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Valuation and Prioritisation in Everyday Life:An Interdisciplinary Review across Economics, Biology, and Behavioral Science

Chandan Kumar[1], Sumit Kumar[2], Suman Raj, Sonali Kumari, Bittu Kumar

(Noida Institute of Engineering & Technology (MCA Institute), Greater Noida, India)

I. Abstract

Human decision-making is fundamentally an allocation problem under conditions of scarcity and uncertainty. Individuals continuously assign value to alternatives and prioritize actions given limited time, energy, and resources. These processes—valuation and prioritisation—have been examined across economics, biology, psychology, and decision theory, each offering distinct yet complementary frameworks. This review integrates major theoretical contributions, including marginal utility, opportunity cost, expected utility theory, statistical value of life, insurance value, survival analysis, optimal foraging theory, life history theory, reinforcement learning, and motivational psychology. The paper extends beyond descriptive synthesis by critically analyzing how these frameworks converge and diverge in explaining real-world behavior. While economic models emphasize rational optimization, biological theories highlight survival and fitness constraints, and psychological models focus on bounded cognition and learning mechanisms. Despite differences in assumptions and methodologies, a consistent pattern emerges: individuals prioritize outcomes that enhance survival probability, reduce uncertainty, strengthen social bonds, increase autonomy and competence, and preserve future opportunities. Material goods and monetary wealth serve primarily as instrumental means to these ends rather than ultimate objectives. This review argues that human valuation is best understood as a multi-layered adaptive system shaped by evolutionary pressures, cognitive constraints, and environmental conditions.

Keywords : Decision-making, Marginal utility, Prioritisation, Risk, Survival.

II. 1. Introduction

Human behavior is fundamentally shaped by the need to make choices under constraints. Individuals must allocate limited resources—time, energy, attention, and financial capital—across competing alternatives, each with uncertain outcomes. This necessity gives rise to valuation, the process of assigning worth to outcomes, and prioritisation, the ordering of actions based on those valuations.

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Economic theory has traditionally framed this problem using utility maximization, where individuals are assumed to choose actions that maximize expected satisfaction (Bernoulli, 1954; von Neumann & Morgenstern, 1944). However, this framework alone cannot fully explain observed behavior, particularly under conditions of uncertainty and limited cognitive capacity. Biological perspectives offer a deeper explanation by framing behavior as an outcome of evolutionary processes aimed at maximizing survival and reproductive success (Darwin, 1859). Meanwhile, psychological and cognitive sciences highlight the role of learning, heuristics, and bounded rationality in shaping how individuals perceive and act upon value (Kahneman, 2011; Sutton & Barto, 2018).

These perspectives, while distinct, address a common question: how do individuals determine what matters? This paper aims to synthesize these fields into a coherent framework that explains both the mechanisms and outcomes of valuation and prioritisation in everyday life. By integrating mathematical formulations, empirical findings, and theoretical insights, this review seeks to move beyond isolated explanations toward a unified understanding of human decision-making.

III. 2. Economic Foundations of Valuation

IV. 2.1 Utility and Expected Utility

The concept of utility forms the foundation of modern economic analysis. Utility functions represent preferences over outcomes, allowing individuals to rank alternatives based on subjective satisfaction rather than objective or intrinsic value. In this framework, goods and outcomes do not possess inherent worth; instead, their value emerges from the satisfaction or utility they provide to the individual. This subjectivity is central to understanding economic behavior, as different individuals may assign different utilities to the same outcome based on their preferences, experiences, and contextual factors.

Under conditions of uncertainty, expected utility theory extends this framework by incorporating probabilities into decision-making. Individuals are assumed to evaluate risky choices according to the weighted average of utilities associated with possible outcomes:

$$EU = \sum_i p_i u(x_i).$$

where pip_ipi represents the probability of outcome xix_ixi (Bernoulli, 1954; von Neumann & Morgenstern, 1944). This formulation provides a structured method for comparing uncertain alternatives and has been widely applied in economics, finance, and policy analysis.

A key contribution of expected utility theory is the formal separation between **outcomes and their likelihoods**, emphasizing that rational decision-making requires consideration of both dimensions. For example, an individual choosing between a stable job and a high-risk entrepreneurial venture implicitly evaluates not only the potential rewards but also the probabilities associated with success and failure. This probabilistic reasoning is embedded in many everyday decisions, even when individuals are not consciously performing explicit calculations.

However, the theory relies on several strong assumptions. These include the consistency of preferences (transitivity), the ability to assign accurate probabilities to uncertain events, and the independence of irrelevant alternatives. In practice, these assumptions are often violated. Individuals may display inconsistent preferences

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over time, misjudge probabilities due to cognitive biases, or allow irrelevant contextual factors to influence their decisions.

Empirical research has repeatedly demonstrated such deviations. For instance, individuals tend to overweight small probabilities and underweight large ones, leading to systematic departures from expected utility maximization. Similarly, framing effects can alter preferences without changing the underlying outcomes, suggesting that valuation is sensitive to presentation rather than purely objective evaluation.

Despite these limitations, expected utility theory remains a foundational benchmark in the study of valuation and prioritisation. It provides a normative standard against which actual behavior can be compared and serves as a starting point for more descriptive models, such as prospect theory and behavioral economics. Importantly, even when individuals deviate from its predictions, the structure of expected utility continues to inform how trade-offs are conceptualized across disciplines.

In the context of everyday life, the relevance of expected utility lies less in its literal application and more in its conceptual insight: individuals implicitly balance desirability and uncertainty when making choices. Whether deciding on financial investments, health-related behaviors, or social commitments, people engage in a form of probabilistic valuation that reflects both potential outcomes and perceived risks. Thus, expected utility theory, while imperfect, captures a fundamental aspect of how humans prioritize under uncertainty.

V. 2.2 Marginal Utility and Diminishing Returns

Marginal utility captures how additional units of a good contribute to total satisfaction and is formally expressed as:

$$MU = \frac{dU}{dx}.$$

This concept reflects the incremental change in utility resulting from a small increase in consumption. The principle of diminishing marginal utility, developed independently by Jevons (1871), Menger (1871), and Marshall (1890), states that as consumption of a good increases, the additional satisfaction derived from each successive unit decreases. In mathematical terms, this implies that the second derivative of the utility function is negative.

This principle has profound implications for prioritisation, as it implies that initial consumption satisfies urgent and fundamental needs, while additional consumption yields progressively smaller benefits. For example, the first unit of food consumed by a hungry individual provides substantial utility by addressing immediate survival needs. In contrast, subsequent units provide diminishing satisfaction, eventually reaching a point where additional consumption may yield negligible or even negative utility.

From a behavioral perspective, diminishing marginal utility explains why individuals prioritize essential goods such as food, shelter, and safety before pursuing luxury or status-enhancing goods. This prioritisation is not arbitrary but reflects an underlying structure in how value is experienced. Basic needs generate steep utility gains at low levels of consumption, creating strong incentives to satisfy them first. Once these needs are met, individuals shift their focus toward higher-order preferences, such as comfort, convenience, and social recognition.

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The concept also plays a central role in explaining economic inequality and redistribution policies. Because additional income provides less marginal utility to wealthier individuals than to poorer individuals, transferring resources from high-income to low-income groups can increase overall societal welfare. This insight has influenced welfare economics and public policy, particularly in the design of progressive taxation systems.

Furthermore, diminishing marginal utility provides a micro-foundation for risk aversion. Since losses reduce utility more sharply at lower levels of wealth, individuals tend to avoid outcomes that could significantly decrease their consumption. This asymmetry between gains and losses means that the disutility associated with losing a given amount often exceeds the utility gained from acquiring the same amount. As a result, individuals prefer safer options even when riskier alternatives offer higher expected returns.

In everyday decision-making, this principle manifests in subtle but pervasive ways. Individuals may choose stable employment over higher-risk opportunities, prioritize savings over speculative investments, or value incremental improvements in well-being differently depending on their current circumstances. For instance, a small increase in income may significantly improve the quality of life for someone near subsistence level, while having little noticeable impact for someone already financially secure.

Additionally, diminishing marginal utility interacts with psychological adaptation. Over time, individuals tend to become accustomed to higher levels of consumption, reducing the perceived value of additional gains. This phenomenon, often referred to as the "hedonic treadmill," reinforces the idea that increases in material wealth do not translate linearly into increases in well-being.

Overall, the principle of diminishing marginal utility provides a crucial link between economic theory and real-world prioritisation. It explains not only how individuals allocate resources but also why certain needs consistently take precedence over others. By highlighting the nonlinear relationship between consumption and satisfaction, it offers a foundational insight into how value is structured and experienced in everyday life.

VI. 2.3 Opportunity Cost

Opportunity cost formalizes the trade-offs inherent in decision-making. Defined as the value of the next best alternative forgone, it ensures that all choices are evaluated relative to available alternatives rather than in isolation (Robbins, 1932). This concept shifts the focus of valuation from absolute gains to comparative outcomes, emphasizing that the true cost of any decision lies not in what is chosen, but in what must be given up.

At its core, opportunity cost arises from scarcity. Because individuals face constraints in time, resources, and cognitive capacity, they cannot pursue all possible options simultaneously. As a result, every decision implicitly involves a ranking of alternatives, where one option is selected at the expense of others. This makes prioritisation an unavoidable aspect of human behavior, rooted directly in the structure of limited resources.

The relevance of opportunity cost extends far beyond financial decision-making into all domains of everyday life. For example, time spent studying cannot be used for leisure, social interaction, or employment. Similarly, choosing to invest resources in one project limits the ability to allocate those same resources elsewhere. Even seemingly trivial daily decisions—such as how to spend an evening or which task to complete first—reflect implicit calculations of opportunity cost.

This concept also highlights the dynamic nature of valuation. The value of any given option depends not only on its intrinsic characteristics but also on the quality and availability of alternatives. For instance, a job offer may appear attractive in isolation, but its perceived value changes significantly when compared to other available opportunities. Thus, valuation is context-dependent, and priorities shift as the set of alternatives evolves.

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In behavioral terms, opportunity cost is not always explicitly recognized or accurately perceived. Individuals often focus on the direct benefits of a chosen option while underestimating or neglecting the value of forgone alternatives. This phenomenon, sometimes referred to as "opportunity cost neglect," can lead to suboptimal decisions, such as overcommitment of time or resources. For example, individuals may continue investing effort into a low-return activity simply because the forgone alternatives are not immediately salient.

Furthermore, opportunity cost plays a critical role in long-term planning and strategic decision-making. Career choices, educational investments, and financial planning all involve evaluating not only immediate outcomes but also the future opportunities that may be enabled or constrained by current decisions. In this sense, opportunity cost is closely linked to the concept of path dependence, where early choices influence the set of available options later in life.

Thus, value is inherently comparative. Prioritisation is not about absolute worth but relative advantage. Time allocation, career choice, and daily planning all reflect this logic. Individuals continuously navigate trade-offs, often implicitly, balancing competing demands in a way that reflects both current constraints and anticipated future possibilities.

Ultimately, opportunity cost provides a unifying framework for understanding decision-making across contexts. It reinforces the idea that rational prioritisation requires not only evaluating what is gained but also fully accounting for what is sacrificed. By making trade-offs explicit, this concept reveals the underlying structure of value in everyday life and highlights the central role of scarcity in shaping human behavior.

$$OC(a) = \max_{b \neq a} U(b).$$

Thus, value is inherently comparative. Prioritisation is not about absolute worth but relative advantage. Time allocation, career choice, and daily planning all reflect this logic.

VII. 2.4 Risk Aversion and Insurance Value

Risk aversion arises when individuals prefer certain outcomes over uncertain ones with equivalent expected value. In formal terms, this behavior emerges when the utility function is concave, such that:

$$u''(x) < 0$$

Under this condition, Jensen's inequality implies:

$$u(E[x]) > E[u(x)]$$

meaning that the utility derived from a certain outcome is greater than the expected utility of a risky alternative with the same mean payoff (Pratt, 1964). This provides a mathematical foundation for understanding why individuals tend to avoid risk even when it may be rational, in a purely expected value sense, to accept it.

Arrow (1971) extended this framework by demonstrating that individuals derive value not only from expected outcomes but also from the reduction of uncertainty itself. This insight gives rise to the concept of insurance

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value—the willingness of individuals to pay a premium in order to eliminate or reduce risk. In this context, insurance is not merely a financial instrument but a mechanism for stabilizing future outcomes and protecting against adverse states of the world.

In real-world contexts, risk aversion manifests in a wide range of behaviors. Individuals often prefer stable income streams over variable earnings, even when the latter may offer higher expected returns. This is evident in the widespread preference for salaried employment over entrepreneurial ventures, particularly among individuals facing financial constraints. Similarly, people invest in savings, insurance policies, and diversified portfolios as strategies to mitigate uncertainty and reduce exposure to potential losses.

The importance of risk aversion becomes especially pronounced in environments characterized by high uncertainty or vulnerability. For individuals with limited resources, the consequences of negative outcomes are disproportionately severe, making risk avoidance a rational and adaptive strategy. In such contexts, prioritisation shifts strongly toward stability and security, often at the expense of higher but uncertain gains. This aligns with the principle of diminishing marginal utility, where losses at lower levels of wealth have a greater impact on overall well-being.

From a behavioral perspective, risk aversion is closely related to loss aversion, as described in prospect theory. Individuals tend to weigh potential losses more heavily than equivalent gains, reinforcing a preference for certainty and downside protection. This asymmetry further strengthens the prioritisation of safety over opportunity, particularly in high-stakes decisions involving health, finance, or personal security.

Moreover, risk aversion interacts with time preferences and expectations about the future. When individuals perceive the future as uncertain or unstable, they are more likely to favor immediate and certain outcomes. Conversely, in more predictable environments, individuals may be more willing to accept risk in pursuit of long-term benefits. This highlights the context-dependent nature of valuation, where preferences are shaped not only by inherent attitudes toward risk but also by environmental conditions and perceived probabilities.

At a broader level, the concept of risk aversion helps explain the emergence of social and institutional structures designed to reduce uncertainty. Financial systems, insurance markets, welfare policies, and regulatory frameworks all serve to stabilize outcomes and protect individuals from extreme losses. These systems reflect a collective prioritisation of risk reduction, demonstrating that the value of stability extends beyond individual decision-making to societal organization.

In everyday life, the influence of risk aversion is pervasive. Decisions related to career choice, health behaviors, financial planning, and even social relationships often involve implicit trade-offs between risk and security. Individuals may choose predictable routines, maintain safety buffers, and avoid unfamiliar situations, all of which reflect an underlying preference for reducing uncertainty.

Ultimately, risk aversion highlights a fundamental aspect of human valuation: the importance of protecting against negative outcomes. While potential gains are valued, the avoidance of loss and instability often takes precedence. This prioritisation of safety and predictability underscores the broader theme that individuals seek not only to maximize outcomes but also to ensure continuity, resilience, and control in the face of uncertainty.

VIII. 2.5 Time Discounting

Intertemporal choice involves trade-offs between present and future outcomes. Exponential discounting models future utility as:

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$$U = \sum_{t=0}^{T} \delta^t u(x_t)$$

(Samuelson, 1937). However, empirical evidence suggests that individuals exhibit hyperbolic discounting, placing disproportionate weight on immediate outcomes (Laibson, 1997).

This deviation explains behaviors such as procrastination, impulsive consumption, and underinvestment in long-term goals. It also highlights the importance of psychological factors in shaping prioritisation.

IX. 2.6 Statistical Value of Life

The statistical value of life (VSL) provides a quantitative measure of how individuals value risk reductions. By observing trade-offs between wages and mortality risk, researchers estimate:

$$VSL = \frac{\Delta WTP}{\Delta p},$$

where (WTP) is willingness to pay for a small risk reduction (p).

(Viscusi & Aldy, 2003).

These estimates reveal that individuals place extremely high value on small reductions in mortality risk, indicating that survival and safety are central to human valuation.

X. 2.7 Behavioral Economics

Behavioral economics challenges the assumptions of rational choice theory by incorporating psychological insights. Prospect theory, for example, demonstrates that individuals evaluate outcomes relative to reference points and exhibit loss aversion (Kahneman & Tversky, 1979).

Additionally, cognitive biases such as framing effects, availability heuristics, and limited attention influence decision-making (Kahneman, 2011). These findings suggest that valuation is not purely rational but is shaped by perception, context, and cognitive constraints.

XI. 3. Biological and Evolutionary Perspectives

XII. 3.1 Fitness and Adaptive Value

From an evolutionary standpoint, behavior is shaped by natural selection to maximize reproductive success (Darwin, 1859). Traits and behavioral tendencies that increase the likelihood of survival and successful reproduction are more likely to persist across generations. As a result, many human preferences—such as those for food, safety, social belonging, and status—are not arbitrary but reflect adaptive strategies that enhanced survival in ancestral environments.

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These preferences can be understood as part of an evolved motivational system designed to guide organisms toward fitness-enhancing outcomes. For example, the strong preference for calorie-dense foods can be traced to environments where food scarcity was common, making high-energy resources particularly valuable. Similarly, aversion to physical danger and uncertainty reflects the high cost of injury or death in environments lacking modern medical care. Social cooperation and group belonging also carry significant adaptive value, as early humans relied heavily on collective action for hunting, protection, and resource sharing.

Importantly, these evolutionary influences operate largely at a subconscious level. Individuals do not explicitly aim to maximize reproductive fitness; instead, they respond to proximate psychological cues such as hunger, fear, desire for social approval, and pursuit of status. These proximate motivations act as intermediaries between environmental conditions and adaptive outcomes. In this sense, human decision-making is guided by mechanisms that were historically effective, even if they do not always produce optimal results in modern contexts.

This perspective suggests that economic utility functions can be interpreted as approximations of deeper biological objectives. While economic models treat utility as a flexible and abstract representation of preferences, evolutionary theory provides a grounding for why certain preferences exist and why they tend to be widely shared across individuals and cultures. For instance, the high valuation of safety and risk reduction observed in economic behavior aligns with the evolutionary imperative to avoid mortality.

However, there are also important mismatches between evolved preferences and contemporary environments. Many modern conditions differ significantly from those in which human cognitive and behavioral systems evolved. For example, the preference for immediate rewards, which may have been adaptive in uncertain environments, can lead to suboptimal outcomes in contexts that require long-term planning, such as education, health maintenance, and financial investment. Similarly, the tendency to overconsume calorie-rich foods can contribute to health problems in environments where such resources are abundant.

These mismatches highlight the limitations of purely biological explanations and underscore the importance of integrating insights from economics and psychology. While evolutionary theory explains the origins of preferences, it does not fully account for how individuals adapt those preferences in changing environments. Cultural norms, institutional structures, and individual learning processes all play a role in shaping how biological tendencies are expressed in practice.

Furthermore, evolutionary perspectives emphasize that prioritisation is fundamentally constrained by survival thresholds. Certain needs—such as access to food, shelter, and protection—must be satisfied before individuals can allocate resources to other goals. This hierarchical structure of needs is consistent with observed patterns in economic behavior, where basic necessities are prioritized over discretionary consumption.

In summary, the evolutionary framework provides a foundational explanation for why humans value certain outcomes more than others. It reveals that valuation is not purely subjective or arbitrary but is rooted in adaptive processes that have shaped human behavior over long periods of time. By linking economic utility to biological fitness, this perspective deepens our understanding of prioritisation and highlights the underlying continuity between human decision-making and broader patterns of behavior observed in the natural world.

XIII. 3.2 Survival Analysis and Hazard Reduction

Survival analysis models the probability of surviving over time as a function of hazard rates. Even small reductions in risk can lead to significant increases in expected lifespan.

This framework reinforces the idea that avoiding catastrophic outcomes is a primary driver of prioritisation. Individuals tend to prioritize actions that reduce risk, even at the expense of potential gains.

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XIV. 3.3 Optimal Foraging Theory

Optimal foraging theory models organisms as maximizing energy efficiency in resource acquisition (MacArthur & Pianka, 1966; Charnov, 1976). This framework predicts that organisms will choose strategies that provide the highest energy return for the lowest effort.

In human contexts, this translates to a preference for convenience and efficiency, often at the expense of optimal long-term outcomes.

XV. 3.4 Life History Theory

Life history theory examines how organisms allocate resources across growth, reproduction, and survival. Environmental conditions play a crucial role in shaping these strategies. In unpredictable environments, individuals prioritize immediate rewards, while stable environments encourage long-term planning (Promislow & Harvey, 1990).

This theory explains variations in risk-taking behavior and time preferences across different socioeconomic contexts.

XVI. 3.5 Inclusive Fitness and Social Bonds

Hamilton's (1964) concept of inclusive fitness explains why individuals invest in relationships and cooperative behavior. Helping others, particularly close kin, can increase overall genetic success.

This provides a biological basis for the importance of social relationships, which are consistently valued across cultures.

XVII. 4. Psychological and Cognitive Mechanisms

XVIII. 4.1 Motivation and Psychological Needs

Self-determination theory identifies autonomy, competence, and relatedness as fundamental psychological needs (Deci & Ryan, 1985). These needs drive intrinsic motivation and influence how individuals assign value to activities.

XIX. 4.2 Reinforcement Learning

Reinforcement learning models describe how individuals update their expectations based on rewards and feedback (Sutton & Barto, 2018). This adaptive process allows individuals to refine their priorities over time.

XX. 4.3 Attention Constraints

Human cognition is limited, meaning individuals cannot evaluate all possible options. As a result, attention acts as a filter, determining which alternatives are considered. Salient or emotionally charged options often receive disproportionate weight.

XXI. 5. Cross-Disciplinary Convergence: What People Value

While each discipline offers unique insights, their integration reveals a coherent picture of human valuation. Economic models emphasize rational trade-offs, biological models highlight survival constraints, and psychological models explain deviations from rationality.

A key convergence across these fields is the prioritisation of safety and stability. Risk reduction appears consistently as a dominant factor, whether framed as utility maximization, hazard reduction, or loss aversion.

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Another common theme is the importance of social relationships. Both evolutionary theory and psychological research demonstrate that social bonds are critical for survival and well-being.

Finally, all frameworks recognize the role of constraints—whether resource limitations, environmental conditions, or cognitive capacity—in shaping decision-making.

XXII. 6. Conclusion

Valuation and prioritisation are central to human behavior, arising from the need to manage scarcity, uncertainty, and risk. While different disciplines provide distinct explanations, they converge on a shared understanding of what people value.

Individuals prioritize outcomes that enhance survival, reduce uncertainty, strengthen social connections, and provide a sense of control and meaning. Material goods serve primarily as tools for achieving these objectives rather than ends in themselves.

This interdisciplinary perspective provides a more comprehensive understanding of human decision-making and highlights the importance of integrating insights across fields.

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