on_education
Journal for Research and Debate

_understandeconstructing data: lessons from jAIna onto-epistemology

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This is an experimental application of the Jaina seven-valued logic on the question of dataism, the problematic, chiefly Euro-US-centric, ideology for data-driven technosolutionism, in the context of higher education. Based on my own teaching experience and on this underrepresented onto-epistemological framework from India, I show the simultaneous validity of seven seemingly contradictory arguments, suggesting that this may be a practical way to escape unnecessary disputes within the field of critical data studies. These arguments focus on the interplay between different contexts where data are considered meaningful (or meaningless) and/or existentially relevant (or irrelevant).

Keywords: artificial intelligence, critical data studies, Jaina seven-valued logic, learning metrics, pluralism

Introduction

Can critical data studies be critical enough if the epistemic validity of the word data is taken for granted? Most prevailing epistemological frameworks, with their rigid linearity, often fall short in tackling practical and theoretical contradictions when it comes to the meaning and functionality of data. Certainly, there is the necessity to *understand:* teach learners about the ontological foundation of data: what are data and how do they operate within technological systems? Still, we find ourselves dedicating equal time to *deconstruction:* advocating for scepticism towards their very ontology and epistemological validity. All these while habitually submitting to institutional data-driven mandates, from attendance monitoring to scholarly performance in higher education. Since 'understandeconstructing' is not a verb yet, I propose to create it to advocate in favour of an ancient framework revived for a contemporary purpose, that, I argue, is useful in the critical interrogation of established terminologies, not only when it comes to data or education, but also with algorithms or AI as referents (hence, the intended stylised spelling in this text's title).

The present work attempts to apply a relatively underrepresented philosophical framework with its origins in India, the Jaina seven–valued predication logic (*saptabhangi*), to the existence and application of data in the educational setting. Jaina logic offers a protocol to decipher intricate contexts by accepting simultaneous ontological discrepancies. This is further relevant in understanding data beyond colonial imprints (Couldry & Mejias, 2019) and embracing Majority World viewpoints (Galanos & Reisel, 2020; Lewis, 2023; Maitra, 2020).

How Did We End Up Here? From Democritus to Dataism

The very terms datum (singular) and data (plural) reflect Greco-Roman and medieval linguistic traditions and signify a long-standing triumph and mainstreamisation of Democritean (distinct, measurable entities such as atoms, individuals, digits) over Heraclitean ontology and epistemology (a qualitative continuity of flows, boundlessness, constant change) (Flusser, 2007). This early pre-Socratic debate is echoed in a language that assumes discrete objects as 'givens' (data), likely yielding a system that encourages and is sustained by the creation of demarcation lines, the conception of outlines in artwork, and the separation of quantifiable types, metrics, identities, and entities.

Data, currently used as singular noun in everyday, even academic, parlance, carry two opposite narratives that are lost in the merger of a linguistic (and not technological!) singularity: (a) the simultaneous 'givenness' of an assumed precondition ('*Given* that the gravitational constant is… *given* that God is infallible…') as well as (b) the 'evident' or 'neutral' value of what has been collected ('Let the *data* speak for itself… the *data* revolution'). While early forms of data designated immutable beliefs, null hypotheses, and conjectures, this meaning is currently preserved tacitly in the taken-for-grantedness of captured data.

Following the post-2010 success of artificial intelligence (AI) in reorganising vast amounts of digital data, a prevalent deterministic ideology of so-called data-driven advancement has been established and defended (Kissinger et al., 2021). This movement, described by some more critical voices as 'dataism' (Van Dijck, 2014), a term concerned with the senseless excesses and optimistic view of data accumulation, has emerged alongside the rising tide of AI applications and techno-solutionist expectations, further adhering to the mysticism of data as 'givens.'

The inheritance of crypto-Democritean dataist perspectives, coupled with influences from longstanding colonisation, has significantly affected educational systems globally, perpetuating linear models that allow success measured by singular metrics. Contrarily, the Jaina framework introduces affirmative multiplicity as an escape from dataistic linearity.

Presentation of the Jaina Seven–Valued Logic

Before applying it, I want to present the seven-valued logic in its original translated form. This philosophical concept of many-sidedness originates from approximately 500 BCE, with the doctrine's particulars emerging during the 1st millennium CE (Matilal, 1981). Methodologically, the following seven simultaneously valid assertions can act as a mapping process or heuristic framework that can be applied in educational contexts where the critical theorist is confronted with contradictions of framings. I first invite the reader to consider the most exact English interpretation of the original framing:

"The seven predicate theory consists in the use of seven claims about sentences, each preceded by 'arguably' or 'conditionally' (*syāt*), [all] concerning a single object and its particular properties, composed of assertions and denials, either simultaneously or successively, and without contradiction. They are as follows:

(1) Arguably, it (i.e. some object) exists (*syād asty eva*). […]
(2) Arguably, it does not exist (*syān nāsty eva*). […]
(3) Arguably, it exists; arguably, it doesn't exist (*syād asty eva syān nāsty eva*). […]
(4) Arguably, it is 'non-assertible' (*syād avaktavyam eva*). […]

(5) Arguably, it exists; arguably it is non-assertible (*syād asty eva syād avaktavyam eva*). […]
(6) Arguably, it doesn't exist; arguably it is non-assertible (*syān nāsty eva syād avaktavyam eva*). […]
(7) Arguably, it exists; arguably it doesn't exist; arguably it is non-assertible (s*yād asty eva syān nāsty eva syād avaktavyam eva*)." (Suri, 1967, cited in Ganeri, 2002)

Elsewhere, these predicates of the Jaina logic have been translated in less jargon-heavy ways, by replacing 'arguably' with 'in some sense' and describing non-assertibility as indescribability, inexpressibility, or meaninglessness (Hill & Thornley, 1979). I will use this latter phraseology for the present piece as I consider it more accessible.

For my argument, I will refer to instances of meaningful and meaningless cases of existence and non-existence of data. However, I want to emphasise that such meaningfulness or meaninglessness may be extensions of data's referential reality's very indescribability – while their existence or non-existence may impact perceptions as to their meaning.

Applying the Jaina Seven–Valued Logic to Data

Given the context above – the long-standing prevalence of atomist thinking, the demonstration of the Jaina seven valued-logic and its relevance to critical data studies – I will now apply the framework to the day-to-day grappling with the world of data in educational contexts. What follows is based on my own seemingly contradictory, autoethnographic meta-observations about the use of various types of data in Higher Education, chiefly teaching courses with data (and metadata) as a subject of sociological scrutiny. These thoughts stem from my teaching experience, as well as from my general formal or informal educational experience in various regional settings. To make the arguments more practice-oriented, I emphasise the meaningfulness and meaninglessness of data existence. The seven categories should not be taken as separate entities. Their utility is found in the ways in which one fold correlates to others, how one argument can lead to its opposite.

In some sense, data exist and this is meaningful in educational contexts. When we say educational data exist, we refer to the set of measurable, observable recordings that provide insight into educational systems, processes, and outcomes from a particular standpoint. This could include standardised assessment scores, attendance records, or demographic information. They are, or can be induced by CVs, cover letters, LinkedIn endorsements/networks, university ranking data, impact factor rates relating to reading recommendations, or social media performance, among others. They can include the different types of data that are taught to students of statistical data and information science or general researchers according to their utility, thus varying, at least linguistically, "by form (quantitative or qualitative), structure (structured, semi-structured, or unstructured data), source (captured, derived, exhaust, transient), producer (primary, secondary, tertiary), and type (indexical, attribute, metadata)" but also "level (nominal, ordinal, interval, and ratio data), size (small and big data), linked and open data, automated and volunteered data" (Kitchin, 2014, pp. 4-5, 28, 57, 87-98). The cumulative effect of these technical words' wide use is relevant to the establishment of data as a taken-for-granted category, i.e. data as *data*, in the Latin sense). Acceptance of their existence can act as motivation, but upon accepting their premise axiomatically: attendance recording, Wi-Fi use, course descriptors, the varieties of marking types (grade systems and rubrics, activity percentages) are just but a few examples of modes in which data exist by way of being

meaningful in everyday educational practices.

In some sense, data do not exist and this is meaningful in educational contexts. However, from another standpoint, educational data do not exist as enduring, independent entities. As they manifest in specific measurements with specific tools at specific points in time, serving different motivations and purposes, the latter may shift and change, rendering the data ephemeral and context-dependent. Kitchin often quoted a 1950 passage by Jensen, suggesting the unfortunate historical lock-in of data as a word choice, instead of 'capta,' that is captured segments of experience, instead of 'givens,' and thus always dependent on methods for metrics measuring instruments, and (rhetorical) motivation for collecting and using data (Kitchin, 2014, pp. 2-3). Such rhetorical data (capta) act as what Deleuze and Guattari conceptualise as "apparatus of capture" (1987, p. 555), a social mechanism where hierarchical power is expressed through methods of appropriating surplus benefit from seemingly beneficial means: a data-driven society, beneficial for everyone's convenience, presupposes schemas of data-driven control and surveillance. To deny the existence of data but accept their meaning in education is to teach how to think about data critically by examining their uncritical mobilisation in governmental, entertainment, military, healthcare, or other contexts.

In some sense, data exist and do not exist, and this is meaningful in educational contexts. It is possible that educational data both exist and do not exist simultaneously. They exist in tangible records, statistics, and everyday parlance. However, they also do not exist because they fail to capture the fuller, nuanced reality of human learning and experience. The more one interrogates them critically in either time or space, the more they dissolve. In terms of time, this can imply an iterative, abductive approach to epistemology, where data serve as points of exploratory passage within hypothetical inference after continuous induction/deduction and empirical/conceptual variations in learning (Timmermans & Tavory, 2012; Jensen, 2014; Hoffman et al., 2020): we learn and we revise as we go along. In terms of space, we may think of Kitchin's reference to data assemblages, the constitution of data between intersecting systems of thought, knowledge and institutions, financial, commercial, political, governmental, and legal systems, local practices and communities, material infrastructures, or subjectivities, again, dissolved once broken up into its parts (Kitchin, 2014, pp. 24-26). Admitting the existence of data axiomatically can allow for a critical interrogation of their production, biographies, and geographies.

In some sense, data exist but this is meaningless in educational contexts. This fourth standpoint refers to the notion that despite their existence, educational data might be too intricate, interwoven, or idiosyncratic in their form to be fully described in such a way as to render them meaningful for educational purposes. Intricacies like individual growth, social context, emotion, creativity, or other elements of the educational journey may defy quantification or be too private for formal education to employ. Such a standpoint enables an agnostic approach to data that makes amends with the Euro-US linguistic consensus, or the very possibility that an inherent truth *may* exist but is inherently unavailable to humans. However, such a standpoint denies the utility of current mainstream data epistemology.

In some sense, data do not exist and are meaningless in educational contexts. This principle allows for the perspective that educational data do not exist, and even its non-existence is complex and indescribable. That is to say, our inability to capture the full spectrum of learning experiences and outcomes reflects the limitations of our data constructs, making the absence of a complete data portrait in itself an indescribable concept. Within the educational context, the predetermined

definitions of data measurement through hierarchies of power perform social constructs, such as gender/sex, species, age, height, race, and ability, thus questioning the very essence of data by asserting control over what is neutral and what counts as biased or skewed data. The use of marking scales or dichotomisation between pass or fail, acting as extensions of these hierarchies and constructs, further challenges the ontological nature of data, as they tend to oversimplify the multifaceted reality of student learning and exclude the nuances of informational richness and multiplicity.

In some sense, data exist and do not exist and are meaningless in educational contexts. Beyond the surface, data simultaneously resist definition while also resisting complete abolishment as a category, affirming the intricateness and elusiveness of the education sphere. The claim of data's non-neutrality contradicts the concept of a given (that is to say, accepted objective constant), which signifies neutrality without bias or openness to much interpretation, revealing an inherent tension in how we perceive, teach about, and use data. Recent events like the Marking Assessment Boycott as part of ongoing industrial action in the UK highlight the peculiar pragmatism of this matter. Despite seeing the value of marking assessments, some participants protested by withholding their labour – withholding one's labour as a means of protest affirms the labour's onto-epistemological validity. The prolonging of these actions spurred deeper reflections on the significance of these metrics during the boycott. The decision to proceed with pass/fail marks and award degrees despite the industrial action, proved that the overall system could essentially proceed without the data metrics and depend entirely on the circumstance. For a very short period, educational data did not exist or had no meaning: the practice among certain UK universities in June 2023 of conferring provisional degrees without requiring graded coursework, coupled with students readily accepting these credentials, has sparked debate across online fora and informal dialogues regarding the very significance of grades in education. The potential dismissal of grading may act as a cautionary tale, taking into account its enduring impact on academic excellence and the perceived worth of academic qualifications in society. This could even suggest a conceivable future where numerical assessments could be abolished. If they are not, they provide evidence that data metrics exist, only as long as they serve a data-driven university in ruins (Readings, 1996) that quests academic excellence (Sørensen & Traweek, 2022) through metrics, producing maps instead of exploring territories.

In some sense, data and education are meaningless anyway. In lieu of a conclusion, this final angle not only acknowledges the inscrutability of educational data, but questions the very ontological enterprise and given-ness of both education and data. I have witnessed multiple conversations since January 2023, in light of generative AI tools, concerned with the purpose of education and how this is defined in the context of defining cheating: what do students learn when they use various degrees of automation, from search engines and citation managers to essay mills, live lecture subtitling, and generative AI? Do they learn? Do educators teach? For historians and sociologists of education, such questions are not new (Hof, 2023; Rahm, 2023; Selwyn, 2022) – however, their circular re-emergence suggests the need to break the cycle by questioning its historical (atomist) philosophical foundations. Suppose one begins with the prospect that such elements of the broader educational experience defy categorisation and remain slippery and ineffable. In that case, we may broaden our conceptualisations of education beyond the confinements of university institutions so as to extend to individual and collective learning experiences.

Concluding Remarks: Critical Data Studies as Perspectival Variance

The simultaneity of the *saptabhangi*'s propositions (including the present one) act as navigational critical tools – and while it is inherently difficult for linear- or dialectic-oriented epistemologies to conceive of contradiction as a permanent state and thus understandeconstruct data, it is through constant engagement with such 'trouble' (Haraway, 2016) that less troublesome lived futures can be epistemologically imagined and designed.

The Jaina framework can serve, thus, as a unifying concept, combining different critical approaches to critique dataism. Its context-sensitivity to polyvalent perspectives (Clerbout et al., 2011), can be linked to Barad's (2007) onto-epistemology, which treats as inseparable ontological being and epistemological methods and tools. Jaina logic allows flexibility towards novel ways of thinking, similar to how Olufemi (2021) and Woolgar (2022) suggest experiments in 'otherwising'. It aligns well with Nissenbaum's views on 'contextual integrity' (2004) to understand digital privacy in a variety of contexts that can be applied more broadly to our understanding of data not as a singular unit but as a contextual entity.

Jaina logic also allows us to understand, appreciate, and deconstruct (once again: 'understandeconstruct') different perspectives through perspectival variance (Lipman, 2016), akin to the sociology of scientific knowledge's (SSK) symmetrical examination of knowledge claims (Bloor, 1991). Lastly, rooted in non-violence and with a call to humility, Jaina promotes a pluralistic viewpoint which highlights silence as a virtue (Rahlwes, 2023), thus aligning with Penn's algorithmic silence (2021) in an effort to decomputerise, or recent abolitionist demands (Benjamin, 2019) for the right to refuse participation in data collection. Experiencing the (data) world through the seven-valued logic also resonates with Butler's idea of gender identity as performative and fluid, encouraging the expression of identity through its diversity (Mundra, 2022) rather than as fixed data representations.

A weakness, nevertheless, in applying this Jaina framework to concepts already emerging within Euro-US-centric contexts such as data, is that any polyvalent perspective is subject to power asymmetries (Oda & Galanos, 2021). The inherent difficulty in the mind that is accustomed to linear thinking when approaching a framework that gives simultaneously equal credence to contradictory perspectives, translates into a power game of privileging one onto-epistemological stance or one linguistic choice over others. It is perhaps the case that educational practice informed by Jaina values has to embrace meditational practices that exercise the learner towards a symmetrical appreciation of many types of otherwising. A form of conceptual gymnastics, where any learning objective can translate into its opposite and its existence can be doubted at any given time and context.

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Recommended Citation

Galanos, V. (2023). _understandeconstructing data: lessons from jAIna onto-epistemology. *On Education. Journal for Research and Debate*, *6*(18).
https://doi.org/10.17899/on_ed.2023.18.5

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