decision patterns more likely to occur. As such, Prospect Theory was able to contribute to a plethora of field – i.e. law (Curley et al. 2018; Curley et al. 2021; Ritov 1996), marketing/sales (Neuhaus 2021), international politics (Levy 1997), education (Rogers & Fellers 2018) or the military – and highlight irrational deviations from expected behavior.

Daniel Kahneman summarized his as well as his peers’ research results in his book *Thinking Fast and Slow* (2012), in which he argues that humans can consult two decision-making systems: the fast, intuitive, and highly associative system 1 as well as the reflective, slow, and analytical system 2; Thaler and Sunstein (2017, 34) refer to these different modes of decision-making as *Econ* (system 2) and *Human* (system 1). This body of work helps to combine the rationality of economics with the descriptive models from psychology. Following Kahneman’s argument, errors and biases primarily occur if a mismatch between the question at hand and the consulted system occurs (cf. also Neuhaus 2020). Since certain mismatches occur rather frequently, errors or deviations from rationality can be predicted and/or provoked by a change in the surrounding decision architecture (cf. Thaler/Sunstein 2017).

Based on the works outlined above, Richard Thaler and Cass Sunstein developed an application-oriented approach to improve governmental decision settings which they coined *Nudge* (2017). In such behavioral public policies (cf. Neuhaus & Curley 2022; for a critical account see Neuhaus 2022b) decision architects attempt to enhance public welfare by tilting decision architectures in the *right* ways and thereby exploiting irrationalities. In such Nudge policies, the cognitive scope of Prospect Theory is enhanced by insights from sociology, linguistics, and social psychology (cf. Neuhaus 2020) as regarding decisions a “good rule of thumb is to assume that everything matters” (Thaler, Sunstein & Balz 2014, 429). Despite its controversial basis as well as understandings and presumptions, Nudging became a global trend



(cf. OECD 2017) and can be considered an emerging tendency in policymaking. When looking at the history of Prospect Theory and Nudge Theory, it can be argued that the study of decision-making has always been an interdisciplinary endeavor, which oscillated between the disciplines of economics, psychology, and other social sciences. Not only has the academic field been enhanced by this interdisciplinary project, but also these insights have been applied in practical settings (Curley et al. 2019).

Taking a step back at the origin of Prospect Theory, it could be asked how and why a generation of young psychologists have decided to oppose an established paradigm of decision-making. In his book *The Undoing Project* (2017), Michael Lewis argues that Daniel Kahneman has been inspired by two things in his early days of researching heuristics and biases: Wittgenstein's philosophy and Jewish belief. Both epistemological systems (philosophy and religion) highlighted the fact that the first impression of something – i.e. in Wittgenstein's duck rabbit – is rather the result of a specific perspective and is not all that can be known. Also, both systems emphasize the fact that speed in the decision process plays a crucial role and can lead to one-sided and/or wrong impressions. Both inspired Kahneman and his affiliates/colleagues to pursue the endeavor of describing the human decision-making process and identifying influences/settings which favor certain outcomes.

2.2. Interdisciplinary and Historical Inputs

After having recalled key moments in the developments regarding heuristics, biases, and nudges, the second part of this paper examines the interdisciplinary contributions made to the study of decision-making. These contributions are exemplarily in nature, yet they highlight the potential which lies in a re-reading of social sciences as well as humanities classic texts. While such a re-reading may be irrelevant from a history of ideas perspective (cf. Skinner 2006), it can nonetheless be considered a valuable contribution as the object or question of reference – how do people make decisions? – is clearly defined and can be considered a universal of human life. The exemplary concepts being recalled are Plato's Chariot Allegory, Niccolo Machiavelli's *The Prince*, as well as Hegel's *Master and the Slave*.

2.2.1. Plato's Chariot Allegory

One of the earliest accounts on human decision-making processes has been provided by Plato in his Chariot Allegory. In this allegory, the human soul – a key historical reference of psychology – is described as a chariot (cf. Zabarovski 2016, 193) consisting of a charioteer and two horses. "It is generally agreed that [...] the charioteer symbolizes reason" (Ferrari 1987, 185/186) while the two horses describe the different affective modes of human decision-making. According to Zabarovski (2018, 167), "the good (or the white) horse [is] the spirited (or the emotive/affective), and the bad (or the black) horse [can be seen] as the desiderative (or the appetitive)". In line with modern psychological research, Plato described two modes of decision-making, the rational, reflective, and analytical (the charioteer or – in Kahneman's lingua (cf. 2012) – system 2) and the affective, intuitive, and highly associated horses (system 1). Also noteworthy is the fact that "[a]ll three capacities, and not only a rational part of the soul, are given an essential and positive role in striving toward the good and the beautiful, and each capacity is represented as having certain defects" (Belfiore 2006, 190). This observation



goes in line with current research as both decision-making systems do have their *raison d'être* and are vital for a functional human being (cf. Kahneman 2012; Neuhaus 2020). In the quest of arriving at truth – which can also be translated as the *good, right, or beautiful* (cf. Vogt & Neuhaus 2021) –, the charioteer and the two horses need to agree on a common direction as “the true relationship between eros and intellect is harmony, not opposition” (Frentz 2006, 250) – a conceptual approach which foresees application-based usage of psychological research in procedures, such as nudging (cf. Rebonato 2014, 365), in which the (different kinds of the) intuitive and the rational are employed to enhance overall welfare and *the good* (cf. Thaler & Sunstein 2017).

With this kind of conceptualization, Plato also anticipated research from the psychoanalytical school of thought, which rather belongs to the discipline's fringes by today's standards. In the earlier works of Sigmund Freud (cf. 2016/1914), the human psyche is split between the instinctual-driven Id, the super-ego – which can be seen as the external world and its manifestation in norms, rules etc. (cf. Zizek 2019) – and (in between) the ego, which needs to negotiate these extreme. Although the psychoanalytical school of thought quickly focused on rather abstract external and internal factors, which determine (or inhibit) action, the conceptual world of different kinds of drivers, some rather being intuitive/instinctual while other are reflective in nature, is already present (cf. Fromm 1980). Also, the potential collision between a given decision-architecture and intuitive judgements is already available in Plato's thought and in the psychoanalytical works. Even though these areas of psychology may be considered fringe or esoteric by today's standards, parts of these ideas live on in modern psychological as well as counselling research. One such example may be the work of Carl Rogers (cf. 1957), who borrowed some ideas from psychoanalysts and argued that a functional human being needs to align values/desires and action to live a coherent life. These concepts have also, at least in part, been proven empirically, i.e. in Festinger's (cf. 1957) study on cognitive dissonance.

While some of these works only overlap in part, it can still be argued that they – to diverging degrees in resolution – share a conceptual frame regarding human decision-making processes as all referenced schools of thought believe that decisions can be influenced from the outside (horses going astray, the super-ego interfering, or a decision-architecture soliciting certain decisions) and that different, often non-rational modes are at work; may it be the Id, the intuitive system 1, or the black horse from Plato's allegory. These concepts are abstract in nature and do not pass modern psychological standards as they cannot be empirically tested, yet they hint at the possibility that theories of decision-making have occupied the human mind ever since. And while Plato and his allegories found their place among philosophy's classics, the works of Niccolo Machiavelli may be considered testable as they, as it is shown in the following paragraphs, foresaw many of modern psychology's findings.

2.2.2. The Philosophy of Niccolo Machiavelli

Niccolo Machiavelli is often cited as one of the earliest advocates of power politics or what should later find its way into literature as *Realpolitik* (cf. Bew 2016). One of the key pillars *Realpolitik* rests on – and differentiates itself from alternative theories, especially in the nineteenth century Germany (cf. *ibid.*) – is that the world should be seen as it is and not how it ought to be (cf. Machiavelli 2020, 563). As such, Machiavellian thought can be considered



descriptive in nature and should thereby be highly compatible with other descriptive theories, such as Prospect Theory which demarcates itself from the *normative* model of rational choice as it considers rational choice theories “grossly inadequate as a descriptive model of individual choice behavior” (Tversky 1975, 163). Individual connections between Machiavelli’s observations and the study of heuristics and biases have already been spotted by some scholars as Oliver (2013, 690) argues that loss-aversion has been discussed in *The Prince*. However, this subsection connects these works on more than the occasional level. A shared conceptual framework – in this case a descriptive basis from which future behavior can be inferred – serves as a starting point of this. Yet, this conceptual basis can even be extended as Machiavelli (cf. 2020, 514) argues that, in cases of decisions, human beings almost always follow already established paths, a highly compatible argument with the concept of decision-architectures (cf. Thaler, Sunstein & Balz 2014) and given that decisions are highly dependent on the ways and modes of presentation. Lastly, on conceptual level, Machiavelli shares the idea that humans have different modes of decision-making, of which both are necessary, yet in different settings. Machiavelli refers to these different modes as the animalistic (intuitive, quick, instinctual) and the human (reflective, rational, slower) (cf. Machiavelli 2020, 573), which can be read as a reference to ancient writings of Plato but also as a precursor of modern psychological research. Based on this quick and selective review of individual aspects, it can be suspected that Machiavelli is not just highly compatible with Prospect and/or Nudge theory but also foresaw certain effects, heuristics, and biases. A selection of most striking examples is presented next and it focuses on loss-aversion, the anchor effect, as well as mental accounting, known as the house money effect.

As cited earlier, Oliver (2013, 690) already observed that Machiavelli’s writings are coherent with studies on loss-aversion. According to Machiavelli (cf. 2020, 513; 516), the hatred of those who lost freedom or privileges (i.e. after being conquered) outweighs the sympathy of those, who benefitted from the new order of things. This observation is quite literal what Tversky and Kahneman (1991 & 1992) describe as loss-aversion in which losses hurt roughly twice as much as a comparative gain generates pleasure. In fact, different modes of reaction towards such a new order have been described by Kahneman (2012) in which he argues that political reforms – in this case, a change in renting laws from which more people would benefit, yet few would lose their relatively cheap status quo – often fail due to highly-motivated and extremely engaged minority opposition. Therefore, loss aversion is often quoted as a strong conservative force, which keeps individuals, groups, and institutions at certain status quos – an effect that was described by Machiavelli.

The second major heuristic Machiavelli correctly described is the anchor effect. Machiavelli made the strange observation that the public’s judgments of a ruler differ depending on their expectations, as a culprit doing something of good receives more sympathy for his/her deed than an already beloved ruler (cf. 2020, 537). Regarding judgments based on comparisons, Festinger (cf. 1954) argues that comparisons are mostly local in nature; human beings compare with what intuitively comes to mind. These “anchors” (Tversky & Kahneman 1974) help human beings to make qualitative judgements (cf. McElroy & Dowd 2007, 48) by providing necessary context and thereby allow normative judgements of situations (cf. Kahneman 1992, 296). As it could be shown, these judgements violate rational decision-making (cf. Tversky & Kahneman 1974; Sunstein & Vermeule 2008), yet they can explain why similar

actions are evaluated differently as diverging anchors have been consulted in the decision-making process.

Lastly, this sub-section discusses the house money effect. Machiavelli notes that foreign resources (i.e. after conquering a foreign place) are used differently than one's own, as wasting of resources occurs more often with the former (cf. 2020, 568). This tendency can be described as the "house money effect" (Thaler & Johnson 1990) and hints at a larger mental accounting scheme. In such a scheme, resources are not clustered or accounted for in a purely rational sense, but human beings distinguish between *their money* and *foreign money*, even if the person owns different moneys at the moment (i.e. at a game of poker or after plunging a foreign city's treasures). Such an accounting scheme as well as the resulting decisions – playing riskier with *foreign money* or wasting such resources more easily – violate the rules of rationality, yet they seem to have a high degree of continuity as Machiavelli as well as Thaler and Johnson describe an extremely similar procedure.

As it could hopefully be shown, the work of Niccolo Machiavelli shares a plethora of conceptual assumptions and arrives at similar heuristics and biases as modern psychological researcher do; even if Machiavelli's observations are not based on large samples but occasional observation.

2.2.3. Hegel's Master and the Slave

Another way we can see the battle between rationality and intuition is through Hegel's master-slave dialectic (Hegel, 2018). Hegel articulates a myth to make his point. In the myth, two early Homo Sapiens (or humanoid like species) meet. During the meeting they realize that only through the mastery of one over the other, they can truly be recognized as a self-conscious being in their own right as "through this the servant 'finds himself'" (Arthur 1983, 67). Without it, they are merely a neutral object in the other's environment; Bird-Pollan (2012, 243) adds that without another human being to contemplate with, man "behaves like an animal" – a clear parallel to the descriptions and characterizations found in the prior works. Due to this perception of events, a fight to death begins. Now, the fight cannot end in a death, as a death would mean that neither side would be recognized as a self-conscious being – Hegel "sees the consciousness of the bondman as completely dependent upon the consciousness of the lord" (Rollins 2007, 168). From this, one of the humanoid beings claims mastery over the other, meaning that both beings are perceived no longer as an object by the opposing other. Rather, they both see each other through their respective roles, and this allows them to be perceived as self-conscious beings (as opposed to objects in the others environment). The master, however, cannot have full self-consciousness for himself; he is reliant on his slave to recognize him as his master. The slave does not require his master for the same recognition though, he begins to craft all manner of devices and tools for his master, and from this he sees himself, his creativity, in the products he designs. Therefore, the slave's requirement of a master for self-consciousness is no longer needed (cf. Bodei 2007, 44/45).

This dialectic has been analyzed in several ways in various disciplines (philosophy, psychology, sociology etc.) as it can help to illuminate the constant struggle between rationality (system 2) and intuition (system 1). System 1 here is the slave, it is dominated both culturally (seen as less positive) and cognitively (as unconscious processing and judgements are always occurring, waiting for system 2 to take over if needed) by its master, system 2 (Kahneman,



2012). The two systems have been fighting in the pages of academic debate for centuries, for what is more important, gut instinct or logic and rationality. Since the renaissance, at least, rationality (or system 2) has been the master of intuition (or system 1), with scholars, such as Laplace and Descartes promoting ideas around probability and logic, and ever since the world has tried to attenuate the role that emotion and instincts play in observing the world around us (Curley et al., 2019). From these beliefs, the scientific world (including quantitative psychology) has utilized inferential statistics and the scientific method to remove bias from investigation (Wilson & MacLean, 2011). This belief that biased and emotional decision making was inferior and that humans were devoid of such negative traits was shared in early economics, the field saw decision makers as “Laplacean Demon” (Gigerenzer & Goldstein, 1996, 650), where they were supposedly free from the cognitive limitations studied by Tversky and Kahneman (1986). This narrow viewpoint was reached in economics due to the literature not encompassing ideas and approaches from other methods (such as psychology).

Like the master, system 2 is defined by system 1. Rationality is everything that bias, and intuition is not, it is deliberate, limited and can lead to highly accurate decisions (Tversky & Kahneman, 1986), thus system 2 reached the cultural consciousness through being seen as the better of the flawed system 1, or what a person should ideally employ. System 1 on the other hand can lead to erroneous decision making, yet its unideal effects have been discovered (through observation or scientific study) repeatedly in history through the imprints it has left on the world (e.g. wrongful diagnoses, miscarriages of justice, the wall street crash) (cf. Mongin & Cozic 2018, 112/113). System 1 and 2 are in a constant battle, not just externally in the cultural conscious as described above, but also internally through which mode of cognition should be in control.

This battle can be eased through harmony between the systems, reflecting on the fact that both systems play important roles in our decision making, and that our ability to make decisions is reliant on both systems being operational (cf. Neuhaus 2023b). Maybe the way in decision making should not be to suppress system 1 and biased decision making, but rather to find scenarios where system 1 decision making may be beneficial. For instance, in the last 30 years or so, researchers, such as Gerd Gigerenzer, have suggested that fast and frugal decision-making strategies or heuristics, can be beneficial and can lead to the same or higher accuracy rates than more rational models of decision making (for an overview, see Gigerenzer 2013) and on the basis of this, criticized efforts to steer decisions from the outside by cognitive-psychological means (cf. Gigerenzer 2015). Curley, Munro, Lages, MacLean, and Murray (2020) introduced this perspective into the forensic domain, proposing that bias can be negative, positive, and neutral in forensic decision making. Neal, Lienert, Denne, and Singh (2022) took this observation to the next level by suggesting that not only can biased decision making be both positive and negative, but that deliberative cognitive processing can sometimes reduce error and in other occasions increase error. Furthermore, neither mode should strive to be the master of the other internally, both can be used, and future research should inform which mode is appropriate in certain situations.

The master and slave allegory highlights the constant tension that system 1 and system 2 have had over the centuries, both externally in how they have been perceived and internally, reflected in the work of Kahneman (2012). The myth illustrates that the systems are self-reliant and that it does not matter who wins, rather an equilibrium between the two opposing systems is what is needed to operate successfully in the world.



3. Summary and Outlook on Future Research

This paper has started with an observation, namely that psychological research primarily operates in an epistemically highly regulated manner, which manifests itself in the over-employment of certain methodologies and methods. Simultaneously, this paper is based on the presupposition that the object(s) which psychological attempts to fathom is – quasi per definition – interdisciplinary and is, in different resolutions, also discussed in a plethora of other disciplines and fields. As such, all involved disciplines could potentially benefit from an exchange, not to replace a given discipline's practice but to enrich it with additional perspectives.² In fact, Daniel Kahneman's work on heuristics and biases has been influenced by his accidental exposure to religious as well as philosophical concepts (cf. Lewis 2017).

Given these potential upsides, this paper reopened an interdisciplinary discussion of a given psychological object. Therefore, this text has identified and outlined its object of interest – the study of heuristics, biases, and decision-making processes – and provided insights regarding this line of research's emergence and axiomatic presuppositions. In a last step, three authors/texts from diverse academic background have been analyzed; the analysis has been conducted aiming at the identification of common themes, approaches, or observations made by the consulted authors and the cognitive psychologists. As it could be shown, Plato, Machiavelli, as well as Hegel discussed – to diverging degrees and in different levels of resolution – concepts and ideas which can be connected to current psychological research – an observation, which has also been made by other authors (cf. Rebonato 2014; Oliver 2013), yet in less systematic form. Taking the results of this tentative study seriously, it can be argued that not just a shared interest between the disciplines can be identified but also similar results have been produced by different epistemic systems. Therefore, a space for potential discourse and collaboration emerges, in which psychological research and the humanities at large could discuss, compare, and generate findings regarding the inner workings of decision-making processes.

Moreover, as a second and maybe more immediate desiderata, it can be argued that further authors and works should be re-read and re-analyzed with cognitive-psychological research as a potential reflection focus. Authors/work which, at least at first sight, appear useful for such an endeavor could be Isaiah Berlin's motifs or modes of *The Hedgehog and the Fox* (cf. 2013), one being more focused on immediate problems and solutions – a system 1 kind of character – while the other has a long-term vision and enhanced reflective capacity.

² This could be of particular importance as multiple study results hint at the fact that cognitive-psychological research – despite employing standardized, quantitative methodology – is too brittle and narrow regarding its focus, scope, and temporal horizon (cf. Dewies et al. 2021; Mols et al. 2015). Such a deficit could be counterbalanced by expanding the interdisciplinarity of this research program.

4. References

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