EZUMEZU LOGIC AS A DECOLONIAL SYSTEM OF ORDER

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Abstract

Logic is often taken as the study of the laws of thought such that, given certain premises and the laws of logic, certain conclusions follow necessarily. The "traditional laws of logic," developed in European thought, have set the standard for what counts as correct reasoning and have been indispensable tools for the colonization of Africa and the Americas. In this paper, I will argue that Ezumezu logic developed by Jonathan Chimakonam and his colleagues can serve as an alternative to the received logics of Europe but can also serve as a resource to undermine the structures of the colonial system that has been imposed on Africa and the Indigenous peoples of America. To see the potential of such logics, I will argue that Ezumezu logic and the implied logics of Indigenous North America are instances of a larger decolonial system of order that frames both reason and agential action.

Introduction[1]

Ezumezu logic marks an important contribution to decolonial, critical and constructive projects. Logic—most often viewed in the US as an

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incidental subject matter studied by students seeking to escape a math requirement or prepare for law school exams—is rather a central element in understanding how communities and their ways of thinking and relating are organized. I proceed here from a perspective framed by early 20th century American philosophers and logicians Josiah Royce (1951) and C. S. Peirce (1992). Responding at once to the increasing abstraction of philosophical idealism at the time and the increasing narrowness of logical studies under the influence of turn-of-the-century logicism, Royce declared that logic is *the science of order* (See PRATT, 2010). He addressed the topic of order this way:

> The one great task of the intellect is to comprehend the orderly aspect of the real and of the ideal world. The conception of order lies; therefore, just as much at the basis of an effort to define our ideals of character and society as at the basis of arithmetic, geometry, or the quantitative sciences in general…. It is, therefore, not a matter of mere accident or of mere play on words that, if [one] publishes a book called simply 'A Treatise on Order,' or 'The Doctrine of Order,' we cannot tell from the title whether it is a treatise on social problems or on preserving an orderly social order against anarchy or with studying those unsymmetrical and transitive relations, those operations and correlations upon which the theories of arithmetical, geometrical, and logical order depend. The bridge that should connect our logic and mathematics with our social theories is still unfinished. The future must and will find such a bridge. (ROYCE 1951, 223)

In effect, Royce understood ordered thinking and ordered experience to be meaningful precisely because they are ordered in a particular way.

Carpentry, photosynthesis, math, poetry, music, geology, and plumbing are all ordered as particular systems and as systems interacting with each other. 'Logic,' from this perspective, is both the order of processes and things and the name of the field of study that considers how things are ordered in the most general sense. Standard approaches to logic taken in philosophy or in logic classes represent efforts to study a particular order—how humans think or speak (or both). Such narrowness, of course, leaves out some (perhaps most)

systems of order that are ignored by or subjected to the laws of limited, formal logic. I have argued elsewhere that such impositions of a limited logic are part of the colonization process at least as it was carried out in the Americas (PRATT 2021). But more on that later.

From Royce's perspective, it should be clear that the scope of logic as a general study of order should find that the way communities are ordered—their value systems, laws, emotional connections, physical spaces, food practices, aesthetic expectations—are all orders relevant for logical consideration. To the extent that they are orders, there is an invariant dimension, a structure, on which the particulars hang. Such structures make space for some elements, exclude others, and determine what counts and what does not.

What Royce sought was the most general logic—the most general principles of order—that would provide insight into the traditional areas of logic and also be a resource for understanding experiences of all sorts—human, more than human, small scale and large. His colleague, Peirce, shared many of the same aspirations, arguing that logic finally framed the structure of reality and the sciences that study it, eventually proposing metaphysical categories and a theory of signs that identified the invariants in both ontology and meaning.

While neither Royce nor Peirce can be seen as thinkers who aimed to take on colonization, racism, sexism, or oppression in other forms, their work is nevertheless a philosophy of resistance that can aid those efforts. Just as others in the North American philosophical tradition sought to use philosophy to undermine the limits and exclusions of American society, Royce and Peirce sought to undermine the limits of 19th century European-descended thought as it had come to dominate philosophy and the sciences in North America. Even as they affirmed the dominant social structure and ongoing European and American empires, they saw that the systems as received stood in the way of understanding human experience and the place of humans in the wider world. Central to their consideration were two issues: the role of judgment in experience and the status of possibility, what Peirce called *being in futuro*.[2]

Jonathan Chimakonam's development of Ezumezu logic can, from the standpoint of logic as the science of order, be seen as a

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[2] See Pratt and Rosiek, 2023.

culturally specific order system that is framed in relation to the dominant European-descended system but also as dissent from it in important ways. It provides resources to see what is lost in the dominant system and introduces the possibility of rethinking logic as a grounding order for fostering a distinctive African world and way of living.

My plan here is, first, to review aspects of Ezumezu logic and summarize its relation to the dominant system in order to consider, second, the implications of Chimakonam's assessment of the system. He writes:

> [Ezumezu logic] is not a new or unique logic different from logic as it is conventionally known. Just as different traditions such as relevance, para-consistent, three-valued, four-valued, multi-valued logics, etc., have come to be developed as extensions of the big umbrella or logic whose main differences are in the expansion or loosening of the laws which guide reasoning within them, Ezumezu joins that league as a variant of three-valued logic. (CHIMAKONAM 2019, 148)

I will argue that Ezumezu and the dominant formal system of logic are both instances of a wider system of order and that, in light of this larger system, Ezumezu can be seen to be a more inclusive order with the potential to serve not only as a resource for the development of an African logic but as a critical and constructive resource for decolonization around the world. What the dominant order lacks—and what enables its power as a colonizing tool—is that it erases the role of the agent and eliminates the relevance of possible futures. Ezumezu logic restores (or potentially restores) both elements.

I will first summarize what I take to be key elements in Ezumezu and then briefly present key elements of the wider agential logic proposed by Royce. Finally, I will suggest how, in light of this logic of agency, Ezumezu can provide a model of how logic can also take into account the role of purpose and alternative futures.

Key Elements in Ezumezu Logic
Chimakonam accepts the more or less standard idea of logic as a systematic study of the principles of correct reasoning, part of the "edifice of logic" (CHIMAKONAM 2019, 148). But unlike dominant

views of logic, Chimakonam also makes two claims. First, there are multiple logics dependent on contextual applications and the rules of reasoning affirmed (that is, different rules accepted as a result of adapting to context amount to different logics). Second, since logics are responsive to context, they are also tied to culture broadly understood. African logic is "adapted to African background ontology and worldview" (CHIMAKONAM 2019, 97). I have argued elsewhere that both claims are well-founded and provide reasons for and suggest means of decolonizing the dominant "edifice" (PRATT, 2021).

Since Ezumezu is closely connected with the African context and is part of the edifice of logic generally (and so also of the colonizer's logic), it can be used as a critical tool to examine the dominant logic in order to identify its impact on Africa. Dominant logic, for example, has been used as the standard of reasoning such that those who do not use it are marked as irrational and lesser beings. The rules of colonizer logic have been used to exclude ideas, categories, and people from access to opportunities. The same dominant logic that sets standards and excludes individuals and groups has also been used to undercut African traditions and history. At the same time, the commitments of Ezumezu can serve as an instrument of decolonization by supporting the restoration of African traditions and providing a framework for the Africanization of education (See CHIMAKONAM, 2019, Chapter 11).

Chimakonam claims that Ezumezu gains its structure and value by serving as "an accurate mapping of African systems of thought" (CHIMAKONAM 2019, 97). The resulting logic has three key features. First, it is (as already mentioned) a *3-valued system* that is paraconsistent (that is, it does not permit explosion—*ex falso quadlibet*, 2019, 136). The three values are true, false, and "the third value described as ezumezu where the two polar values (truth and falsity) complement" (CHIMAKONAM 2019, 94).

Second, Ezumezu logic is Arumaristic. Such reasoning recognizes a "peripheral variable or agent" who, from that position, can challenge the 'proposals' or claims of other agents. Agreement of the agents is marked as the 'center' and so reasoning in a traditional African context uses a method of making inferences from the periphery to the center. This pattern of reasoning is 'arumaristic' and contrasts with the 'ohakaristic' method that makes inferences from the

center—from proposals taken as acceptable or applicable to all agents—to agential particulars on the periphery (CHIMAKONAM 2019, 117). Arumaristics mark the struggle with contradiction, of opposing positions that, together with ohakaristics—that is, the forward looking aspect of the struggle that aims to transcend contradiction and achieve complementation—mark "creative struggle."

The term 'arumaruka' names the method that "brings two seemingly opposed variables into a logical relationship in which the identity of the separate variables can be strengthened in the collective," while ohakarsi brings "opposed variables into a logical relationship in which the identity of separate variables come together to strengthen the collective" (CHIMAKONAM 2019, 118). The former preserves difference in relation to the collective while the latter fosters a kind of unification. Despite the terms or points of view being at odds, they are not engaged in dialectic in the Hegelian sense. They are rather in a "conversational" relationship, a "third mode" that includes both contradiction and complementation "where there is creative struggle to unveil new concepts and thoughts" (CHIMAKONAM 2019, 153). Chimakonam represents this third mode through what he calls the *conversational curve* (CHIMAKONAM 2019, 141)[3].

Third, Ezumezu logic is *value complementary* in that it affirms truth gluts (that is, A can be both true and false) and so is dialetheic. Complementarity here is not the complementarity of ordinary set theory in which the complement of A, for example, is everything not-A. Rather, if A is true and its complement not-A is also true, then a third value in addition to true and false is generated such that marks both terms as true. This is the truth value called ezumezu.

Royce and Peirce called the ezumezu value 'betweenness', a value to label the intersection of complementary (or obverse) terms that are both true. In Royce's system, the relation of complementarity is described as the O-relation, the obverse relation, a relation of

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[3] Chimakonam defines the "conversational curve" as "a graphic representation of the arumaristic and ohakaristic relationship between opposed variables, call them *nwa-nsa* and its nemesis *nwa-nju*" (CHIMAKONAM 2019, 141). The third mode, the conversation where the process where the variables meet and interact, is called "*nwa-izugbe.*"

incompatibility. If the complementarity relation is true or holds for two or more terms, another term, C, is generated which is at once compatible with A and compatible with B but where the three terms, A, B, and C are not compatible (that is, they are complementary).

Formally, Ezumezu logic endorses six laws. The standard laws of the dominant or colonizer's logic are identity, non-contradiction, and excluded middle. "I add three new laws to [these]," Chimakonam writes, "Njikoka, nmekoka and onona-etiti in lieu of the fact that the ideas of absolute identity, absolute difference and mutual exclusivity which the three traditional laws project in addition to serving a purpose of consistency in reasoning, actually undermine dynamism and short-change other facets of human reasoning by being overtly deterministic" (CHIMAKONAM 2019, 138).

The *Law of Njikoka* (which Chimakonam also calls "integrativity") is an arumaristic proposition that marks relationality and integration. The general idea is that meaning is relational and is "derived from variables when they come together." A is true iff A is true [in relation to; or "wedge implies"] 'A and B' is true. The operation "wedge implies" is a strengthened form of the material conditional. It is similar to a *cetris paribus* conditional used in conditional logic—not as strong as a strict conditional but stronger than a material conditional in that it requires that "all things are equal" in the relation of the antecedent and the consequent. A is true iff, all things being equal, if A is true than 'if A, then A and B is true'.

Note that Chimakonam and Amara Esther Chimakonam (2022, 11) reformulates Njikoka in a later paper as "(T)Ax <-> [(T)Ax >> (F)~Ax]," that is, A is true iff A is true in relation to its opposite, not-A, that is false. In effect, the context requires that if A is true then (all things being equal or in this context) not-A has the truth value false. A and not-A are *integrated* iff, all things being equal, A is true and not-A is false.

The *Law of Nmekoka* ("complementarity") is also an arumaristic proposition. Nmekoka also marks contextuality but a context in which, given that A is true, not-A is also true. So A and not-A are complementary iff A is true in a context then not-A cannot be false in that context. Here Ezumezu is like a first degree entailment system of the sort described by Graham Priest in which A is assigned

true relative to X and not-A is also assigned true relative to X. So 'A and not-A' is true in relation to the context of X.[4]

The *Law of Onona-etiti* is also called the "included middle," an ohakaristic proposition. Like the truth value ezumezu, onona-etiti marks something between. Chimakonam observes that the principle "closely interprets the Igbo concept [of the same name] meaning 'between others, that which comes to the middle'" (CHIMAKONAM 2019, 140). This can be taken as meaning "A could be both true and false or if a thing is equal to itself it can be unequal to or different from itself depending on context" (CHIMAKONAM 2019, 140).

The three principles of Ezumezu logic are taken in relation to a context framed by two theses. The first is the *Ontological Thesis*: "*realities exist not only as independent units at the periphery of the circle of existents but also as entities capable of coming together to the center of the circle of existents, in a network for an interdependent relationship*" (CHIMAKONAM 2019, 141). Ezumezu then is framed by a relational ontology. The second thesis is the *Logical Thesis*: "*values are to be allocated to propositions not on the bases of fact such propositions assert but on the bases of the context in which these propositions are asserted*" (CHIMAKONAM 2019, 142). Truth, then, is context dependent. Taken together, the dynamic character of a relational ontology is engaged through claims that are also dynamic, since what is true changes with changing context. A world characterized by these commitments undermines absolute and universal principles and the structure of colonial logic that reinforces them.

What is the relation of the Ezumezu principles and those of Western or dominant logic? Strictly speaking, if the principles of the dominant system are accepted without qualification, then those principles would override the Ezumezu principles (which clearly violate them). If these principles capture the common commitments of African culture, then accepting the dominant logic is to override and reject the core ordering principles of African life.

But in a world characterized by the ontological and logical theses of Ezumezu logic, the relational and contextual framework allows the Western principles to be used, but only within a context in which they are accepted—explicitly or implicitly. The theses of

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[4] See Priest, 2008, Chapter 8.

Ezumezu (which are the principles of a relational and contextual logic) are wide enough to contain both Western and Ezumezu logics and so provide an account for both and mark their differences. From the Ezumezu perspective (or rather in an Ezumezu world), Western logic is compatible with Ezumezu (as different systems) and suggests that the two systems are properly understood as subsystems of a more general logic that explains both.

Chimakonam argues that the understanding of Western logic from the perspective of Ezumezu provides reasons to try to set Western logic aside (even though it is a legitimate logic in its context). He proposes three goals to be satisfied by any successful logic: (1) to avoid inconsistency; (2) to avoid contradiction; and (3) to avoid absolute claims (CHIMAKONAM 2019, 133). Ezumezu logic, according to Chimakonam, accepts goals 1 and 3. Inconsistency is avoided when it can be avoided (given Njikoka and Nmekoka) because, in light of goal 3, truth is context-bound and so Ezumezu logic can include inconsistent claims. Universal claims (weakened by the third goal) are to be understood as what Peirce called 'generals'—claims that hold most of the time or probabilistically. Chimakonam argues that Ezumezu holds a universalness theorem that states: Any system of logic is universal iff its elementary formal statements are context-specific (CHIMAKONAM 2019, 134). By adopting the universal theorem, Ezumezu can also accept goal 2, since claims that without context might be of the form 'A and not-A', in context (that is, with truth values assigned within a context where A and not-A, for example, can both be assigned true), contradiction is avoided. Consequently, Ezumezu logic can accept all three goals of a successful system of logic.

Western logic, on this account, fulfills the first two goals but rejects the third goal and the idea that truth is bound to context. On this standard, the dominant system of logic is less successful and, while clearly a viable system of order, ignores a key element of a logic born of the commitments of African life and culture that demand responsiveness to context.

Ezemezu Logic and the Agential Logical System
Ezumezu logic is in many ways similar to a logic which frames the order systems common among North American Indigenous peoples. Their central commitment to the need to order life in relation to

particular lands and the recognition that agency—the ability to act with a purpose—is shared by humans, non-human beings, and complex systems such as tribes, lands or places, species, ecosystems, and climate. Indigenous logics, like Ezumezu, are not reducible to a single set of truths since truth is relational and contextual. Instead, these Indigenous logics, might be characterized as having four broad features (which may also be characteristic of Ezumezu logic).

First, such logics are *modal* in their recognition of the structure of possibility and necessity. Second, they are *dialetheic* in their affirmation that some contradictions are true. Third, these logics are *paraconsistent* in that the principle of explosion does not hold. Finally, these logics are *entential*, in that they will include the formal role of purposes or unrealized possibilities as causal in the processes of ordering and taking action. As a result, actions taken are also necessarily acts of sacrifice in that whatever action is taken, other possible actions will never be actualized and so are irrevocably lost. I will claim (without argument here) that the diverse logics of colonized cultures share these characteristics and can be understood as subsystems of a more general logic that in turn can serve as a critical framework for advancing anti-colonial and decolonial efforts to transform philosophy, social sciences, and politics.[5]

A logic of agency that meets these most general conditions originated in the logical work of American philosopher Josiah Royce (1951; see also PRATT, 2010). Taken up in light of indigenous conceptions of agency (see PRATT, 2006), Royce's logic, which he called $\sum$, is a system of order grounded in the logical operation of obverse relation (that is, where 'A and not-A' is true), that is, it is based on a statement of possibilities such that the possibilities A and $\neg$A are both true of a situation in which an agent can act. An agent, in order to act, selects from the two (or more) incompatible possibilities and, in doing so, irrevocably sets one line of action or set of possibilities aside and opens the other to new possibilities. The possibilities necessary in order for an agent to be able to act are incompatible (that is, are contradictory in that both cannot be taken together) *and* true, such that an agent has a real choice between them whenever the agent acts. Contradictions in $\sum$ are only ruled out when actions are actually

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[5] This paragraph and the next three are modified versions of paragraphs in Pratt, 2021.

taken. The principles of non-contradiction and excluded middle only hold for actions taken such that the other (contradictory) actions are consequently negated. An action taken collapses the alternatives into an actual outcome (based on the action taken) and eliminated possibilities (that is, the outcomes that would have followed had another action been taken).

Agency is not, however, acting through coercion or by chance; it is, to use a term proposed by Terrance Deacon, "ententional." Agency requires that the agent chooses in light of some purpose from some bounded range of possibilities. Agency, in this sense, is not just the ability to act but the ability to act with a purpose. These possibilities (or future states) are what Deacon (2011, 3) calls "absential phenomenon," that is, "the paradoxical property of existing with respect to something missing, separate, and possibly non-existent …phenomena whose existence is determined with respect to an essential absence" (DEACON 2011, 3). While dominant logic, in its received form, involves an agent and processes of inference framed by non-contradiction, excluded middle, and identity, this alternative logic involves an agent, two or more incompatible courses of action, and an organizing purpose or entention. Purposes, on this account, require the presence of real alternative futures, *being in futuro*.

Like Ezumezu and Indigenous North American logics, Royce's $\sum$ does not require ontological uniformity. In the way of most modal logics, $\sum$ supposes plural worlds (without regard to what "kind" of worlds they are). Rather than reducing the experience of different worlds (cultural or otherwise) to a single world, $\sum$ can affirm dramatically different worlds of varied access and connections despite being related by a common logic or system of order. Since past actions are inaccessible (that is, actions are not reversible), $\sum$ requires that unity, when it occurs, occurs only in the outcome of action. Origin stories, shared languages and cultural forms, are operative in the ordering process, but they are operative so as to realize possibilities, not to realize some unity in the past. $\sum$ also implies norms. However, $\sum$ does so without establishing the norm of consistency. As a result, where dominant logic establishes the expectation that rational thought always rejects contradiction and that thinkers who accept them are "primitive" by definition, $\sum$ *requires* inconsistency in the present moment so that agents can act. From the perspective of $\sum$, the demand for consistency amounts to the demand that agency cease in favor of

a static system of actions, beliefs, and values that are all compatible with each other.

Where dominant logic expects epistemic and practical access across cultural and other differences, $\sum$ expects only limited access. Bridging differences (that is, going beyond obverse relations that mark boundaries) requires the generation of a third term, like onona-etiti in Ezumezu, but where the third term is a future state or purpose in terms of which the present inconsistency of a boundary can find a common orientation. Shared purposes constitute the point of contact for joint or collective action but do not require that the divergent courses of action unify except in relation to the issue at hand. The result is that access across differences is possible but only happens locally around the possible shared purpose, not universally where the two sides can be reduced to a single whole. While dominant logic requires that users seek consistency of actions, beliefs, expectations, and world, $\sum$ places agents in the midst of inconsistency where beliefs, expectations, and worlds, include contradictions that cannot be resolved in terms of the situation from which they emerge. It is only in action that contradictions collapse such that a new line of possibilities is actualized, even as another line is lost forever.

I have argued elsewhere that the dominant, colonizer logic is a subsystem of the larger system $\sum$ (see PRATT, 2021; PRATT & ROSIEK, 2023). In the dominant logic, the actions of agents are overdetermined by the narrowing of worlds to one, to the demand for consistency of beliefs and truth claims, the use of *reductio* arguments that rely on the principle of explosion, and the exclusion of purposes as making a formal difference in inference. The inconsistencies necessary for action still occur but the possibilities excluded are overlooked or seen as possibilities destined to be left behind. The necessary organizing purposes are present as well, often captured by the idea that the judgments that direct action are "neutral" or "objective" and so obscure the fact that they are nevertheless organizing purposes. Such logic works because it can operate within the larger system. That it has worked, however, has been central to the rise of settler colonialism and other systems of racial, gender-based, and economic oppression. To resist such systems, it is necessary to take up an alternate or wider logical perspective. Ezumezu logic, while aimed at fostering African culture and life, points toward this larger project.

Royce's System Σ, as a general logic, becomes a critical tool when one seeks to explain how the general system came to be limited by social, political, economic, and other forces that made it the narrow operative system that actually orders one's community and environment. If this approach is right, wider systems are possible. Narrower systems can be explained by what principles and actions serve to enforce the laws of the logical system that dominates. However, the larger framework raises the issue of what purposes are in place that framed the choices made. Elsewhere I argue that the process of colonization is enabled both by a logical structure that is imposed on the colonized and by a purpose or vision of a colonized future to the advantage of the agents acting. Such agents are not necessarily human-sized agents but can also be systems that, like individuals, operate toward some *being in futuro*.

Conclusion

Criticism alone is insufficient as a response to an oppressive system and has the potential to reinforce it. Ezumezu logic is an example of a critical tool that provides constructive resources. Not only do the principles of logic provide a model for cultivating how one can reason from a present situation to a future, but they also provide norms that can serve as unrealized states of affairs. These norms or futures include the expectation of pluralism, of the restoration of an African tradition of thought, the idea that value resides in both the center and the periphery, and so on. Ezumezu logic, in this case, is not an incidental subject matter but a central philosophy of resistance.

Declarations
*The author declares no conflict of interest or ethical issues for this work.

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