Ontological Relativity and Conceptual Analysis as Theoretical Frameworks for Epistemic Injustice: Exploring Applications

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Abstract:

This article introduces a novel theoretical framework for addressing epistemic injustice – a phenomenon where certain groups or individuals are systematically excluded from knowledge creation and dissemination processes – by employing ontological relativity and conceptual analysis. "Ontological relativity" refers to a philosophical perspective that posits our understanding of reality as being shaped by our toolbox of concepts, categories, language, and social practices; "conceptual analysis" is a method of inquiry that involves the rigorous examination and deconstruction of a particular concept or set of concepts in order to uncover their constituent elements, relationships, and underlying assumptions. To exemplify the effectiveness of the ontology-based approach, two paradigmatic applications are explored: *a*) educational practices and *b*) clinical practice and access to healthcare. Through the presentation of these applications and the step-by-step illustration of the applied methodology, the aim of this article is to showcase the efficacy of ontology in tackling epistemic injustices, suggesting innovative paths for future research in this domain.

Keywords:

Conceptual Analysis, Epistemology, Epistemic Injustice, Ontological relativity, Ontology

1. Introduction: the theoretical framework

"Epistemic injustice" is an overarching concept that encompasses various phenomena previously addressed through distinct expressions (cf., among others, Davis 1981; Haraway 1988; hooks 1990; Butler 1990; Collins 1991; Alcoff 1991; Scheman 1993; Fricker 1998), ultimately consolidated under a unified category that gained widespread recognition and dissemination thanks to Fricker (2007). This concept describes the systematic exclusion or marginalization of certain groups or individuals from the processes of knowledge creation, dissemination, and recognition, through the imposition of norms and standards that perpetuate power imbalances and privilege certain perspectives over others. This can occur in a variety of ways, such as through the exclusion of marginalized views from academic discourse, or through the underrepresentation of certain groups in cultural institutions or media representation (see Haslanger 2012; Dotson 2012b; Snorton 2017; O'Neill 2000; Cudd 2006). Epistemic injustice can have serious consequences, as it can perpetuate and reinforce social inequalities, such as gender discrimination, racism, xenophobia, LGBTQI-phobia, and other forms of unfairness (Pohlhaus 2011; Medina 2012; Serman & Goguen 2019; Anderson 2020).

This article introduces a theoretical framework for addressing epistemic injustice by utilizing the tools provided by formal ontology and conceptual analysis, a method of inquiry that involves the rigorous examination and deconstruction of a particular concept or set of concepts in order to uncover their constituent elements, relationships, and underlying assumptions (Smith & Medin 1981; Poli-Simons 1996; Munn-Smith 2008; Valore 2016). Conceptual engineering follows as the subsequent step after the process of

conceptual analysis: conceptual engineering is the design, implementation, and evaluation of concepts (Chalmers 2020). Conceptual engineering covers both the creation of entirely new concepts, known as *de novo* conceptual engineering, and the refinement of existing concepts, which is referred to as conceptual re-engineering.Inizio modulo

Within this framework, I will consider how the thesis of ontological relativity, according to which our understanding and perception of reality are shaped and influenced by the conceptual framework, categorization, language, and social practices, might shed light on various forms of epistemic injustice, such as testimonial injustice (that occurs when someone's testimony is dismissed or discredited based on irrelevant or discriminatory factors, such as their race, gender, age, or social status, rather than the content or credibility of their testimony itself, see Fricker 2007: 9-29; Wanderer 2017), hermeneutical injustice (the kind of epistemic injustice that occurs when a subject is unfairly disadvantaged in her capacities to make sense of an experience, see Fricker 2007: 147-175; Dotson 2012a; Medina 2017), and ignorance-based oppression (discrimination, marginalization, and exclusion rooted in stereotypes and biases that prevent individuals from seeing members of the targeted group as fully worthy of producing and receiving knowledge).

In order to illustrate the application of ontological relativity to epistemic injustice, two cases, where the ontology-based approach may help, are explored:

a) *Educational Practices*: Teachers and educators often operate within a conceptual and linguistic framework that may not adequately represent the experiences of students coming from different backgrounds (such as students from ethnic and racial minority groups), students with unique needs (such as individuals with physical, sensory, cognitive, or emotional limitations or disabilities), LGBTQI+ students, and others. By exploring the ways in which categories and culture shape our understanding of our identity, the ontology-based approach aims at offering insights into how educators can develop more inclusive educational approaches that recognize and value diversity in our communities. In particular, ontology can help examine the language and concepts employed in educational materials and educational practices, identifying and challenging instances of epistemic injustices in the classroom that stem from biased ontological categories embedded in background assumptions, utilizing conceptual analysis to develop inclusive curricula, exploring the impact of concepts on shaping educational practices, and ultimately applying conceptual analysis to enhance teacher training. By integrating ontological relativity into this framework, we can improve our understanding of the intricate dynamics between the background assumptions ingrained in language, culture, and tacit values, on one hand, and the conceptual map(s) we rely on, on the other hand.

b) *Clinical practice and access to healthcare*: The ontology-based approach aims at reducing inequalities in access to healthcare by identifying key concepts and ontological categories that may be perpetuating injustices and by identifying ways in which researchers and healthcare providers can become more sensitive to the needs of individuals from marginalized groups and ensure that their experiences are adequately represented. Marginalized groups in this case include immigrants and refugees, who may face barriers to accessing healthcare, such as lack of documentation, linguistic obstacles, or limited understanding of the healthcare system; individuals from cultural, linguistic and religious minorities, who may have specific healthcare needs and beliefs that need to be taken into account; LGBTQI+ individuals, who may experience discrimination and stigma within the healthcare system and lack of access to appropriate care due to limited knowledge or understanding about their specific health needs; elderly individuals, who may have unique health challenges related to aging, such as chronic conditions, mobility issues, and cognitive decline, which can make accessing healthcare more challenging. Specifically, this article will propose the utilization of conceptual analysis to define and examine health disparities associated with biased background ontological categories. By raising awareness of hidden biases within our conceptual frameworks and embracing the perspective of ontological relativity, we can strive for improved flexibility and inclusivity in our approach to reality.

The selection of education and health as the two paradigmatic examples of the application of ontology and conceptual analysis to epistemic injustice is based on the recognition that these domains represent two of the most essential means by which a community can foster greater inclusivity and fairness. Both education and health are widely acknowledged as critical components of individual well-being and collective development and are therefore key factors in promoting a more just and equitable society.

2. Advancing the state of the art: bridging the interdisciplinary gap

A recent and promising innovative approach in contemporary ontology is an improved accounting of the general categories that we use in framing our understanding of reality, including the often hidden metaphysical and background presuppositions of taxonomies and categorizations in our sciences and practices (Haslanger 1995; Benitez-Leshin-Rhodes 2022; Xu *et al.* 2022; Valore 2016; Del Pinal 2016; Valore 2017b), thanks to tools like conceptual engineering and conceptual analysis (Guarino 1985; Cappelen 2018; Burgess-Cappelen-Plunkett 2020; Chalmers & Jackson 2001; Chalmers 2020). Ontological and conceptual relativity (Quine 1969; Putnam 2004) provide a theoretical basis for acknowledging the dynamic nature of categories and the need to critically examine the assumptions and biases that underlie our conceptualizations.

This has been applied to natural sciences (Valore-Dainotti-Kopczyński 2020) and to biomedical research and practices (Gangemi-Pisanelli-Steve 1999; Munn-Smith 2008: 83-108; Valore 2017a; Barton *et al.* 2017; Valore 2021). For instance, the notion of "intrinsic properties" is usually assumed in cosmology along these lines: (1) intrinsic properties are those that exist independently, unaffected by any selection biases, and (2) if we suspect that certain properties are influenced by biases, it becomes crucial to devise a method to uncover the underlying intrinsic properties. An analysis in terms of ontological relativity has revealed the problem of selection biases in detecting cosmological objects and how neglecting the metaphysical background theory that validates these preferences may impact scientific research (Valore-Dainotti-Kopczyński 2020).

The important role of hidden presuppositions when conceptualizing a certain field seems confirmed by recent research in experimental psychology on the effects of previous beliefs on categorization tasks (e.g., Ahn & Kim 2000) and studies in cognitive science about the psychology of learning and categorization (e.g., Lalumera 2010; Hampton & Jönsson 2012; Rehder & Hastie 2001).

On one hand, there are many studies on ontological relativity (cf. Rosch & Mervis 1975; Rosch 1978; Sosa 1999; Sosa 2009), including applied ontology (Le Bihan-Barton 2021; Stuart 2021) and biomedical ontologies. On the other hand, there are some studies that try to apply ontological relativity to education (e.g., Pejaković 2016), investigations into epistemic injustice in the fields of education (Kotzee 2017) and medicine and healthcare (Carel & Kidd 2017) and some that propose an ameliorative analysis of some concepts involved in epistemic injustice (e.g., Haslnager 2012) and even apply epistemic injustice to ontology (Maldonado-Torres 2007). However, the ontology-based approach that applies the recent advancements in theoretical research, in particular under the shape of ontological relativity and formal conceptual analysis, to the ethical and practical implications of epistemic injustice in education and medicine appears to be novel and not yet fully described in the existing literature.

3. The strategy: using ontology to address inequalities

The rising prevalence of inequalities poses a hindrance to the general well-being of individuals, societal cohesion, and collective progress. Among the various forms of inequality, epistemic injustice represents one of the most insidious forms of privilege. It takes different forms, acknowledged by the literature (Fricker 2007; Hookway 2010; Pohlhaus 2017), but all of them seem to stem from assumptions over categorization.

Testimonial injustice refers to situations where someone's testimony is unfairly disregarded or questioned based on discriminatory factors such as race, gender, age, or social status instead of the actual content or validity of their statement. The relevance of background categories here is manifest. This kind of injustice occurs when the hearer's set of sortal concepts, including bias, influences their assessment of the speaker's credibility, leading them to unjustly discredit or dismiss the speaker's testimony (the paradigmatic case is "rape", with what Jenkins 2021 calls "dishonesty myth," i.e. the belief that women usually lie about being raped). Sortal concepts here design the tacit map of our ontological trees, and they guide our prejudices and stereotypes.

Hermeneutical injustice is a form of epistemic injustice that occurs when an individual or group is prevented from fully understanding or making sense of their own experiences because of a lack of available

conceptual tools or linguistic frameworks. This type of injustice can occur when a conceptual structure is assumed as "normal" or "natural" and/or fails to provide adequate resources for people from marginalized backgrounds to express or articulate their experiences in a way that is understood and validated by others. For example, a person who has experienced a unique form of discrimination or trauma may struggle to articulate or describe their experiences because there is no commonly recognized language or framework for doing so (using again rape as an example, a surprisingly high number of abused women deny being raped and fail to report it, even though their own description of the experience of being forced to a sexual intercourse legally matches the definition of "rape." Cf. Koss, M. P., Gidycz, C. A., & Wisniewski 1987). Experiences being dismissed, ignored, or trivialized, may be the result of background assumption of ontological categories and semantic maps that guide our definitions.

Ignorance-based oppression is a form of discrimination that relies, again, on biases and stereotypes, leading to the marginalization, exclusion, and discrimination of certain groups based on their perceived lack of worthiness to produce and receive knowledge. One example of ignorance-based oppression happens when a person's identity or social group is invalidated or discredited, and their experiences and knowledge are dismissed or devalued. This often occurs when dominant groups assume that their perspective is the norm and marginalize or exclude those who do not fit into this norm. As a result, marginalized groups may be left out of important decision-making processes, which further perpetuates their exclusion and lack of representation in society. Furthermore, ignorance-based oppression can lead to a distorted understanding of social realities and can perpetuate myths and stereotypes. For example, racist attitudes or xenophobic beliefs can be reinforced by a lack of exposure to diverse perspectives and experiences. This type of oppression can be challenging to overcome, as it requires a deep examination of one's own biases and the willingness to learn about and engage with diverse perspectives, which often requires an explicit renegotiation of our most fundamental sortal concepts. It also requires the creation of inclusive spaces where marginalized groups can share their experiences and knowledge, and where dominant groups can learn to recognize and challenge their own biases.

The ontology-based approach seeks to examine the potential of ontological relativity, through conceptual analysis and conceptual engineering, as a framework for shedding light on all the previous forms of epistemic injustice experienced by marginalized groups: testimonial injustice, hermeneutical injustice, and ignorance-based oppression.

For example, certain groups may be excluded from the cultural approach we judge appropriate/normal for certain contexts and thus their perspectives may not be fully represented in our understanding of reality and existence, because they lack the proper set of concepts and the proper toolbox of categories. This places marginalized individuals or groups at a disadvantage when it comes to their ability to comprehend and interpret their own experience. Even if we denounce this inequality, the map of ontological categories we use in building the background framework for our conceptualization may just remain unexplored. Exposing the background philosophical assumptions that put certain groups at disadvantage, ontological relativity can enhance our ability to identify the roots that give rise to the problem and promote focused conceptual engineering to solve the problem.

Similarly, the dominant cultural framework may shape the way in which we understand certain notions or phenomena, leading to a distorted or incomplete understanding of reality in specific contexts, depriving ourselves of additional perspectives. The conceptual analysis offered by the ontological relativity approach can be also used to develop more inclusive and accurate categorial frameworks, by identifying and challenging assumptions, biases, and stereotypes in categorization that may perpetuate or reinforce mono-dimensional or narrow representations. The intersection of ontological relativity and epistemic injustice draws attention to the ways in which our understanding of reality is shaped by power dynamics and cultural contexts, contributing to the development of more inclusive practices, policies, and research agendas that better reflect the experiences and perspectives of marginalized groups.

Furthermore, conceptual analysis and conceptual engineering can inform the development of practical interventions and strategies aimed at addressing these forms of inequality and injustice, such as targeted educational programs, community outreach initiatives, or policy changes. By illuminating the underlying concepts and assumptions that shape these inequalities, formal ontology and conceptual analysis can help identify effective solutions that address the root causes of these problems.

To exemplify the theoretical framework, two potential applications that serve as illustrative cases for the ontology-based approach are presented.

4. First illustrative case: educational practices

Educational strategies, curricula and materials, such as textbooks, are often inadequate in meeting the needs of our society, and contribute to educational inequalities by reinforcing stereotypes or excluding certain groups or individuals. Stereotype threat occurs when members of stigmatized groups experience anxiety or self-doubt in school and academic settings due to negative stereotypes about their group. Instead of recognizing the complexity of the bundles of properties that may be used to identify an individual as a member of a kind, stereotypes rely on simplified and often biased assumptions about what is considered relevant for an individual to be categorized within a specific group.

Understanding stereotypes in terms of conceptual analysis involves recognizing the tendency to make assumptions about what is "relevant" for an individual to be considered as an instantiation of a certain category. Conceptual analysis helps us unpack the notion of "relevancy" within stereotypes, acknowledging that it is inherently ethically and metaphysically charged. It highlights the subjective nature of what is considered relevant, as it is often influenced by societal norms, cultural beliefs, and tacit personal biases. By critically examining these assumptions and questioning their validity, we can better understand the flawed nature of stereotypes and the limitations they impose on recognizing the complexity and individuality of each person.

In educational practices, the application of conceptual analysis to stereotypes is particularly crucial, as assumptions based on social, cultural, or personal beliefs can influence how individuals are perceived, judged, and treated within society. This can disadvantage students who belong to groups that are stereotyped as being less intelligent or capable. For instance, teachers or school administrators may hold implicit biases or stereotypes about immigrant students, assuming that they have lower abilities, which can lead to lowered expectations for their performance in school. As a result, these students may receive less attention and guidance in the classroom and be subjected to lower standards, leading to lower grades and discouraging them from pursuing further education. Additionally, educators may not fully understand the cultural backgrounds and experiences of immigrant students, making it difficult for them to connect with and engage these students in the classroom. This can create a sense of alienation and exclusion for immigrant students, further perpetuating educational inequalities. Another example is the case of women in STEM fields, who may face stereotype threat that undermines their confidence and performance in these fields (see, for instance, the report on gender stereotypes in primary school textbooks in Scierri 2017; the science faculty's gender bias in Moss-Racusin *et al.* 2012; and the fact that female communication scientists are cited less frequently in Knobloch-Westerwick & Glyn 2013). Students with disabilities may also face epistemic injustice in education. For example, teachers may assume that these students cannot understand or contribute to classroom discussions, leading to limited learning opportunities and exclusion from school or academic activities. Other examples are non-native speakers of the language of instruction and students from low-income backgrounds. Anxiety or self-doubt experienced by stigmatized groups can lead to lower grades, reduced opportunities for learning and growth, and even dropping out of school. By raising awareness about the tendency to make biased assumptions of relevance, educators can foster inclusivity and challenge stereotypes within the classroom. They can encourage students to critically analyze and question the stereotypes they encounter, promoting a more nuanced understanding of individuals and groups. Educators can develop curricula that highlight diverse perspectives, challenge stereotypes, and provide opportunities for students to engage in critical thinking and empathy-building activities.

While acknowledging the presence of psychological consequences such as anxiety and potential implications for performance stemming from internalized stereotypes, here we deliberately omit an in-depth exploration of the emotional dimensions associated with stereotypes to focus on the examination of the concealed assumptions inherent within our conceptual frameworks and their ensuing ripple effects on interconnected notions.

A practical example may help. Let's consider the implementation of the student categorization model based on the concept of "learning styles."

Learning styles are commonly utilized, among several other approaches, to customize recommendations by identifying the learning material that best aligns with the individual learner's needs. Over the past few decades, numerous classifications of learner model standards have emerged, aiming to describe the learner's profile and identify the suitable learning content based on their perceptual, presentational, processing, and organizational preferences. In some instances, these classifications exhibit overlapping characteristics, either with similar or distinct names, such as the Felder-Silverman model (FSLSM, cf. Feder & Silverman 1988), the Kolb's Experiential Learning Theory (cf. Kolb & Kolb 2005), The Myer-Briggs Type Indicator theory MBTI, cf. Meyr *et al.* 1998), and others. According to Coffield *et al.* (2004), a total of 53 distinct learning style models were identified and classified into a hierarchical structure known as Families of Learning Styles.

At a higher level of abstraction, the concept of "student diversity" or "learner variability" encompasses a wide range of unique characteristics, abilities, and learning preferences that exert a profound influence on the educational experiences of students. These factors, including cognitive abilities, cultural background, linguistic diversity, socioeconomic status, and individual learning needs, form a hierarchical relationship within the overarching concept of "student diversity." Nestled within the broader conceptual framework, the notion of "learning styles" emerges, positing that individuals possess preferred modalities, such as visual, auditory, or kinesthetic modes, for receiving and processing information. Advocates of learning styles argue that instructional tailoring aligned with students' preferred learning styles can yield enhanced learning outcomes. However, it is essential to acknowledge that the concept of learning styles has encountered scrutiny and ongoing debate within the educational community. In addition to empirical research, which has shown that the evidence supporting the claim that aligning instruction with specific learning styles significantly enhances learning outcomes is limited in scope, ontological analysis can further reveal that this claim rests on various assumptions (e.g., the link between a particular learning style and hidden assumptions about, for instance, gender or race). To provide a visual representation of the conceptual landscape, an ontological map can illuminate the hierarchical relationship between the concept of learning styles and the broader concept of student diversity or learner variability and other properties we assume to be relevant. This mapping elucidates the significance of conducting a rigorous analysis of the hierarchical structure, thereby enabling the identification of potential biases inherent in selecting the relevant properties needed to be acknowledge as an instantiation of a certain category. Framing students exclusively based on learning styles can perpetuate the erroneous notion that students possess one main preferred mode of learning, based on a relevant property of their personality (which property?), disregarding the intricate complexity and diverse nature inherent in each student. Consequently, this framing inadvertently fosters bias by disregarding other pivotal factors that contribute to students' learning, such as prior knowledge, motivation, cultural background, financial possibilities and individual strengths. Recognizing the limitations and potential biases associated with framing students solely based on learning styles, educators can adopt more inclusive and equitable instructional approaches, remaining mindful of the potential pitfalls associated with an excessive reliance on one conceptual framework as the sole determinant of instructional design. This encompasses embracing a comprehensive understanding of student diversity, considering multiple dimensions of learner variability within the hierarchical structure, and designing instruction that accommodates diverse learning preferences, introducing multi-level and different ontological maps associated to our categorization, in terms of conceptual relativity, i.e. relative to different background assumption about what is relevant among the several properties each of us exhibits.

In practice, conceptual analysis can be applied to examine the language and concepts used in educational materials, to identify and challenge epistemic injustices in the classroom, to explore the role of concepts in shaping educational practices, and to improve teacher training.

5. Second illustrative case: clinical practice and access to healthcare

Inequality in medical research and clinical practice is often perpetuated by biases in concept and categories that hinder marginalized groups from being fully represented and treated: healthcare providers may not be

aware of these background presuppositions and may not be trained in how to communicate effectively with individuals from marginalized groups, leading to misunderstandings or lack of trust. Some patients may also face discrimination or bias from healthcare providers who view them as less capable or worthy of receiving certain types of care based on the "kinds of patients" they are (see, for instance, the systematic review of the implicit racial/ethnic bias among healthcare professionals and its influence on healthcare outcomes in Hall *et al.* (2015). This is particularly dramatic considering that individuals from marginalized groups may be more likely to have chronic health conditions due to a range of social, environmental and economic factors. For example, poverty and discrimination can limit access to healthy foods, safe housing, and quality healthcare, which can increase the risk of chronic diseases. In addition, experiences of discrimination and stigma can lead to chronic stress and anxiety, which are also associated with negative health outcomes. The cumulative effect of these factors can result in a greater burden of chronic disease among marginalized groups, leading to further health inequalities (see the report by the European Social Policy Network of the European Commission published in Baeten *et al.* 2018).

One of the roots of the problem is the implementation of the patient categorization model based on the concept of "kinds of patients."

The concept of "kind," a central notion in ontology, plays a significant role in two key aspects of healthcare disciplines: "disease" and "categories/types of patients." While the concept of "disease" has received considerable attention from researchers in the philosophy of science and philosophy of medicine (e.g., Amoretti-Lalumera 2020 for the concept of disease in the time of COVID), with its epistemological characteristics being examined extensively (Reznek 1987; Hesslow 1993; Lemoine 2013; Schwartz 2007; Sulmasy 2005; Dragulinescu 2010), the concept of "categories/types of patients" remains ontologically elusive and has not yet received sufficient scrutiny (cf. Hadorn 1997; Beebee & Sabbarton-Leary 2010b for the case of psychiatric kinds of patient; Valore 2017a). The application of ontological analysis to the notion of kinds of patients can provide several benefits. By employing ontology, we can gain a deeper understanding of the conceptual structure and categorization of patients within the healthcare domain. This analysis allows us to identify and clarify the essential properties, relationships, and distinctions among different types of patients. Through ontological analysis, we can also address potential biases and limitations in the current categorization of patients and, by critically examining the existing patient classifications, we can identify epistemic injustices or discriminatory practices that may be perpetuated.

An illustrative instance from the field of epidemiology is the inclusion of the category "homosexual" in HIV transmission, based on initial empirical data indicating a shared susceptibility to infection within this category. This categorization assumed that certain properties or behaviors associated with homosexuality were relevant indicators of HIV risk. As a result, individuals who did not fit the stereotype of the "homosexual" category, but still engaged in high-risk behaviors, were overlooked and not adequately targeted for prevention efforts. Conversely, individuals who identified as homosexual but did not engage in high-risk behaviors were unfairly stigmatized and faced discrimination, leading for instance to the exclusionary policy that restricted blood donation from individuals based on their sexual orientation and not the assessment of risk (De Buck *et al.* 2015). Furthermore, the selection of the relevant property for homosexuality primarily in terms of "men who had sex with men" (MSM) resulted in a disproportionate focus on cisgender men in the search for prevention and treatment options. Consequently, less attention and resources were allocated to understanding and addressing HIV transmission among women. This gender bias further compounded the impact of the erroneous categorization, perpetuating disparities in healthcare outcomes and limiting access to appropriate care for women at risk. By adhering solely to the suggestion of focusing on factors assumed to typically contribute to a medical condition, we risk overlooking certain variables that are excluded from consideration. Considering background assumptions and bias in our categorizations can have a dual impact, both on treating patients more fairly and contributing to advancements in medical research.

Another example is the case of skin cancer standardized on light-toned skin, which leads people of color to receive a late-stage diagnosis for skin cancer as a result of doctors categorizing their concepts of the disease in terms of "normal color" of the dominant group.

Historically, medical education and training have primarily focused on diagnosing skin conditions based on the presentation of symptoms on light-toned skin. This approach is rooted in the assumption that the features and manifestations of diseases are most apparent on this particular skin type. One example is the standard administration of the Fitzpatrick's Skin Type Classification Scale to assess sun sensitivity and skin

cancer risk, which is normalized in terms of paradigmatic "white" skin and yields data that overestimate BIPOC prevalence of type IV skin ("never burn/always tan"). Consequently, when individuals with darker skin tones present with skin abnormalities or potential signs of skin cancer, doctors may overlook or underestimate the severity of the condition (Pichon *et al.* 2010). This delayed recognition often results in late-stage diagnoses for people of color, reducing the effectiveness of treatment options and diminishing their chances of successful outcomes, leading to poorer survival rates for this cancer (see the statistics 2001/2015 in Culp-Lunsford 2019). The problem lies in the inherent bias embedded in the conceptual framework, which is influenced by ontological assumptions, that defines what is considered "normal" or representative within the medical community, leading doctors and healthcare professionals to unintentionally perpetuate health disparities and contribute to the perpetuation of systemic injustices. The ontological relativity of concepts such as "normal" and "representative" highlights the subjective nature of these categorizations and their potential to overlook the diverse range of skin tones and the unique characteristics of diseases across different racial and ethnic groups (cf. Hoffman *et al.* 2016). Conceptual analysis can help uncover and challenge these biases by critically examining the underlying assumptions and presuppositions that shape medical concepts and classifications, promoting awareness of the limitations of current conceptual frameworks, and offering a better understanding of the social, cultural, and historical influences that shape our understanding of "kind of patients," finally enabling us to provide more equitable and culturally sensitive care. The ontology-based approach promotes awareness of the limitations of current conceptual frameworks and encourages a more inclusive perspective.

Conceptual analysis can also inform advocacy efforts aimed at reducing inequalities in access to healthcare by identifying key concepts and categories that may be perpetuating such inequities. By examining the language used in policy documents and public discourse around healthcare, we can identify how certain concepts and categories are used to support or undermine efforts to reduce disparities, and develop more effective strategies.

6. Applied methodology

Given a plurality of individuals, there are various ways to classify them in non-arbitrary kinds based on their properties. This involves assigning predicates to individuals, where each individual can be associated with a predicate or its negation or none. We can create sets and subsets of individuals based on specific predicates, resulting in subsets that may or may not overlap (Fig. 1). This hierarchy depends on the choice of properties to generate the sets and the subsets within our taxonomy.
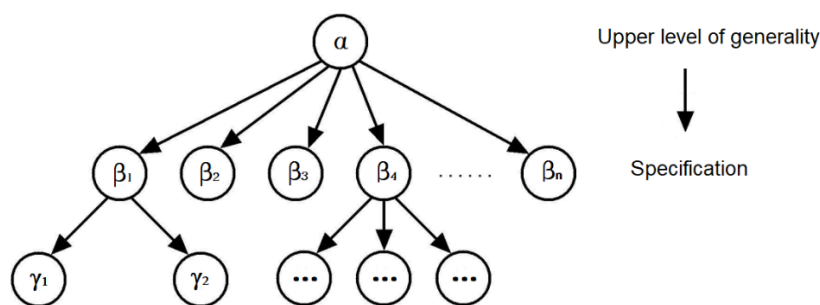

Figure 1

However, this approach encounters complications when individuals do not come with preferred properties for classification, and/or when all choices are considered equally valid. Although we can define properties based on shared characteristics, the number of sets to which any two elements possibly belong is determined by the total quantity of elements, not their properties. Therefore, any coherent classificatory principle will

generate sets, but it cannot capture the intended meaningful property sharing needed to grasp non-arbitrary kinds.

To identify significant sets, we need a generating principle that aligns with our aims and context, which involves evaluative perspectives and preferred strategies. Yet, selecting a strategy for relevant properties and preferences is challenging. Even when the correct grouping is established, it does not come with a label explaining the reason for gathering the individuals. The complexity intensifies when properties come in degrees, as decisions regarding ordering strategies and data interpretation become crucial (Valore 2018).

Ontological relativity suggests being skeptical about the idea of a single taxonomy or unique correct grouping of individuals without considering relevant or perspicuous properties, which require pragmatic choices and evaluations. However, this does not necessarily mean we should abandon the notion of kind altogether. Although we may question the necessity of a unique specific structure based on property sharing, our ontology still requires a hierarchical taxonomy. The choice of ordering depends on theoretical concerns, considerations, and the range of our interests. Ontological relativity allows us to frankly expose and analyze the background assumptions. In this context, conceptual schemes or categorial frameworks serve as guiding backgrounds for our grouping options, determining the recognition of one structure of kinds over another.

In order to expose these ramifications, we need to apply conceptual analysis, identifying the relevant concepts that define the conditions for an individual to be an instantiation of a certain kind. These may include attributes, characteristics, and behaviors that are associated with the concepts. This step involves breaking down the concept into its constituent elements and examining how these elements interact with each other. The analysis should identify any underlying assumptions, relationships, and implications that the concept has. Conceptual analysis will allow us to incorporate any new insights we have gained from our scrutiny of the key elements and also to consider alternative definitions of the notion. This will help us develop an improved understanding of the limitations of our definitions. For instance, this is a a concept map of what a concept map is by Shavelson & Ruiz-Primo 1998:
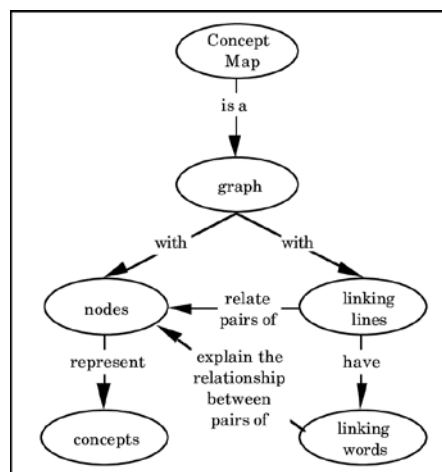

Figure 2
Adapted from *CSE Technical Report 491: On the Assessment of Science Achievement Conceptual Underpinnings for the Design of Performance Assessments: Report of Year 2 Activities*, Los Angeles: University of California 1998.

Thanks to this analysis, we can examine, in our exemplification, case studies of specific instances of epistemic injustice in educational practices and access to healthcare.

In the case of educational practices, our ontological analysis should be applied to the implicit conceptual frameworks of language, terminology, categories, assumptions embedded in textbooks and other educational materials. Analyzing the implicit conceptual frameworks of language and concepts in educational materials will reveal hidden biases that reinforce stereotypes or exclude certain groups or individuals. In addition, it can be applied to identify and challenge epistemic injustices in the classroom, through the analysis of the trees of concepts and categories used in educational settings. This involves paying attention to the actual practices (e.g., it is particularly important to pay attention to how students are being evaluated and assessed and to

recognize that students from marginalized groups may be less likely to be believed or understood by their teachers, based on hidden properties that are tacitly believed to be relevant). Ontological analysis can also be useful to explore the family of assumptions of these conceptual maps: the background categories that underpin both educational material and educational settings in the classroom, such as "intelligence" or "learning style." By questioning the assumptions and implications of these concepts, it will be possible to identify ways in which they contribute to educational inequalities and develop alternative approaches that are more equitable. Finally, ontology can be used to develop inclusive curricula, identifying gaps or biases in the curriculum that contribute to educational inequalities: by teaching teachers how to apply conceptual analysis and conceptual engineering to their own practices and materials, it may be possible to promote greater awareness of the ways in which concepts and categories can contribute to educational inequalities.

In the case of clinical practice and access to healthcare, conceptual analysis and conceptual engineering can be used to define and analyze health disparities in terms of their underlying conceptual categories and frameworks, addressing, for instance, language barriers and health literacy. By analyzing the concepts and categories used in healthcare communication, we can identify ways in which they may be confusing or exclusionary for patients with limited language proficiency or health literacy, and develop more accessible and inclusive approaches. Ontological analysis can also help healthcare providers and researchers better understand the diverse perspectives and experiences of patients and communities, and develop more inclusive clinical practices, by examining the concepts and categories that underlie medical diagnoses, treatment protocols, and research methods, we can identify how they may be biased or exclude certain groups, and work to develop more equitable approaches. Finally, it can be used to examine the ways in which social determinants of health, such as poverty, racism, and gender discrimination, affect health outcomes, and to include those silent variables in our conceptual framework when categorizing "kinds of patients." This way, we can identify how certain concepts and categories are used to support or undermine efforts to reduce inequalities, and develop more effective advocacy strategies.

Conclusions

The inequality in education and clinical practice and the lack of awareness of the limitations of current conceptual frameworks and ontological categories should represent a serious concern in our society, as it restricts access to a basic human need, creating feelings of resentment, insecurity, and unhappiness among members of our communities. By exploring the ways in which ontological relativity and epistemic injustice overlap, the suggested strategy will help to raise awareness of the unique perspectives and experiences of marginalized individuals and communities, through an explicit analysis of their specific conceptual frameworks and categories. This has been shown through two exemplifications.

By instructing educators on the implementation of conceptual analysis and conceptual engineering to their individual teaching methodologies and materials, it may encourage heightened recognition of the manners in which concepts and categories ground stereotypes and can perpetuate educational disparities. This prospect will result in more just and impartial pedagogical approaches, in addition to increased accentuation on heterogeneity and integration within the classroom setting and in dealing with students from different marginalized groups.

The application of conceptual analysis can also facilitate healthcare providers in comprehending the wide range of perspectives and experiences of patients and communities, leading to the creation of more comprehensive and inclusive clinical practices. The investigation of the fundamental concepts and categories that form the basis of medical diagnoses, treatment protocols, and research methodologies can assist in identifying any potential biases or exclusion of specific groups and facilitate the development of more impartial approaches.

Finally, by recognizing the ways in which ontological presuppositions operate in the realm of knowledge production, the ontology-based approach could help to identify areas such as academia and publishing industry where marginalized viewpoints are excluded or overlooked. This could lead to a more inclusive and diverse body of knowledge, as well as a greater appreciation for the importance of marginalized voices in shaping our understanding of different perspectives.

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