Niger Delta Journal of Philosophy & African Values
Department of Philosophy, Niger Delta University, Nigeria
E-ISSN: 3141-1800

The Problem with Quantification: An Existential Perspective on the Limits of Numerical Representation

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Volume 1, Issue 1, 2026

Abstract

Quantification has driven the advancement of civilisation and facilitated significant progress in science, engineering, and the humanities. Despite its widespread success, quantification now presents a philosophical challenge: can the use of numbers or measurements to describe phenomena adequately address the complexity of human existence? Existential critique maintains that quantification, while effective for observable phenomena, does not capture qualities such as authenticity, consciousness, freedom, and intrinsic value. These dimensions are rooted in individual and subjective experience. Efforts to quantify these aspects result in a category error, reducing unique human experiences to objects, distorting meaning, and fostering alienation. Furthermore, quantification reduces ethical responsibility to numerical terms, thereby diminishing the moral and personal dimensions of experience. This paper draws on existentialist thinkers (Sartre, Heidegger, Camus) and phenomenologists (Husserl, Merleau-Ponty) to propose an ethics of quantification that explicitly recognises the limits of measurement and prioritises existential understanding. The strengths and limitations of quantification, including its contributions to social progress and science, are critically examined. Ultimately, recognising the boundaries of quantification is argued to be essential for preserving meaningful human understanding.

Keywords: Quantification, Human Experience, Authenticity, Existentialism, Phenomenology, Measurement

Introduction

Enumeration and measurement are fundamental to human cognition. From an early age, individuals count, compare, rank, and assess. The impulse to quantify shapes cultures and influences perceptions of self, others, and the value attributed to life. This analysis begins with a central point: not everything significant can be quantified, and not all that is quantified possesses significance. The primary question is not whether quantification is useful (its utility is evident) but whether quantification can fully capture human existence. The thesis advanced here is that it cannot capture the intricacies of the human existential experience. Applying quantification to existential issues such as authenticity, consciousness, freedom, and intrinsic value constitutes a category error by imposing objective reasoning on a fundamentally subjective domain. This limitation is not merely technical but intrinsic to quantification itself, which requires commensurability and reduces diverse phenomena to a single scale. Essential aspects of human life cannot be reduced in this manner. No numerical value can convey the gravity of a moral choice, the depth of grief, or the meaning of a life. Assigning numbers to these experiences substitutes representation for reality and results in distortion.

This paper offers three original contributions beyond prior surveys. First, it treats quantifying human experience as a philosophical category error based on the subject-object divide in existential phenomenology. Second, it identifies three harms: alienation from reality, suppression of subjective meaning, and displacement of ethical responsibility. Third, it proposes an existential ethics of quantification and a framework for deciding when to use numbers and when to prefer qualitative understanding.

Conceptual Framework

Quantification

Quantification uses numbers and mathematics to represent objects, properties, and relations such as measuring, counting, ranking, and calculating. It is not just a technical tool; rather, quantification is a way of knowing. By highlighting some features of phenomena and excluding others, quantification directs attention. To quantify is to make something measurable, select a dimension for comparison, and treat that dimension as significant. This influence of quantification and its effect on what is understood, not just what is recorded, is central to the critique this paper develops. In logic and linguistics, quantification has a technical meaning. Logical quantifiers specify the range of objects a predicate applies to. Universal quantification ($\forall$) means a predicate applies to all objects in a domain. Existential quantification ($\exists$) means it applies to at least one object (Copi et al. 2013). These formal tools support mathematical reasoning and language analysis, allowing precise statements about scope and generality. Quine's idea that 'to be is to be the value of a bound variable' shows quantification is about logic and about how theories define what is real (Quine 2019).

This paper focuses on quantification more broadly by treating quantification as a cultural and epistemological method that makes numbers the primary means of understanding human

experience. Whitehead calls this 'misplaced concreteness'—the tendency to treat abstractions as reality (Whitehead 1978). When a student becomes a grade point average, a patient a risk score, or a worker a productivity index, quantification replaces what it describes. This substitution or representation replacement of reality creates the issues discussed here. Quantification is powerful within its proper limits, especially within the domains of quantitative research. Natural sciences, engineering, economics, and policy rely on careful measurement. Their successes show what quantification can do when things are genuinely comparable and when they fit a shared scale without losing what matters. This paper asks if human existence, with its subjectivity, freedom, and meaning, meets this condition. Trying to quantify human existence is a category error because it wrongly applies a tool that fits one kind of thing to a very different one.

Existentialism

Existentialism as a philosophical movement does not have a single doctrine, but it insists that existence comes before essence. Some traditions begin with definitions of human nature based on reason, divine creation, or biology. Existentialism rejects this. It claims humans are not born with a set nature. Existence comes first: we are born without purpose and through our choices and actions, we create meaning and identity (Sartre 2021). This shift affects how we view knowledge, ethics, and systems that claim to show what a human is, including quantification. Sartre is direct about this insight when he opines that there is no pre-given or pre-determined human nature. Human beings are 'condemned to be free' and must take responsibility for their choices without outside validation (Sartre 2021). This freedom feels like anguish, not liberation—the anxiety of acting without a manual or excuse. The temptation to escape this through bad faith is a key existential failure for Sartre (Sartre 2021).

Heidegger studies existence by analysing *Dasein*, the being who questions its own being. For him, authenticity means *Dasein* accepts its predicament, faces its limits, and avoids losing itself in public conformity (Heidegger 2010). Living authentically is not private or easy; it requires constant effort and ongoing awareness of one's choices. Any external system, such as classification, that claims to define a person, is resisted by authenticity. Merleau-Ponty extends the existentialist analysis into the domain of perception and embodiment. His central claim is that consciousness is not a detached, self-transparent observer of the world but is always already embedded in a body, a situation, and a field of practical engagement (Merleau-Ponty 2002). We do not first have experiences and then assign them meaning; meaning arises from the lived encounter itself, prior to any reflective or theoretical mediation. This has direct methodological consequences: any account of human experience that begins by abstracting from its embodied, situated, pre-reflective character—as quantification does—has already distorted what it set out to understand.

A further dimension is contributed by Whitehead's process philosophy, which, while not strictly existentialist, shares the movement's insistence on existence as 'dynamic becoming' rather than static being. Whitehead describes reality as constituted by processes of 'becoming, perishing, and the objective immortalities of those things which jointly constitute stubborn fact'

(Whitehead 1978). His concept of prehension—the activity by which an actual entity integrates elements of its environment into its concrete being—resonates with the existentialist emphasis on the self as perpetually constituted through engagement with the world, rather than as a fixed entity whose properties can be recorded and compared. Taken together, these thinkers converge on a picture of human existence that is irreducibly first-personal, dynamic, and constituted through freedom and engagement rather than given as a set of stable, measurable properties. This picture generates the existential critique of quantification: not as an external objection from another discipline, but as a consequence of taking seriously what it means to be the kind of being we are.

Theoretical Framework

Historical Philosophical Perspectives on Quantification

Tracing the historical philosophical perspectives on quantification is as challenging as finding a consensus on the definition of philosophy. While it is tempting to consider the historical perspectives of quantification from Thales, Grey would argue that the historical shift from qualitative to quantitative ontology should be part of a broader cultural transformation, as discussed in detail by Ferreirós and Grey (2006), who provide an extensive analysis of this transformation in their seminal work. If this is the case, then quantification predates the recorded history of Western philosophy. However, Grey asserts that understanding the history of quantification entails adopting a modernist framework. He observes that the definition of modernism is an ongoing debate, but identifies some features that distinguish modernism from other periods in its emergence. These features include:

- A rejection of traditional norms and pursuit of radical innovation in both content and methods (Ferreirós & Grey 2006).
- An emphasis on abstraction, autonomy, and the creation of self-contained systems of thought (Ferreirós & Grey 2006).
- A heightened awareness of the role of the subject (the artist or mathematician) in shaping the meaning and interpretation of their creations (Ferreirós & Grey 2006).

These characteristics provide insight into how modernism fostered a shift toward quantification as a dominant intellectual approach. To establish a philosophical grounding for our understanding of the development of quantification, we must consider the origins of intellectual thought. A significant but often overlooked figure in the discourse on quantification is Pythagoras. The problem with Pythagoras is that none of his writings survived, forcing reliance on secondary accounts of his scholarship. These accounts suggest that Pythagoras applied himself to mathematics, considering its principles to be the very principles of the universe, as documented in detail by Riedweg and Rendall (2005). This emphasis on mathematics illustrates an early departure from a purely qualitative to a quantitative view of reality.

Pythagoras's contributions provide an essential link between the early philosophical pursuit of understanding the universe and the broader cultural transformation described by Grey (Ferreirós & Grey 2006). His approach laid the foundation for the later development of philosophical and scientific thought, in which quantification became a central theme. Aristotle acknowledged the importance of mathematics, but his primary focus was on the qualitative description and analysis of the world. His approach was to probe the essence of things through their inherent qualities rather than their measurable quantities (Aristotle 1984). Following Aristotle, medieval Europe continued the logico-mathematical philosophical approach that emphasised the relationships between concepts rather than quantification. However, the invention of the mechanical clock in the late 1300s introduced the "clockwork universe," a concept that epitomised reliance on predictable and uniform laws governing the universe. Roudaut (2022) explores this transformation, emphasising its profound impact on the quantifiable perception of reality. The division of time into uniform measurable units inspired a quantifiable perception of reality. The medieval period saw an increasing interest in applying mathematical principles to describe the world, using quantitative qualities such as light, motion, heat, virtue, and grace.

The Renaissance also showed interest in explaining phenomena through quantification, with renewed attention to the concepts of space and time. For example, Thomas Bradwardine (1300–1349) advocated the use of precise numerical representations in mathematics across various fields of study. Johan Huizinga (1872–1945) identified the influence of quantification in art, music, and literature by using geometric principles to create measurable visual space. In music, the use of Scholastic logic and definitions illustrated the growing use of quantitative methods to arrange and organise sound. In art, the works of Piero della Francesca (1415–1492), especially *Flagellation*, embody this principle and could be interpreted as a way of measuring physical space (Roudaut 2022).

Roudaut (2022) identifies a trend in mathematical ontology from the 19th century: a shift from qualitative descriptions of phenomena to a formalised, abstract understanding influenced by set theory, axiomatic thinking, and Modernism based on logical relations. Richard Dedekind (1861–1916) illustrated this shift by rigorously constructing mathematical objects and establishing their existence. For instance, Dedekind's work on the real numbers via cuts, later called "Dedekind cuts," exemplifies his commitment to rigorous logical methods. This approach allowed him to define irrational numbers as precise mathematical objects, solidifying the structure of the number line and ensuring the consistency of mathematical analysis (Roudaut 2022). His focus on structure and formal systems paved the way for mathematicians to explore more abstract and general concepts. This shift from intuitive, qualitative justification enabled mathematics to overcome the limitations of concrete representations (Roudaut 2022).

Epistemological Perspectives

Epistemological perspectives on quantification examine how the use of numbers and measurements affects our understanding of knowledge. Quantification, through numbering and measurement, plays a vital role in knowledge inquiry. However, understanding knowledge through quantification is challenging due to the complexity of the process and the various approaches

to its inquiry. As we examine knowledge through the lens of quantification, we encounter challenges such as the oversimplification of lived experience using the epistemic paradigm of quantification. Existential phenomenology critiques this oversimplification, arguing that reducing the richness of lived experience to mere numbers distorts its essence. For instance, Husserl's reaction against the "natural attitude," common to both science and everyday understanding, challenges the quantitative approach, emphasising the subject's cognitive experience (Dreyfus & Wrathall 2006) instead.

The desire to know drives human inquiry, but the methods of knowledge acquisition remain contentious. Plato's analysis of knowledge as justified true belief laid the foundation for discussions on the necessary and sufficient conditions for knowledge (Audi 2002; Gendler & Hawthorne 2006). During the medieval period, philosophers sought to quantify qualities, attempting to describe the world numerically. This ambition continued into the modern era, influencing thinkers like Descartes and Locke, who relied on abstract concepts such as "awareness" and "causation." Whitehead's critique of this approach, highlighting the fallacy of "misplaced concreteness," underscores the limitations of relying solely on quantification (Whitehead 1978).

Modern epistemology introduced a distinction between primary and secondary qualities, further complicating the quantification of these qualities. Primary qualities, such as shape and number, are inherent to objects, while secondary qualities, such as taste and colour, are subjective. Kant's argument that experience is structured by mental categories such as space and time raises the question: Is quantification imposed by the subject or inherent in the object? Kant leaned toward the former, suggesting that quantification reflects the mental structuring of reality (Guyer & Wood 2021). Riemann's exploration of alternative geometries challenged Kant's notion of necessary truths, demonstrating that multiple frameworks could yield valid interpretations of reality. This, in turn, complicates the relationship between quantification and truth (Ferreirós & Grey 2006).

Frege's foundational work in logic and arithmetic sought to establish a rigorous mathematical system. However, Russell's paradox revealed inherent contradictions in set theory, exposing the limitations of constructing a secure logical foundation for mathematical knowledge (Shanker 1996). Existential phenomenology critiques quantification for its limitations in understanding human experience. Phenomenology, particularly in Husserl's work, emphasises that consciousness actively shapes understanding, revealing that quantification is not a neutral, objective process but a complex act of human perception. This approach seeks a qualitative exploration of experience, moving beyond numerical representation (Dreyfus & Wrathall 2006). Merleau-Ponty's perspective on embodied perception further complicates the epistemological discussion. He argues that bodily experience shapes how we understand and measure the world, challenging simplistic distinctions between perception, conception, and quantification (Merleau-Ponty 2002). Hausdorff's concept of "considered empiricism" also critiques traditional views of mathematics, asserting that mathematical frameworks involve hypothetical and conceptual choices, shaped by human perspectives (Ferreirós & Grey 2006). These critiques collectively highlight that, while powerful, quantification is influenced by subjective decisions and cannot fully capture the richness of lived experience.

Ongoing philosophical debates challenge simplistic views of quantification and concep-

tualisation. The discussion between nominalism and realism explores whether concepts are linguistic constructs or reflect inherent properties of reality (Dreyfus & Wrathall 2006). Questions of justification further complicate these debates, as strong numerical evidence remains provisional. Contemporary thinkers emphasise the need to examine the assumptions underlying quantification and its limitations in addressing complex phenomena. This perspective invites a more complex view, encouraging exploration beyond the confines of numerical representation (Merleau-Ponty 2002). The epistemological perspectives on quantification offer a rich and complex landscape for understanding the world. The historical development of these ideas, from Plato's foundational contributions to contemporary critiques, underscores the enduring challenges of relating numbers and measurements to the nature of reality.

Phenomenological Approaches to Measurement

The subject-object relation has been a focal point of epistemological discourse and is reimagined in phenomenology. Phenomenology offers a different perspective on this duality, which has become a framework for knowledge inquiry. Phenomenology transcends this duality and the mere quantification of phenomena, emphasising the lived experience (Dreyfus & Wrathall 2006; Merleau-Ponty 2002). Following the traditional subject-object dichotomy, we can consider the meaningful relationship between the measurer and the measured, illustrating how embodied experience and active consciousness shape our understanding of the world and how we define it. Existentialism and phenomenology both abandon this dualism and reductionism in favour of the richness of the lived experience. A phenomenological approach to a house, for example, would focus on its lived meaning for its inhabitants, the feeling of home, rather than simply its longitude and latitude. While not dismissing the value of quantification in certain contexts, phenomenology cautions against mistaking the map for the territory, the measurement for the phenomenon itself.

This is further established in Husserl's phenomenology through the notion of intentionality, which is the aboutness or directedness of consciousness towards objects (Dreyfus & Wrathall 2006; Husserl 1999). This directedness implies that our acts of measurement are not simply passive reception of data but active engagement with the world, in which we impose meaning and structure through our chosen methods and categories. The very act of quantifying, therefore, is a constitutive one, shaping our understanding of the phenomenon in a particular way (Dreyfus & Wrathall 2006).

However, Merleau-Ponty emphasises the role of the body in our engagement with the world, meaning measurement is not a detached activity or process. It emanates from our embodied interactions with the world, in which our senses, movements, and pre-reflective understanding shape our perceptions and measurements (Merleau-Ponty 2002). Therefore, our "bodily grasp" of the world underlies our ability to quantify and conceptualise it. For example, the phenomenological analyses of perception highlight how our lived experience of space and time differs from the abstract, geometrical conceptions found in physics. We do not perceive the world as a collection of points and distances but rather as a field of meaningful possibilities for action and interaction. Our embodied movements, our sense of directionality, and our tempo-

ral experiences of past, present, and future shape how we measure and understand spatial and temporal phenomena (Dreyfus & Wrathall 2006).

For phenomenology, understanding spatial and temporal phenomena is context-sensitive. This implies that the significance and meaning of measurement depend on the numerical value, the individual's perspective, the measurement's purpose, and the specific context or situation. This challenges the idea of universally applicable, objective measurements, highlighting the need to consider the subjective and intersubjective dimensions of quantification (Dreyfus & Wrathall 2006). Phenomenology emphasises the limitations of purely quantitative approaches, especially in knowledge inquiry. However, it does not reject the value of measurement but calls for a better understanding of the overlap of qualitative and quantitative aspects of knowledge. Therefore, avoiding reductionism requires incorporating the lived experience in our analysis, making qualitative data more meaningful and insightful. Phenomenology encourages a critical and reflective approach to measurement. This approach encourages us to ask "How much?" and "What does it mean?" in our inquiries to acquire a deeper, holistic understanding of the object of inquiry (Dreyfus & Wrathall 2006; Husserl 1999).

Existential Critique of Quantification

The existential critique of quantification does not reject mathematics. Instead, it claims that quantification—being understood as the application of mathematical measurement to phenomena—has limits when used on human life, a domain it was not meant for. This section examines the claim in three ways: the category-error argument, which concerns the misapplication of categories; the authenticity argument, which questions whether quantification captures genuine human experience; and the enframing argument, which addresses how quantification shapes our understanding of the world.

The Category Error Argument

Quantification is a way to make things comparable; it turns different things into numbers that can be compared, added, or changed. This works well in the natural world, where things can be separated from their context without losing meaning. For example, a stone's mass is the same whether it is a doorstop or a weapon. Water's temperature does not change with its use. But human existence is different. The meaning of a person's action or life depends on its context and the mind that experiences it. Sartre says 'existence precedes essence', so humans do not have fixed traits. They are subjects who form their nature through free choice and action (Sartre 2021). Assigning numbers to individuals—such as a well-being index or risk score—does not record a real quality but rather forces analysis on what cannot be reduced.

Gilbert Ryle's idea of a category mistake comes from another branch of philosophy, but it fits this problem (Ryle 1949). It is a category mistake to ask where the 'university' is after seeing all its buildings. In the same way, it is a mistake to ask for the number representing a person's dignity, freedom, or authenticity. These are not missed numbers; they are not numbers at all. Whitehead calls it the 'fallacy of misplaced concreteness': taking an abstraction as reality

(Whitehead 1978). This applies here. When a student becomes a GPA, or a patient becomes a risk score, it looks precise—but this just replaces an idea for a real, complex human life.

The Authenticity Argument

For Sartre and Heidegger, authenticity means honestly facing existence. 'Authenticity' here is knowing your situation and responding with sincerity, not just following outside expectations. Such a person owns their freedom, takes responsibility, and refuses to define themselves by labels or convention (Dreyfus & Wrathall 2006). For Sartre, 'bad faith' is the denial of this freedom. It is lying to oneself: acting as a fixed thing, not an ongoing project (Sartre 2021). Quantification, when applied to people, is a tool of bad faith. Defining someone by numbers turns them into an object. It freezes their existence into fixed traits and ignores their openness. Worse, when people believe these numbers define them, they reduce themselves. Sartre would call this bad faith a situation when a conscious being accepts a static identity, even though they are always more than any label (Sartre 2021). This is not just a theory. Research shows how metric-driven environments create this effect. Muller (2018) documents how performance metrics in schools, healthcare, and government distort priorities and reduce motivation. He calls this 'metric fixation': replacing real goals with what can be measured. The existential view is that metric fixation is more than a management problem. It is bad faith built into institutions.

The Enframing Argument

Heidegger's look at modern technology offers another depth of the existential critique. In *The Question Concerning Technology*, Heidegger says modern technology is more than tools; it is a way of seeing the world. This way of seeing is called *Gestell*, or 'enframing' (Heidegger 1977). Enframing makes everything a 'standing reserve' (*Bestand*)—a resource to be ordered and used. A river becomes a source of power; a forest becomes timber. Quantification is one of the primary instruments of enframing. When human beings and their experiences are subjected to quantification, they are revealed as standing reserves—as resources to be measured, compared, optimised, and managed. The student's education becomes human capital; the patient's health becomes a cost-benefit calculation; the worker's life becomes a unit of productivity. Heidegger's worry is that enframing does not merely distort our understanding of things; it forecloses other, richer modes of disclosure. When the quantitative frame becomes dominant, the possibility of encountering a human being as a subject—or as someone whose existence has inherent meaning that exceeds any measure—is systematically suppressed (Heidegger 1977; Pietersma 2000). This is not technological determinism. Heidegger does not argue that quantification is inherently evil, but that its unreflective dominance constitutes a danger that manifests when human beings lose the capacity to encounter themselves and one another outside the frame of measurability. The existential critique, in this register, is a call for what Heidegger calls *Gelassenheit*—a 'releasement' from the compulsion to enframe, a willingness to let things be encountered in their own terms (Heidegger 1966).

Synthesis

The three arguments converge on a single conclusion: quantification, when applied to human existence, does not merely fail to capture something—it actively distorts the phenomena it claims to represent. It generates alienation by substituting representations for lived realities. It facilitates bad faith by enabling individuals and institutions to evade genuine engagement. And it participates in a broader technological enframing that forecloses non-quantitative modes of understanding. The existential critique does not require abandoning quantification. It requires its philosophical demarcation: a clear-eyed understanding of where numbers illuminate and where they obscure, grounded in a prior commitment to the irreducible complexity of human existence.

The Transition from Qualitative to Quantitative Paradigms: An Ontological Shift

The historical movement traced from the qualitative ontologies of Aristotle and the medieval scholastics to the formalised, mathematical frameworks of the modern era is typically narrated as a story of intellectual progress: the gradual replacement of imprecise, subjective descriptions with rigorous, objective measurement. This narrative is not false, but it is incomplete. What the historical record also reveals, when read through the lens of existential phenomenology, is an ontological shift: a transformation not merely in how phenomena were described but in what kind of thing the world was taken fundamentally to be. The consequences of that shift for epistemology, for ethics, and for our understanding of human existence are still being resolved. Aristotle's natural philosophy was oriented by the question of form: what makes a thing the kind of thing it is, what distinguishes it qualitatively from other kinds of things, what its proper function and end might be (Aristotle 1984). Measurement, for Aristotle, was subordinate to this qualitative inquiry: quantities described features of substances but did not constitute them. The medieval scholastic tradition extended this framework, developing the concept of qualitative intensity—the idea that properties like heat, charity, or grace could be more or less fully realised without being reduced to a linear scale—as a way of thinking about degrees of being that preserved the primacy of the qualitative (Roudaut 2022).

The decisive break came not from a single argument but from a convergence of practical and intellectual developments. The mechanical clock, as Roudaut (2022) demonstrates, was not merely a tool for measuring time; it introduced a model of the universe as a self-regulating mechanism governed by uniform, quantifiable laws. The commerce of the Renaissance required precise calculation and record-keeping, creating institutional demand for numerical literacy. The works of artists like Piero della Francesca and thinkers like Thomas Bradwardine applied geometric and numerical principles to domains such as visual space and the analysis of motion that had previously been understood qualitatively (Roudaut 2022). The cumulative effect was a transformation in the dominant ontological assumption: from a world of qualitative forms and purposes to a world of quantitative relations and magnitudes.

The philosophical consolidation of this shift is visible in the distinction between primary

and secondary qualities that runs from Galileo through Locke to Kant. Primary qualities such as extension, figure, number, and motion are held to be genuinely in the world; secondary qualities such as colour, taste, and sound are merely subjective responses to primary ones (Guyer & Wood 2021). This distinction encodes a hierarchy in which the quantifiable is identified with the real and the objective, and the qualitative is demoted to the merely apparent and subjective. It is a short step from this hierarchy to the assumption—increasingly dominant in modern social and human sciences—that knowledge of human beings must take a quantitative form.

It is at this point that the existential critique becomes most incisive. The shift to quantitative paradigms did not merely change the methods of inquiry; it changed the implicit model of what a human being is. If the real is the measurable, and the measurable is the primary, then the aspects of human existence that resist quantification—such as freedom, authenticity, moral seriousness, the first-person texture of lived experience—are implicitly relegated to secondary status: subjective, merely apparent, not fully real. Heidegger's concept of enframing names this tendency at the level of technological civilisation as a whole: the disclosure of everything that exists, including persons, as standing reserve—as resource available for measurement, ordering, and optimisation (Heidegger 1977).

This is not a counsel of despair about modernity. As Crosby (1996) rightly notes, the quantitative revolution enabled achievements in science, in medicine, in the organisation of social life that are neither trivial nor reversible. The existential response is not to reverse the historical transition but to understand it philosophically: to see it as a particular ontological orientation with a specific domain of validity and a specific set of oversights, rather than as the natural end of intellectual progress. Phenomenology and existentialism emerged, in part, as responses to precisely this cultural situation—attempting to recover and articulate the qualitative dimensions of human experience that the dominant quantitative paradigm had rendered invisible. The transition from qualitative to quantitative paradigms is therefore not merely a chapter in the history of ideas but an ongoing challenge to which this paper contributes.

Counterarguments and Responses

An existential critique of quantification faces several serious objections. Three deserve sustained attention: the emancipatory argument, the scientific progress argument, and the pragmatic argument. Each has genuine force; none, it will be argued, is ultimately decisive against the existential critique, though each serves to refine and limit its scope.

The Emancipatory Argument

The most powerful objection to the existential critique comes not from defenders of technocracy but from advocates for justice. Quantification, this argument runs, has been an indispensable tool of social emancipation. Before governments could challenge marginalisation, they needed data showing how groups were affected. Before environmental advocates could address the unequal burden of pollution, they needed quantitative evidence of its distribution. Before labour movements could demand fair wages, they needed aggregate statistics on income inequality. To critique quantification is, on this view, to pull the analytical rug from under those

who most need it (Desrosières 2016; Espeland & Stevens 2008). This argument deserves to be taken seriously, and it succeeds in establishing something important: the existential critique of quantification cannot be generalised into a wholesale rejection of numerical methods. Quantification has genuinely exposed injustices that would otherwise have remained invisible, and this is a significant moral achievement.

However, the argument does not dissolve the existential critique but rather refines its scope. The emancipatory uses of quantification operate primarily at the level of social structures and systemic patterns, not at the level of individual existence. Documenting that minority groups are denied jobs at twice the rate of majority groups is a quantitative claim about a social pattern; it does not require reducing any individual person to a number. The existential critique targets precisely the latter move: assigning numerical values to individual human lives, experiences, and worth. These are distinct operations, and the legitimacy of the former does not entail that of the latter. Moreover, even in emancipatory contexts, quantification is a means, not an end; it serves the non-quantifiable goal of human dignity, which is itself resistant to numerical expression.

The Scientific Progress Argument

A second objection holds that quantification has been the engine of humanity's greatest cognitive achievements. The scientific revolution, the development of medicine, the understanding of climate systems, and the mapping of the genome all depend on rigorous quantitative methods. If quantification is as limited as the existential critique suggests, how do we account for these extraordinary successes? The existential response is to grant the point entirely within its proper domain. No one in the existential tradition denies that quantification is the appropriate method for investigating the natural world. Heidegger's critique of modern science is not that it is wrong about nature, but that its mode of disclosure forecloses other modes of encounter with the world (Heidegger 1977). Merleau-Ponty, similarly, does not dispute the findings of physics; he argues that they presuppose a lived, embodied engagement with the world that physics itself cannot capture (Merleau-Ponty 2002). The scientific progress argument, therefore, establishes the power of quantification in its proper domain while leaving untouched the question of whether that domain extends to human existence. Indeed, the natural sciences themselves increasingly recognise the limits of purely quantitative methods at the boundaries of their own fields. The interpretation of quantum mechanics, the study of consciousness in neuroscience, and debates about the nature of scientific explanation all involve irreducibly qualitative philosophical questions that cannot be resolved by collecting more data (Dreyfus & Wrathall 2006). The existential critique is thus not anti-science; it is a contribution to the ongoing philosophical reflection on what science can and cannot tell us.

The Pragmatic Argument

A third objection is frankly pragmatic: even if quantification is philosophically inadequate as a representation of human existence, it may be practically indispensable. Policymakers cannot govern without metrics; clinicians cannot assess patients without standardised measures; ed-

ucators cannot track progress without assessments. The alternative—governing by qualitative judgment alone—opens the door to arbitrariness, bias, and abuse of power. Numbers, however imperfect, constrain discretion and create accountability (Muller 2018; Saltelli 2020). The existential critique does not deny that metrics can constrain bias or that accountability requires some form of measurability. What it challenges is the assumption that the practical necessity of metrics in governance entails their philosophical adequacy as representations of human reality. These are distinct claims. A metric can be practically useful as a proxy while philosophically misleading as a representation; the conflation of the two is itself one of the primary dangers the existential critique identifies.

Furthermore, the pragmatic argument tends to naturalise a particular institutional arrangement as if it were inevitable. Many of the contexts in which quantification feels indispensable—such as standardised testing in education, productivity metrics in workplaces, and well-being indices in policy—are themselves historically contingent creations, not logical necessities. The existential recommendation is not to abolish all metrics, but to remain perpetually critical of the representational claims made on their behalf, resist their extension beyond their proper scope, and preserve space for qualitative judgment, professional discretion, and the recognition of what cannot be measured (Muller 2018).

Critiques and Challenges of Quantification

Previous sections have established that quantifying human existence constitutes a category error, distorting rather than accurately describing lived reality. Building on this foundation, this section demonstrates how this error produces harm across four domains: ethical, epistemological, existential, and socio-cultural. Rather than merely acknowledging the limits of quantification, it specifies the mechanisms by which these limits generate harm in each area.

Ethical Implications

The ethical critique starts from a basic point: in metric-driven systems, what cannot be measured cannot be optimised, and so tends to be ignored. Transitioning from this foundational concern, the belief that numerical metrics represent the world and its values—the "attitude of quantification"—is not ethically neutral (Whitehead 1978). Applying this attitude to ethics makes a category error, as moral issues are irreducibly qualitative, not purely measurable. G. E. Moore's analysis of the concept of "good" clarifies this error. Through his open question argument, Moore demonstrated that "good" is a simple, unanalysable property that cannot be reduced to natural or measurable terms (Moore 1993). His analogy with the colour yellow is illustrative: just as yellowness cannot be decomposed into more basic properties, goodness cannot be translated into a formula or score. Attempts to do so, as in utilitarian calculus when moral value is reduced to units of welfare, do not measure a pre-existing property. Instead, they substitute a quantitative proxy for a moral reality that resists quantification (Moore 1993). This constitutes the naturalistic fallacy in quantitative terms.

A. J. Ayer and Charles Stevenson reached a related but distinct conclusion through their emotivist theories. Recognising that moral statements could not be verified empirically, Ayer argued that they express emotional attitudes rather than factual claims. Thus, they fall outside the domain of truth altogether (Ayer 2001). Stevenson extended this analysis, emphasising the persuasive function of moral language (Stevenson 1969). Both thinkers correctly identified the inadequacy of applying quantitative and empirical methods to ethics. However, their response of abandoning moral knowledge entirely went further than the existential critique requires. The existential position is not that ethics is merely emotive. Instead, it holds that its proper subject matter—such as freedom, responsibility, dignity, authenticity—is genuinely cognitive yet irreducibly qualitative.

Quantifying ethics produces tangible consequences. When moral decisions depend on numerical tools such as cost-benefit analyses or social impact metrics, the complexities of ethical dilemmas are reduced to simplified calculations (Mitcham 2005). This process shifts moral responsibility from decision-makers to the metrics themselves. Blackburn refers to this as ethical evasion, where calculation supplants conscience (Blackburn 2009). Once decisions are based on metrics, those who design or use them can claim adherence to objective procedures; a transfer of responsibility is inherent in the process. The existential response is clear: Sartre's analysis of bad faith is relevant in that quantification used to avoid ethical judgment is a refusal of freedom (Sartre 2021). Ethics for human existence must be rooted in lived experience, freedom, and responsibility—things that metrics can only approximate. Quantitative tools may help ethical reasoning, but must remain secondary to personal moral judgment (Dreyfus & Wrathall 2006).

Epistemological Implications

Having considered the ethical dimension, the epistemological critique interrogates the scope and limits of quantification as a means of knowing. Phenomenology contends that quantification presupposes a neutral, external observer; however, Husserl and Merleau-Ponty argue that this perspective is inaccurate. All knowledge, including quantitative knowledge, is constituted through the active, embodied experience of a conscious subject. Husserl's concept of intentionality as the fundamental structure of consciousness—as always directed toward objects—reveals why quantification cannot be epistemologically neutral. When a researcher quantifies a phenomenon, they do not passively record pre-existing numerical facts. Instead, they constitute the phenomenon as a quantifiable object through a specific act of consciousness: selecting a dimension to measure, choosing a unit of measurement, and interpreting the result within a conceptual framework (Husserl 1999). The act of quantifying is interpretive and perspectival. Quantification does not stand outside the world it describes; it is one among many possible modes of engagement, each disclosing different aspects while concealing others (Dreyfus & Wrathall 2006).

Husserl's *époché* (suspending the "natural attitude") shows what quantification misses: pre-reflective, lived experience that comes before all theory (Husserl 1999). Quantification, as a natural attitude, treats the world as a set of measurable objects. This way, it leaves out the first-

person, qualitative experience that phenomenology says is basic. Eidetic reduction also shows the existence of essential structures that measurement cannot capture (Husserl 1999). Merleau-Ponty deepens this critique through his analysis of embodied perception. Our knowledge of the world is not primarily conceptual or quantitative. Instead, it is rooted in the pre-reflective bodily engagement through which we inhabit and navigate our environment (Merleau-Ponty 2002). The geometer's abstract space is parasitic on the lived space of the body: the felt sense of up and down, near and far, reachable and out of reach. To represent space purely geometrically, or time purely chronometrically, is not to describe experience more accurately. Rather, it is to abstract from experience in ways that sacrifice its most fundamental character (Merleau-Ponty 2002). Whitehead captures the epistemological stakes of this abstraction in his concept of the fallacy of misplaced concreteness: mistaking a useful abstraction for the concrete reality from which it was derived (Whitehead 1978).

Two more epistemological problems deserve attention. First, quantification tends to equate truth with empirical proof, as Pietersma (2000) notes, and ignores self-evident or intuitive knowledge. Mathematical and logical truths are known through insight, not by measurement, showing the limits of quantification. Second, the nominalism-realism debate questions whether quantities measured by quantification reflect real properties or just our methods. Concepts such as intelligence or social capital may be real or constructed through measurement (Dreyfus & Wrathall 2006). Quantification usually assumes realism, treating its measures as real, but phenomenology suggests many features are made by measurement itself.

Existential Implications

This convergence leads to the existential consequences of quantification, which are central to the argument presented. Ethical and epistemological limitations converge on a critical point: the systematic application of quantification to human life results in alienation, creating a disconnect between individuals and their lived reality. Alienation has a complex history, but its existential sense is specific. For existentialists, alienation means seeing a person's existence—by oneself or others—through categories foreign to their subjective experience. Marx saw alienation as reducing the worker to a tool; Hegel saw the spirit losing itself in objects. Sartre saw the look or the gaze that turns a free subject into an object as the deepest alienation (Sartre 2021). Quantification is the institutionalisation of the look: it reduces people to profiles, scores, and indices that claim to represent them but only substitute for them.

Sartre's concept of bad faith further clarifies the existential stakes. Bad faith is self-deception—denying freedom by treating oneself as something fixed (Sartre 2021). Quantification supports bad faith both individually and institutionally. Individually, people may identify with their metrics, such as a student seeing their GPA as their worth. Institutionally, organisations using only metrics create conditions where bad faith is almost unavoidable.

Heidegger's analysis of *das Man* (the anonymous "they-self" through which *Dasein* loses itself in public conformity) acquires a distinctively contemporary form in metric-driven culture (Heidegger 2010). The quantified self is, in Heideggerian terms, a form of inauthenticity: a mode of existence in which one's sense of worth and meaning is outsourced to external mea-

surement systems rather than claimed through the resolute confrontation with one's own existence. Muller's research on the institutional effects of metric systems documents this dynamic empirically: organisations governed by metrics systematically suppress their members' intrinsic motivations and professional judgments, replacing authentic engagement with measurable performance (Muller 2018).

The existential implications of quantification extend beyond individual psychology to the broader structure of social existence. Quine's ontological formula, "to be is to be the value of a bound variable," encapsulates the logic of a world where existence is validated solely through quantification (Quine 2019). In such a context, aspects of human experience that resist quantification—such as grief, wonder, moral seriousness, and the sense of a life well lived—are systematically devalued, not because they are unimportant, but because they remain invisible to prevailing modes of accounting. The existential critique maintains that this invisibility reflects the limitations of quantification, rather than indicating a deficiency in human experience.

Jonas's ethics of responsibility offers a further dimension. Writing in the context of technological civilisation, Jonas argued that the capacity to quantify and predict future outcomes generates a distinctive moral responsibility: we become answerable for the consequences of systems we create and deploy (Jonas 1985). Applied to quantification itself, this principle implies that those who design and implement metric systems bear responsibility for the human realities those systems conceal—the lives that fall outside the measured categories, the values that resist numerical expression, the persons who are diminished rather than illuminated by their scores.

Social and Cultural Implications

The social and cultural dimensions of quantification demonstrate that its challenges are not limited to philosophical abstraction but are embedded in the concrete practices by which societies organise power, allocate resources, and construct reality. As Desrosières (2016) contends, quantification does not simply reflect social reality; it actively constructs it. The categories, equivalences, and values established through quantification are not neutral findings but social achievements shaped by power dynamics, cultural assumptions, and historical circumstances.

This constructive dimension of quantification is evident in the most basic social uses of numbers. Census categories determine who counts as a member of a community and in what proportions; income thresholds define the boundary between poverty and sufficiency; diagnostic criteria determine who receives treatment and who does not. In each case, a quantitative boundary is drawn that has profound consequences for real people, consequences that the apparent objectivity of the numbers tends to obscure. The choices embedded in these classifications reflect the priorities and perspectives of those with the power to make them (Espeland & Stevens 2008; Mitcham 2005).

Espeland and Stevens's sociology of quantification illuminates the social mechanisms through which numbers gain authority. Quantification functions as a form of social action: it creates commensurability, enabling comparison across contexts that were previously incommensurable, and in doing so, it transforms the things it measures (Espeland & Stevens 2008). A

university ranked numerically is not simply described differently; it is a different kind of institution, one that must orient its practices toward the dimensions being measured. This reactivity of quantification—the way that measurement changes what is measured—is one of its most consequential and least acknowledged features.

The relationship between quantification and power is central to understanding its social effects. Quantified measures enable surveillance and the management of populations at scale, creating what Espeland and Stevens call governance "at a distance"—the capacity to control and evaluate persons and institutions without direct engagement (Espeland & Stevens 2008). The apparent objectivity of numbers lends this governance a legitimacy that more visibly discretionary forms of authority lack. When a school is placed in special measures on the basis of its test scores, or a welfare claimant is denied support on the basis of a risk algorithm, the numerical basis of the decision presents itself as beyond contestation. This is precisely the mechanism Saltelli (2020) identifies as the corruption of quantification by mistrust: numbers become mandated not because they are genuinely informative but because they provide institutional cover for decisions that would otherwise require explicit justification.

However, it would be erroneous to regard the social analysis of quantification as exclusively critical. As the counterarguments in Section 3.6 demonstrate, quantification has served as an essential instrument of social emancipation. The identification of racial disparities in lending, policing, and healthcare, the measurement of gender pay gaps, and the mapping of environmental injustice all rely on rigorous quantitative methods that render invisible patterns visible and actionable (Desrosières 2016). The existential critique does not claim that quantification is inherently oppressive, but rather that it is inherently partial: it reveals certain aspects of social reality while concealing others, and the selection of what to measure encodes values that are seldom made explicit.

Cultural variation in the use of quantification further complicates the picture. Western industrial societies tend to privilege numerical precision and quantitative analysis as the gold standard of knowledge, a preference that reflects specific historical developments—the scientific revolution, the rise of capitalism, the growth of bureaucratic states—rather than universal epistemic norms (Crosby 1996). Other cultural traditions have developed rich forms of qualitative, relational, and narrative knowledge that resist translation into numerical terms without significant loss (Tafreshi et al. 2016). The hegemony of quantification in globalised knowledge systems therefore carries a risk of epistemic imperialism: the marginalisation of alternative ways of knowing under the pressure of a dominant metric culture. The social and cultural critique of quantification thus converges with the existential critique at a systemic level: both identify quantification's most serious danger as the suppression of what it cannot measure, and both call for critical reflexivity about the assumptions and power relations embedded in the choice of what to count.

Philosophical Reflections and Recommendations

The preceding analysis establishes three interconnected claims. First, the application of quantification to human existence constitutes a category error, misapplying a mode of reasoning suited to objects to the irreducibly subjective domain of lived experience. Second, this error is not merely logical but generative: it produces alienation, displaces moral responsibility, distorts epistemological inquiry, and encodes power relations while presenting itself as objective. Third, these harms are not inherent to measurement itself but arise from the unreflective extension of quantification beyond its appropriate domain. These claims have both methodological and normative implications. This section articulates these implications by first examining the requirements of an existentially informed approach to knowledge, and then translating them into six concrete recommendations for researchers and practitioners.

The fundamental reorientation that existential phenomenology demands is a shift from asking "How much?" as the primary question of inquiry to asking "What does it mean?" This is not a rejection of precision but a reordering of priorities: precision in service of meaning, rather than meaning sacrificed for precision. Heidegger's concept of being-in-the-world holds that the world is not primarily a collection of measurable objects but a context of significance—a field of concerns, practices, and relationships within which persons pursue projects and encounter others (Heidegger 2010). Any method of inquiry that begins by stripping away this contextual significance in order to isolate measurable variables has already distorted its subject matter before the first datum is collected.

Merleau-Ponty's insistence on the primacy of the lived body reinforces this point from a different direction. Our most fundamental knowledge of the world is not theoretical or numerical but practical and embodied: we know the world first through the grip of our hands, the orientation of our bodies, the rhythms of our perception (Merleau-Ponty 2002). Quantification abstracts from this embodied knowledge, and the abstraction is useful precisely to the extent that the embodied reality it abstracts from has been adequately understood. Research methods that bypass participants' lived experience to generate numerical data risk producing results that are technically precise but humanly irrelevant.

Excessive reliance on quantitative data introduces an additional risk, which Heidegger's concept of *das Man* elucidates: individuals may lose the capacity for authentic self-understanding by delegating self-interpretation to external metric systems (Heidegger 2010). When personal worth is consistently expressed through numerical indicators such as academic grades, performance ratings, social media metrics, or health scores, the cumulative result is a form of alienation from one's own existence. Brower (1949) identified this phenomenon in psychology as early as 1949, observing that reducing individuals to measurable variables distorted the very subject the discipline aimed to understand. Muller's more recent research documents the institutional consequences: metric fixation, or the substitution of measurable proxies for genuine goods, has become pervasive in contemporary organisational life (Muller 2018).

Recommendations from an Existential Perspective

The following six recommendations are grounded in the existential and phenomenological analysis developed throughout this paper. They are primarily addressed to researchers but carry implications for practitioners, institutions, and policymakers who deploy quantitative methods in contexts that affect human lives.

i. **Prioritise Research Aims Over Methods.** Research should be guided by its aims rather than by the availability of quantitative tools. The question "What do we need to understand?" should precede "What can we measure?" This requires a willingness to accept that some of the most important questions about meaning, dignity, authenticity, and value may not yield to numerical methods at all, and that acknowledging this honestly is preferable to generating technically rigorous answers to the wrong questions (Muller 2018).

ii. **Embrace Critical Reflexivity.** Researchers must cultivate a sustained awareness of the assumptions embedded in their choice of measures: what is being counted, what is being excluded, whose perspective the measurement encodes, and what social effects the act of measurement produces. This reflexivity is not optional; it is a basic condition of epistemological honesty. Quantification is not a neutral recording of the world; it is an interpretation of it, shaped by values and power relations that deserve explicit examination (Pietersma 2000; Tafreshi et al. 2016).

iii. **Centre Meaning in Inquiry.** Rather than treating qualitative approaches as supplements to quantitative methods, researchers should recognise that the understanding of meaning is itself a primary epistemic goal, one that qualitative methods are specifically designed to pursue. Phenomenological interviewing, narrative analysis, and ethnographic observation are not methodologically inferior to statistical analysis; they are appropriate to a different and in many contexts more fundamental domain of inquiry (Dreyfus & Wrathall 2006; Guba & Lincoln 1989).

iv. **Acknowledge the Limits of Reason.** Existentialism's scepticism toward purely rationalistic approaches is a scepticism about completeness, not about validity. Quantification, as a product of analytical reason, is genuinely powerful within its domain; what existentialism insists is that this domain does not exhaust reality. Researchers should be explicit about the boundaries of what their quantitative methods can claim to know, and should resist the temptation to present numerical results as more conclusive than the underlying epistemological situation warrants (Glanzberg 2004).

v. **Value the Concrete and Particular.** Quantification operates by aggregating instances into patterns, thereby necessarily effacing the particularity of individual cases. Existential thought insists on the irreducible significance of the singular: this person, this experience, this moment. Researchers should resist the pressure to generalise prematurely and be willing to engage directly with the concrete details of people's lives rather than retreat to statistical abstractions (Guba & Lincoln 1989; Merleau-Ponty 2002).

vi. **Assert a Licence Not to Quantify.** The most practically significant recommendation is also the most straightforward: resist institutional pressures to quantify when quantification does not advance the genuine aims of inquiry. As Muller (2018) contends, the optimal use of a metric is sometimes to refrain from using it altogether. In situations where quantification would obscure rather than clarify—by reducing individuals to numbers, suppressing the complexity of ethical judgment, or creating a misleading appearance of objectivity—the epistemically and ethically responsible action is to decline. Researchers should not interpret this as a methodological failure; rather, it exemplifies the reflective judgment that quantification, at its worst, seeks to supplant. These recommendations do not constitute an anti-quantitative methodology. Instead, they outline an existentially informed critical practice: one that employs quantitative methods where appropriate, resists them where they are not, treats numerical results as contributions to understanding rather than replacements for it, and remains attentive to the human realities that any measurement system inevitably overlooks.

Conclusion

This paper has argued that extending quantification to human existence constitutes a category error—the application of a mode of reasoning appropriate to objects to a domain whose defining features are subjectivity, freedom, and meaning. This error is not merely logical. It is productive of specific harms: the alienation of persons from their own lived experience; the displacement of moral responsibility onto the apparent objectivity of numbers; the suppression of qualitative knowledge by the hegemony of measurement; and the encoding of power relations within the neutral-seeming language of metrics. The argument has been developed across several dimensions. Historically, the shift from qualitative to quantitative modes of understanding—which gathered momentum from the late Middle Ages through the scientific revolution and into modernity—was a transformation in the dominant mode of disclosing reality. Epistemologically, phenomenology reveals that quantification is not a neutral recording of the world but a constitutive act: it shapes the phenomena it claims to describe, and it conceals the pre-reflective, embodied dimensions of experience that are its own condition of possibility. Ethically, the application of quantitative methods to moral phenomena commits the naturalistic fallacy in its quantitative form and creates structural conditions for the evasion of genuine moral judgment. Socially, quantification constructs as well as reflects reality, encodes the priorities of those who design measurement systems, and governs populations through the apparently objective authority of numbers.

In response to these concerns, this paper has engaged seriously with the strongest counterarguments. The emancipatory uses of quantification—its role in exposing systematic injustice and holding institutions accountable—are genuine and significant. The scientific achievements enabled by rigorous measurement are beyond dispute. The practical necessity of metrics in governance, resource allocation, and institutional management is real. These considerations establish that the existential critique cannot be a wholesale rejection of quantification. Its proper

scope is more precise: a philosophical demarcation of the boundary between the domain in which quantification is appropriate and the domain in which it distorts.

That boundary runs along the distinction between the measurable and the meaningful. On one side lie the natural phenomena, social patterns, and institutional processes that quantification illuminates without residue. On the other side lie the dimensions of human existence—authenticity, dignity, freedom, moral seriousness, the texture of a life—that resist translation into numerical terms not because they are vague or unmeasurable but because they are constitutively qualitative: their nature is altered, not clarified, by the attempt to quantify them. The existential perspective asks us to hold this distinction with care. It does not demand that we abandon our spreadsheets and our statistics. It demands that we remember what they cannot tell us—and that we preserve, against the pressure of metric culture, the capacity to encounter persons as subjects rather than as data, to make judgments rather than merely calculations, and to recognise that the most important questions about human existence are answered not by counting but by understanding.

Future research should continue to develop the normative framework sketched in Section 5, examining how an existentially grounded ethics of quantification might be operationalised in specific institutional contexts—in education, healthcare, social policy, and the governance of artificial intelligence. The growing deployment of algorithmic systems that make consequential decisions about human lives based on quantitative models makes this work increasingly urgent. Existential philosophy, with its insistence on the irreducibility of the human subject, has a distinctive and necessary contribution to make to these debates.

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