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Reviewing the Extended Mind Theory: Theoretical Insights and the Role of Experimental Philosophy in Understanding Cognitive Boundaries [†]

[Genişletilmiş Zihin Kuramı Üzerine: Bilişsel Sınırları Anlamada Kuramsal Yaklaşımlar ve Deneysel Felsefenin Rolü]

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Abstract: This study proposes a theoretical account of the evolution of the extended mind hypothesis by using experimental philosophy (x-phi) in the study of the concept of intrinsic content. Building on Clark's (1998) argument on behalf of extended cognition and Adams and Aizawa's (2001) neural-centric process argument, it considers how cognitive boundary judgments relying on intuition can illuminate the use of external devices, such as notebooks or mobile phones, in mental processes. The study concludes that x-phi's methods, which explore folk intuitions, offer a practical means of figuring out whether intrinsic content is contained in the brain or distributed across external systems. By considering factors like socioeconomic status that may affect intuitions, it highlights x-phi's ability to provide empirical insights to discussions in philosophy of mind (Knobe & Nichols, 2008). Drawing on inter-disciplinary methods across several disciplines (Yüksel, 2021), this research links philosophy and cognitive science and offers an addition to debates around 4E cognition (embodied, embedded, extended, enactive). The proposed method is aimed at making the theoretical and intuitive components of extended mind theory more transparent and providing a gateway towards future empirical investigations.

[†] Some parts of this article, particularly those discussing the theoretical aspects of the extended mind theory, were previously presented as a conference paper at Günümüz Koşullarında Felsefeyi Yeniden Düşünmek (Rethinking Philosophy in Contemporary Contexts) held in Gaziantep, Turkiye, 2024. This article expands upon that work by incorporating a detailed analysis of experimental philosophy and its implications for evaluating the extended mind theory.

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Öz: Bu çalışma, içsel içerik *(intrinsic content)* kavramının araştırılmasında deneysel felsefe *(experimental philosophy/x-phi)* yöntemlerinden yararlanarak, genişletilmiş zihin teorisinin *(extended mind theory)* kuramsal gelişimine yönelik bir değerlendirme sunmaktadır. Bu çalışmada, Clark'ın (1998) genişletilmiş biliş *(extended cognition)* yaklaşımı ile Adams ve Aizawa'nın (2001) sinir-merkezli süreç *(neural-centric process)* savı temel alınarak, bireylerin dışsal araçlar—örneğin cep telefonları ya da not defterleri—ile zihinsel süreçleri ilişkilendirme biçimleri, verdikleri felsefi yargılar *(philosophical judgments)* üzerinden ele alınmaktadır. Araştırma, felsefi yargılara odaklanan deneysel felsefe yöntemlerinin, içsel içeriğin yalnızca beyin merkezli *(brain-centred)* olarak mı bulunduğunu yoksa zihinden dış dünyaya aktarılarak mı dağıldığını *(distributed)* anlamanın işlevsel bir araç sunduğunu öne sürmektedir. Ayrıca, bu tür felsefi yargıları etkileyebilecek sosyo-ekonomik durum *(socioeconomic status)* gibi etmenler göz önünde bulundurularak, deneysel felsefenin zihin felsefesi tartışmalarının ampirik katkı sağlayabileceği vurgulanmaktadır (Knobe & Nichols, 2008). Disiplinlerarası yöntemlerden (Yüksel, 2021) yararlanan bu araştırma, felsefe ile bilişsel bilim arasında bir köprü kurmakta ve 4E biliş *(4E cognition-embodied: bedenlenmiş, embedded: gömülü, extended: genişletilmiş, enactive: etkin/edimsel)* çerçevesindeki tartışmalara katkı sunmaktadır. Önerilen yöntem, genişletilmiş zihin teorisinin hem kuramsal boyutlarını hem de felsefi yargıya dayalı yönlerini daha görünür kılmayı ve ileride gerçekleştirilecek ampirik araştırmalar için bir temel oluşturmayı amaçlamaktadır.

Anahtar Kelimeler: genişletilmiş zihin teorisi, deneysel felsefe, halk yargısı, içsel içerik, sosyoekonomik durum, 4E biliş.

1. Introduction

The theory of extended mind, according to Clark and Chalmers (1998), challenges one of the strongest assumptions in both cognitive science and philosophy of mind: that thinking is skull- and skin-bound. Cognitive activity, according to the theory, is not bound to the brain but is externalized to tools and environments that people use. For instance, Clark and Chalmers utilize the case of Otto, an individual with memory impairment, who employs a notebook to recall items that other individuals would recall in their biological memory. Whenever Otto requires recalling an address or a fact, he consults his notebook just like an individual with no memory impairment would consult their brain. By functioning as an external memory aid, the notebook becomes an integral component of Otto's cognitive process.

The extended mind theory posits that external devices, when embedded within cognitive processes, co-constitute mental processes with biological systems (Clark & Chalmers, 1998). Notebooks or smartphones can hence be embedded within our cognitive systems, which contravenes the internalist account of cognition as brain-

bound. Such a change provokes fundamental questions: if a notebook works like memory, is it of the mind? Or can external hardware contain inherent content? Clark and Chalmers assert affirmatively, appealing to functional integration. Adams and Aizawa (2001) reply that cognition is purely composed of intrinsic neural processes, distinguishing tools that facilitate (coupling) from tools that constitute the mind (constitution). Such an exchange drives the need to probe cognitive boundaries even deeper.

The philosophical argumentative strength of intuitions makes this theoretical controversy even more complicated. Although the validity of intuitive judgments has been challenged, they are frequently used as a tool for determining the acceptability of philosophical arguments. Experimental philosophy, as a self-identified methodological movement, gained prominence in the early 2000s with systematic efforts to empirically examine philosophical intuitions (e.g., Knobe & Nichols, 2008). Although empirical elements have occasionally appeared in earlier philosophical work, these instances were not unified under the methodological framework or identity of what is today recognized as experimental philosophy.

Experimental philosophy is a great tool for communicating about the extended mind hypothesis via considerations regarding how various people all over the world and through time respond to thought experiments like Otto and Inga in both high and low technological cultures. Studies not only reveal a spectrum of intuitions but also raise crucial questions about their relationship with philosophical analysis and universality—though the reliability and methodological limits of experimental philosophy remain subject to ongoing debate (Sosa, 2007; Stich & Tobia, 2016).

In the contemporary world, the salience of the extended mind theory is enhanced by the accelerated pace of technological advances. Technologies such as artificial intelligence, wearable technology, and neural interfaces dissolve the boundary between internal and external, and hence Clark's thesis becomes more increasingly intuitive to present-day audiences. That is a significant methodological challenge: are contemporary intuitions about extended cognition measurements of ephemeral technological fads, or are they coherent deeper cognitive principles? To respond to this, it would be essential to empirically test the extended mind theory in diverse contexts, and how determinants such as technology literacy, cultural factors, and personality types construct and constrain people's conception of cognitive limits.

To address these concerns, this paper aims to contribute to this debate by addressing two main objectives. First, this paper critically analyses the theoretical foundations of the extended mind theory using the arguments put forward by Clark, Adams, and Aizawa. In doing so, the paper recognizes tensions in concepts between internalist and externalist theories of cognition. Second, it addresses the potential contribution of experimental philosophy to experimentally testing these debates. Based on insights derived from cross-cultural research, behavioral experiments, and contemporary cognitive science, the paper shows how experimental methods can be complemented in philosophy to create an expanded vision of cognitive boundaries.

The structure of this paper is as follows. The next section outlines the theoretical context to the extended mind theory, providing an overview of its main principles and the criticisms to which it has been subject. Particular emphasis is given to the distinction between intrinsic and derived content, and the implications of coupling and constitution for a theory of cognition. The following section is concerned with the application of experimental philosophy, examining how cognitive boundaries can be scientifically tested through intuitive judgments. The section also explains how thought experiments, such as those involving Otto and Inga, can serve as a laboratory for testing the acceptability and plausibility of the extended mind hypothesis. The fifth section discusses possible objections, such as whether technological and temporal contexts can influence intuitions, and offers responses. The more general ramifications of the research for cognitive science, philosophy of mind, and interdisciplinarity are considered finally in the paper's conclusion. By integrating theoretical insight and empirical investigation, this paper tries to go further than a mere gulf between philosophical theory and cognitive fact. This study contributes to a clearer understanding of the extended mind hypothesis and highlights the potential of experimental philosophy in addressing core questions about cognitive boundaries.

2. Overview of the Extended Mind Theory

Building on earlier insights from embodied cognition theorists such as Merleau-Ponty, Clark and Chalmers (1998) changed the face of philosophy of mind and cognitive science by proposing that cognition need not be limited to the brain but may instead extend into the external world through the tools and environments with which individuals interact. Behind this suggestion is the thesis that cognitive processes can extend to external environments and tools when these resources function as seamless and transparently integrated components of the cognitive system. By broadening the scope of cognition, the theory encourages a contemporary reassessment of enduring philosophical assumptions concerning the independence of the mind and its interaction

with the external world—assumptions that have evolved from classical thought to modern cognitive science.

At the heart of the theory is the notion of parity, which asserts that if an external process performs a task equivalent to one performed internally, then it should be counted as part of the cognitive system. In their standard example, for instance, Clark and Chalmers present Otto, a man suffering from memory loss who relies on a notebook to jot down and remember information. Otto's notebook is sufficiently a biological memory system that it provides him with the same sort of useful advantage as someone with normal memory. The parity principle suggests that the notebook should be considered as a genuine part of Otto's cognitive system (Clark & Chalmers, 1998). This cognitive extension dissipates the traditional difference between internal and external processes. The critics of this theory, Adams and Aizawa (2001) and others, have argued that external instruments merely enable cognition but are not part of the cognitive process itself. They uphold the priority of intrinsic content, as they define it, in terms of internal properties of mental states that do not require external causes. This comparison makes the argument against the extended mind theory issue at hand: how can cognition be viewed as encompassing the external objects when the external objects lack the characteristic features generally assigned to mental states?

Clark and Chalmers (1998) respond by being careful of functional integration of external devices when thinking of cognitive systems. They argue that the objects, such as Otto's notebook or a smartphone, are not mere resources, but rather, they are active participants in human cognition where certain qualifications are met. These are reliability, availability, and trustworthiness, which enable external parts to become integrated into the user's cognitive practices (Menary, 2010). This functional account resists inherent perspective by changing focus from the origin of cognitive content to roles and functions of external elements in framing mental processes (Sterelny, 2010).

Extended mind theory also has profound implications for cognitive boundaries. Cognitive science and philosophy of mind have historically understood the brain to be the sole locus of mental processes. Extended mind theory erodes these boundaries in the sense that it suggests cognition is a distributed process with internal and external aspects. This shift is also indicative of broader trends in cognitive science, such as the growing popularity of distributed cognition (Hutchins, 1995) and embodied cognition (Varela et al., 1991), both of which focus on how mind, body, and world reciprocally affect each other. While the theory has been generally accepted in such areas as artificial intelligence and educational technology, it is itself a subject of ongoing debate. Perhaps the most tenacious criticism is its dependence on external factors that do not possess intrinsic cognitive properties (Adams & Aizawa, 2010). The argument in this case points

to the importance of investigating the interplay between intrinsic content and the extended mind, especially where external devices expand the boundaries of cognitive independence. By challenging conventional boundaries of the mind, the extended mind theory not only reformulates philosophical discussion but also invites interdisciplinary research opportunity. Its ramifications are not only to be pursued in theoretical discussion but also in practical application, for example, cognitive technology design and human-computer interaction studies (Kirsh, 2010). As this essay demonstrates, there is a need for a precise understanding of the relationship between intrinsic content and extended cognition in order to assess the validity and scope of the theory. In the following section, the essay discusses the idea of intrinsic content and critically examines the objections raised against the extended mind theory, highlighting the internalist and externalist theories of cognition challenges.

3. Intrinsic Content and its Criticisms

The intrinsic content theory, central to the internalist position in the philosophy of mind, has been at the main point of dispute between the proponents of the extended mind theory and the defenders of traditional boundaries of cognition. Clark, as an advocate of the extended mind hypothesis, and Adams and Aizawa, who are defenders of the intracranial cognition, represent opposite sides in this ongoing debate (Adams & Aizawa, 2001; Clark & Chalmers, 1998). This debate prolongs the classical philosophical divide between externalism and internalism (Lau & Deutsch, 2014). While externalism renders mental states, including belief and desire, to be determined through interaction with the world, internalism renders such states to be determined through internal mental properties irrespective of what occurs outside the mind (Burge, 1986; Fodor, 1987).

Intrinsic content is the built-in character of mental states as a result of internal cognitive processes and structures (Burge, 1986; Pylyshyn, 1984). Internalists believe that such attributes provide a solid foundation for mental states to ensure coherence and consistency in cognition. Internalists such as Adams and Aizawa argue that intrinsic content arises from the neural organization of the brain and is the defining mark of cognition. They also make a distinction between coupling, where external devices aid cognitive processes without being part of them, and constitution, which, they argue, applies only to processes in the brain (Adams & Aizawa, 2001, 2010).

Clark, nevertheless, challenges the notion of internal content by speculating that mental states are co-constituted by interaction with external tools such as phones or notebooks. Clark, as mentioned earlier, in his known famous thought experiment, draws parallels between Otto who enhances his memory deficit by using a notebook and Inga whose

biological memory is sufficient for her requirements. Clark holds that Otto's notebook is an extension of his thought process, identical to that of Inga's memory (Clark & Chalmers, 1998). Cognition, Clark argues, is not restricted to processes within the brain but is instead distributed in an array of relations between the environment, body, and mind (Clark, 2008). This distributive account recharacterizes intrinsic content as a continually changing attribute determined by internal and external causes that extend the traditional boundaries of cognition. Adams and Aizawa strongly oppose this recharacterization on the grounds that external aids lack intrinsic properties necessary to constitute true cognition. They emphasize stability and coherence provided by intrinsic content and maintain that extrinsic causes, while useful, do not couple with cognition as seamlessly as neural occurrences. This distinction between constitution and coupling remains a prime source of dispute, raising critical questions about the boundaries of cognition as well as the sufficiency of the extended mind hypothesis (Adams & Aizawa, 2010).

This intrapersonal content conflict, triggered by the call, mirrors broader philosophical debates about the nature of cognition and how it operates in the world. In effect, it is the opposite of the so-called “cool” mind-body dichotomy - referring to traditional views that conceive of cognition as abstract, affectless, and divorced from bodily or contextual grounding - and resists narrow mind boundaries. These disagreements suggest that empirical investigation has to be utilized to attempt the acceptability and the plausibility of these alternative views. Experimental philosophy is an appropriate paradigm to use here, and it is possible to test scientifically intuitions about cognitive limitations and external aid. Briefly, the problem of intrinsic content is at the centre of broader disputes on cognition, mind-body, and the environmental causation of mentality. In its critical analysis of Clark's and Adams and Aizawa's positions, the paper addresses implications of intrinsic content for the theory of the extended mind. Other than this, it also discusses how experimental philosophy can contribute to clarifying such controversies by empirically probing their intuitive and psychological dimensions, offering a more grounded account of the theoretical and practical relevance of cognition to both cognitive science and the philosophy of mind. In the following section, this paper explains Andy Clark's redefinition of intrinsic content and how his arguments challenge the conventional boundaries of cognition and redefine our understanding of the interaction between internal and external factors in mental processes.

3.1. Andy Clark and Intrinsic Content

In The Extended Mind, Clark and Chalmers (1998) posed the question: "Where does the mind end and the rest of the world begin?" (p. 27). Their answer discounts the

conventional presumption that the mind is confined to the brain and body. They argued that our mind extends beyond these boundaries, integrating with the external world. According to this perspective, intrinsic content is mediated by the material vehicles of cognition, suggesting that it is not solely contained within biological vehicles, as Adams and Aizawa claim (Clark, 2005). As previously introduced in the introduction, the Otto-Inga thought experiment (Clark & Chalmers, 1998) illustrates how a notebook used by Otto, an Alzheimer's patient, may serve as a functional extension of memory, akin to Inga's biological recall. This case forms the cornerstone of extended mind theory by suggesting that external resources can be integral to cognitive processing.

Clark asserted that "Otto's long-term dispositional beliefs just were not all in his head" (2005:2). This experiment illustrates how Inga's physical memory and Otto's notebook serve similar cognitive functions. Otto's notebook is treated as a material vehicle and part of his cognitive process. Clark and Chalmers (2010) argued that "...part of the world is (so we claim that) part of the cognitive process. Cognitive process ain't (all) in the head!" (p. 29). Both Inga and Otto consult their memories to recall the address, with Inga using her physical memory and Otto his notebook. Both believe they will find the address in these places, highlighting the functional analogy between Inga's memory and Otto's notebook. Thus, the information about the museum address extends beyond the body (Clark & Chalmers, 2010).

Critics argue that non-biological vehicles, such as Otto's notebook, are not resilient (Adams &Aizawa, 2010). Clark responded that physical memory can also be susceptible to traumatic problems, whereas Otto can protect his notebook. He argued that Otto's notebook may be less susceptible than physical memory (Clark, 2005). The debate grows more relevant in the technology era, where technological devices are part and parcel of our cognitive processes. When we use technology tools, our brains hook into and become a part of the environment, validating Clark's contention.

Clark's thought experiment shows the everyday applicability of the extended mind hypothesis. With the example of Inga's and Otto's thought processes, Clark demonstrated how external resources and tools can be an extension of the mind. This is a denial of the traditional method of internal content to the brain and a favoring of a more world-mind interactive process. Also, Clark's view is centered on the flexibility and strength of cognitive processes in incorporating external factors (Clark, 2005). Otto's use of the notebook is one of the methods by which cognitive processes can be extended through the utilization of external devices to compensate for biological weakness. This comes after the rise in utilization of electronic devices in the modern world, where external devices are being utilized more to enhance cognitive ability.

Clark's exploration of intrinsic content with the extended mind thesis presents a compelling argument for the integration of external properties in cognitive processing (2005). He challenges the traditional border of the mind and develops the concept of material vehicles like notebooks, electronic hardware, and other gadgets that are part and parcel of cognition. This longer perspective on cognition accounts for the dynamic coupling of mind, body, and world in that the cognitive processes are not encapsulated within our biological machinery but are distributed across a network comprising external elements. Clark's model also serves to underscore the flexibility and resilience of cognitive processes to biological constraints. Otto's use of his notebook is a fine example of how external resources can replace biological memory loss by bringing consistency and stability to cognitive processes. It is particularly relevant in the case of neurodegenerative diseases like Alzheimer's disease, where external devices can prove to be essential for ensuring cognitive wellness and independence. The extended mind theory also prompts us to rethink the ethical and practical dimensions of cognitive enhancement. As we integrate increasingly sophisticated technologies into our daily lives, there are concerns about how these gadgets are impacting our intellectual independence, privacy, and sense of self. Theory assumes that these gadgets are not merely supportive but constitute an integral part of our intellectual activity, which has profound implications for the planning, operation, and control of technological machines. Besides, the theory also focuses on highlighting the importance of the environment in cognition development and functioning. Learning environments, workplaces, and urban settings may all shape how individuals engage with external resources to support cognitive tasks. From the perspective of the extended mind theory, Clark's view challenges traditional brain-bound models of cognition by emphasizing the functional role of external elements. Rather than replacing internal mechanisms, this perspective enriches our understanding of the dynamic interaction between the mind and its surroundings. While the theory remains primarily philosophical, it holds potential implications for designing cognitively supportive environments in an increasingly technology-integrated society.

3.2. Adams & Aizawa and Intrinsic Content

In The bounds of Cognition, Adams and Aizawa (2001) identified themselves as defenders of intracranialism. In contrast to this identification, they acknowledged the opposing view of transcranialism, arguing that "cognitive processes extend in the physical world beyond the bounds of the brain and the body" (p. 43). In other words, this form of externalism (or transcranialism) concerns the role of derived content in cognitive processes, rather than aligning with traditional semantic externalism as seen in works by Putnam or Burge. For this reason, Adams and Aizawa claim that "a first essential condition on the cognitive is that cognitive states must involve intrinsic, non-

derived content." (2001:48). Their position emphasizes that truly cognitive states must be grounded in internal, non-derived processes, rejecting the inclusion of externally represented symbols—such as the inscriptions in Otto's notebook—as genuine parts of cognition. As mentioned above, each cognitive process should include intrinsic content. Otherwise, that process cannot be accepted as cognitive. In so doing, Adams and Aizawa asserted that there is a difference between coupling relations and constitutive relations. For example, when an object (such as X) is coupled with another object (such as Y), this does not mean that X becomes a part of Y. In the same way, Adams and Aizawa (2010) rejected Otto's notebook as a part of his cognitive process, even though the notebook is coupled to Otto. According to Adams and Aizawa, this is a non-cognitive process. In response, Clark pointed out that each cognitive process does not include non-derived content. There seems to be a nuance between Clark's argument and that of Adams and Aizawa. Clark argued that a cognitive process includes either non-derived (intrinsic) or derived content. For example, before Otto looks at his notebook, he notes something in it with his intrinsic content.

Richard Menary joined the debate in this argument, notably in Attacking the Bounds of Cognition (2006), where he criticized Adams and Aizawa's perspective rather than defending it. While agreeing with the conceptual distinction between intrinsic and derived content, Menary disagreed with the conclusion that this distinction precludes external representations from cognitive status. On the contrary, he emphasized the importance of manipulative and socially embedded practices in determining cognition and so advocated a version of the extended mind hypothesis that is attentive to the manner in which content is transformed by embodied interaction with external tools.

This debate highlights the tension between strict internalist models—such as Adams and Aizawa's emphasis on non-derived, intrinsic content—and externalist accounts like those proposed by Clark and Menary. While the former view cognition as fundamentally brain-bound, the latter argue that external artifacts and social conventions are integral to cognitive processes. This divergence reveals the complexity of defining cognitive boundaries and underscores the importance of empirically examining how individuals intuitively respond to such scenarios, particularly when considering socio-cultural contexts such as technological familiarity and SES (Clark, 2008). Menary (2006) followed this thesis by proceeding to elaborate on this thesis by referring to the role of enculturation in cognition. He contended that human beings are not passive recipients of social conventions but are actively internalizing and rearranging them through cognitive operations and not as passive recipients. Enculturation makes it difficult to define intrinsic and derived content since the brain gets reorganized and transforms itself because of extrinsic pressures.

Adams and Aizawa hold firmly to a clean distinction between intrinsic and derived content, while Clark (2005) and Menary (2006) advocate a more comprehensive account which considers the contribution of external inputs to the formation, organization, and boundaries of cognitive processes. This ever-present controversy underscores the need for a sophisticated understanding of the interrelationship between the brain, the body, and the external world in cognitive science research.

Although Menary (2006) does not directly address socioeconomic status (SES), his enculturation framework implies that culturally mediated practices—such as the use of technology—can shape cognitive habits. Building on this implication, it can be speculated that individuals from higher SES backgrounds who are more familiar with technologies, like smartphones, would be more inclined to view cognition as distributed. This speculative inclination supports the extended mind thesis by showing how access to external tools might influence intuitive judgments about cognition. These tendencies are also consistent with 4E cognition perspectives—embodied, embedded, enactive, and extended—which assert that cognition arises from dynamic interactions with the world (Gallagher, 2017). In this respect, interpreting intrinsic content as socially and culturally situated further challenges internalist boundaries and reinforces Clark's (2008) position that cognition may extend beyond the brain in context-sensitive ways. This socio-technological framing, therefore, enhances the relevance of experimental philosophy in understanding how intuitive judgments vary across environments.

4. The Role of Experimental Philosophy in Philosophy of Mind

The intrinsic content arguments as well as the extended mind theory also highlight the use of intuitions in evaluating philosophical arguments. As noted earlier, the tension between internalist and externalist strategies is founded on varying assumptions about the boundaries of cognition and on the utilization of external aids. But these assumptions are generally made on the basis of unreflective intuitive judgments. Experimental philosophy closes the gap by systematically exploring intuitions, including empirical data on their variability, reliability, and agreement with theoretical claims.

By focusing on intuitive plausibility, theories such as moral responsibility, and free will help experimental philosophy close the gap between philosophical idealizations and everyday reasoning. This approach does not aim to assess intuitions in terms of epistemic coherence, but rather examines how consistent patterns of intuitions may reflect underlying cognitive biases that influence theoretical allegiance. Such a focus on the consistency and variability of intuitions is not merely of descriptive interest but

stems from the philosophical need to assess the reliability, scope, and influence of intuitive judgments in shaping our conception of cognitive boundaries—a need emphasized in the literature on experimental philosophy (Knobe & Nichols, 2008; Weinberg et al., 2001).

4.1. Intuitive Judgments and Cognitive Boundaries

Intuitive assessments are important to evaluate the extended mind theory, particularly in the identification of cognitive boundaries. A well-known thought experiment by Clark and Chalmers (1998) challenges the assumption that cognition must be confined to the brain by considering whether an external aid, like a notebook used by an Alzheimer's patient, can be part of one's cognitive system. Experimental philosophy subjects these intuitions to empirical test, showing how they vary in settings such as technological familiarity or SES, as revealed in Section 4.2. Experiments by Weinberg et al. (2001) and Machery et al. (2004) show that intuitions are not the same everywhere but culturally and individually variable, meaning cognitive boundary perceptions can vary astronomically and even go astray. For example, an individual who is addicted to smartphone may treat it as an extension of their thoughts, and others prefer neuroprocesses and align themselves with Adams and Aizawa (2001). Experimental philosophy brings out these disparities by employing the use of surveys and thought experiments, thereby giving an insight into the psychological underpinning of philosophical arguments (Knobe & Nichols, 2008). Present research has brought out how experimental philosophy systematically scrutinizes the range of folk intuitions across different contexts as a solid foundation for its use against arguments about cognitive boundaries (Yüksel, 2023). Nagel (2012) indicates that intuitions are influenced by framing and load on cognition, which is important for testing hypotheses like Otto's notebook. Methods allow researchers to inquire whether folk intuitions support Clark's (2008) distributed solution or Adams and Aizawa's (2001) internalist solution on which to ground abstract argument based on common-sense reasoning.

4.2. Empirical Testing of Intrinsic Content

Adams and Aizawa describe intrinsic content as non-derived mental state properties, and those only associated with neural processes, and that external tools like Otto's notebook simply aid cognition but are not constitutive of it. Clark and Chalmers respond that cognition extends to such tools when they are employed on a daily basis, contending that intrinsic content can include such external elements within an extended system. This theoretical tension leads to an empirical question: how do ordinary people conceptualize intrinsic content, and are their intuitions aligned with internalist or externalist models? I suggest that experimental philosophy provides a strict means to

examine this by putting folk intuitions to experimental test, with socio-economic status (SES) providing a useful angle due to its role in technology use.

Experimental philosophy moves beyond traditional argumentation by employing functional tools—questionnaires and thought experiments—to investigate whether people comprehend high-level ideas like intrinsic content. It makes no assumptions as to what intuition should be like but instead records real reactions and seeks to see if intrinsic content actually appears to be fixed and internal, as Adams and Aizawa state, or not fixed and not internal, as Clark suggests. SES, or control over how much one is exposed to technology, could strongly impact these beliefs. People of higher SES, being constantly around gadgets like smartphones or organizers, could think that such devices are a normal extension of mind, supporting Clark's (1998) argument of cognition outside the skull. Those with lower SES, with reduced exposure, might subscribe to a belief that keeps cognition in the brain, in accordance with Adams and Aizawa's (2001) argument. Weinberg et al. (2001) concluded that intuitions about knowledge differ with background, indicating SES might have influence as well on perceived content innateness.

This is a strategy that bridges philosophical questions to everyday experience and would be the one method of inquiring whether meaning varies with context in intrinsic content. A focus on SES would illuminate whether technology impacts how people draw the line between internal and external cognition, a question that leads inevitably to examining how these differences appear in intuitive judgments across diverse groups.

The Role of Socio-Economic Status in Shaping Intuitions

As outlined in previous sections, the disagreement between internalist and externalist perspectives can be further illuminated by exploring the socio-economic variables that shape our intuitions. Since SES affects exposure to and engagement with technological tools, experimental philosophy offers a promising framework to investigate how such contextual differences may influence intuitive conceptions of intrinsic content.

SES, that is, resources, education, and income, significantly influences the utilization of cognitive tools by individuals, which may modify their intuitive notion of the limits of cognition. Weinberg, Nichols, and Stich (2001) showed that epistemic intuitions vary within socio-economic groups and that philosophical judgments are therefore not context-free but relative rather. Sripada and Stich (2006) assert further that socio-cultural norms affect cognitive processes, and therefore technology access based on SES can affect what people consider when it comes to intrinsic content. Used with intrinsic

content, this would be that the individuals with higher SES, and who are always using smartphones, AI assistants, or wearables, would likely end up conforming naturally to Clark's (1998) parity principle, wherein tools are a component of cognition. For example, a person who relies on an electronic planner would find it as an extension of memory, blurring the distinction between intrinsic and derived content. Or, lower SES members, less accustomed to such technology, might feel sympathetic to Adams and Aizawa's (2010) internalism and assume that cognition relies on the properties inherent to the brain.

This SES-created divergence supplies fertile ground for empirical study. Machery et al. (2004) showed that reference intuition diverges across cultures, a technique applicable to cognitive boundaries. Researchers could present participants from varying levels of SES with a scenario involving a memory-impaired individual using external notes to function daily, and assess whether participants see this external medium as part of cognition. More high-SES participants, familiar with technological integration, would likely confirm, exemplifying Clark's (2005) availability and reliability. Lower SES participants, less acculturated with such tools, might emphasize the neural singularity of intrinsic content, as Adams and Aizawa (2001) do. Knobe and Nichols (2008) propose that experimental philosophy is particularly well-suited to uncover subtle psychological patterns behind philosophical judgments. Building on this framework, the current study suggests that socio-economic status (SES) may influence whether individuals lean toward internalist or externalist views of cognition. To further this question, experiments might vary the complexity of the tool—pitting a notebook against a smartphone app—and measure SES-based differences. Nagel (2012) points out how framing and cognitive load influence intuitions, suggesting that familiarity with technology may make higher SES individuals more open to distributed cognition. For instance, an SES-high subject would contrast his or her smartphone with Otto's notebook, admiring its incorporation into day-to-day operation, while an SES-low subject would rule out external devices as mere supplements, preferring mind-based balance. Menary's (2006) integrational approach prefers this, believing enculturation through technology more readily available to higher SES groups is redescribing cognitive boundaries, challenging strict accounts of internal content.

Additional designs can explore SES's impact on perceptions of tool reliability, a key component of Clark's (2010) extended mind hypothesis. A survey can ask participants to rate the reliability of Otto's notebook and biological memory, comparing responses to SES. Those with more SES, who are reliant on digital networks, might rank the two equally, while lower SES groups might prefer neural autonomy. Such experiments, fueled by Knobe's (2007) call for reasoning studies, would display how SES functions as a mediator of intuitions, verifying whether the attractiveness of intrinsic content is

global or local. In grounding such arguments empirically, experimental philosophy does not only provide closure to internalist and externalist debates but helps us understand cognition's socio-cultural determiners too. The following pages will take into account the experimental philosophy's contribution to cognitive science and whether or not intrinsic content can be adequately tested through its methodology.

5. Discussions and Implications

Section 4 revealed the potential for empirical testing of extended mind hypothesis and intrinsic content in SES terms as the governing theme and folk intuitions. This bridges the gap from evidence based on theory to argument but is susceptible to several types of counterarguments to be met. This section addresses three possible challenges of using this sort of methodology, what are the implications, and what these findings will do to alter the direction and approach of philosophy and cognitive science and future studies.

5.1. Objection 1: Temporal and Technological Contexts

One of the primary concerns is how technology and time affect intuitions about cognitive boundaries, posing a problem for experimentally applying the extended mind theory in philosophical experiments. At the time Clark and Chalmers (1998) put forward their idea, smartphones or AI assistants were not widespread—Otto's notebook likely seemed just an aid, not part of cognition. In 2025, technology is integrated into the fabric of daily life: phones store memories, provide direct navigation, and inform decision-making, so Clark's (2008) distributed cognition is the new normal. One could retort that experimental findings reflect only these technology trends and not an invariant fact about cognition. Participants in urban areas with ubiquitous smartphone use, for instance, will directly adopt extended cognition, while participants in rural areas with limited exposure to technology will prioritize neural exclusivity, accounting for temporal and regional variation among intuitions. If intuitions change over time, as Weinberg et al. (2001) found for epistemic judgments that varied across contexts, are they too unstable to use to test the theory? This diversity does not invalidate the approach—it strengthens it. Machery et al. (2004) showed that intuitions about reference are culturally diverse, so temporal shifts could be showing the pliability of thought, corroborating Clark's (2008) idea of dynamic mental processes. Experimental philosophy can fix this by testing on other groups—rural communities with fewer technologies or older adults who are less reliant on digital tools—to see if externalist intuitions hold in non-urban, tech-drenched contexts. Nagel (2012) stresses how framing affects intuitions, so altering scenarios (e.g., paper notebooks and apps) could demystify technology's contribution. These studies are claimed by Knobe and

Nichols (2008) to reveal underlying psychological sources of philosophical disputes, rather than ultimate truths. Longitudinal monitoring of intuitions may demonstrate how technological diffusion alters perception and anchors the theory in direct experience, making it more generalizable across settings.

5.2. Objection 2: Subjectivity of Intuitions

One of the greatest obstacles to use experimental philosophy in experimentally testing intrinsic content is the subjective nature of intuitions, which casts doubts on their ability to resolve philosophical disputes. Weinberg et al. (2001) illustrated that epistemic judgments differ across socio-economic and cultural groups, and the Section *The Role of Socio-Economic Status in Shaping Intuitions* suggests SES intensifies this division—higher SES individuals favour Clark's (1998) extended cognition approach, while lower SES groups favour Adams and Aizawa's (2010) brain-based model. Sceptics will reply that this variation undermines experimental philosophy's credibility: if intuitions are so variable, based on individual exposure such as technological use or education, how do they determine whether intrinsic contents are neural or distributed? For instance, university-educated participants, who are used to using computers, will consider Otto's notebook mental, while high school graduates, less familiar with technology, will value neural constancy, under SES-driven subjectivity. This subjectivity may reduce experimental results to merely idiosyncratic opinions and not general cognitive principles, invalidating the method's philosophical value.

This critique gains force considering more general epistemological issues. Sosa (2007) advises that intuitions, as non-inferential judgments, are susceptible to bias or contextual noise and not rigorous enough to underwrite basic cognition claims. For example, Nagel (2012) demonstrates how framing—for example, describing Otto's notebook as trustworthy vs. erroneous—skews responses and suggests SES-driven variation may originate in superficial as opposed to deep reasoning. Skeptics may press further: if intuitions are as variable as Machery et al. (2004) report cross-culturally, may not be unstable enough to decide between Clark's dynamic view and Adams and Aizawa's strict internalism? This might limit experimental philosophy to the status of a descriptively aimed tool—charting opinions—rather than an evaluative one able to assess intrinsic content's nature.

But this subjectivity is not an impasse, but a doorway. Knobe and Nichols (2008) argue that experimental philosophy is especially well-suited to reveal the psychological basis of philosophical disputes, showing how cognition operates in real life. SES-based differences, as outlined in the Section *The Role of Socio-Economic Status in Shaping Intuitions*, are founded on everyday experience—people of higher SES will see tools as

brain extensions because they use them every day, while people of lower SES, with less availability, emphasize brain-based stability. This heterogeneity does not exclude the method; it bridges abstract argument and lived experience. To offset subjectivity, large cross-cultural samples like Machery et al. (2004) can examine whether patterns recur worldwide. Alexander et al. (2010) recommend monitoring intuition across time to discover enduring patterns in order not to allow results to be snapshots of bias. By situating intuitions in wider data sets, experimental philosophy may fortify its function in testing the extended mind thesis. The objection overlooks the utility of experimental philosophy in demonstrating how humans actually think, and that is most important in determining intrinsic content. Intuitions differing, particularly along SES lines, don't weaken the method—they illustrate how cognition maps onto life. A technophile may think of her phone as part of her mind, while the less privileged consider only their brain. This diversity is not something to be dismissed but is instead a window into how mental boundaries are drawn today. Philosophy becomes more applied as we examine these views.

5.3. Objection 3: Methodological Limits of Experimental Philosophy

A third challenge is whether experimental philosophy can properly test complicated ideas such as intrinsic content, which forms the basis of the extended mind debate. Adams and Aizawa (2001) base cognition on neural activity, stressing intrinsic content's biological nature, whereas Clark (1998) stresses functional roles both in brain and environment. On critics' part, strategies like questionnaires or thought experiments like Otto and Inga simplify such a debate excessively. For example, whether or not Otto's notebook is part of Otto's mind may have different answers based on whether the notebook is introduced as "reliable" (as argued by Clark) or "error-prone" (as argued by Adams and Aizawa), showing how formulation impacts outcomes. Whereas these challenges reflect inherent methodological limitations, these issues can be addressed by ever more sophisticated experimental designs. For instance, complex thought experiments can be coupled with ever more dynamic and precise data collection methods, i.e., computerized behavioral monitoring or observational studies, for registering online cognitive processes. In addition, interdisciplinary collaboration between philosophers, cognitive scientists, and psychologists can yield new opportunities for testing the extended mind hypothesis in ever more solid and comprehensive terms. The question of whether or not Otto's notebook is part of his mind lowers high-level scientific and philosophical problems to opinion, while ignoring neural or conceptual nicety. More creative approaches might be used in an effort to overcome the methodological problems experimental philosophy faces when attempting to quantify cognitive processes. For example, employing techniques like eye tracking, electroencephalograms, or functional magnetic resonance imaging (fMRI)

may offer a more in-depth understanding of cognitive processes. Larger cross-cultural comparisons and the use of longitudinal studies may also yield more accurate and dependable data. By using these methods, it would be possible to measure participants' cognitive processes more accurately, which would improve experimental philosophy as a whole. Weinberg et al. (2001) note that self-reports have a tendency to record judgments at the surface level rather than cognitive processes at the deeper level.

This is reinforced with methodological shortcomings. Sosa (2007) maintains that philosophical argumentation needs more than folk intuition, which may lack the stringency to settle between Clark's functionalism and Adams and Aizawa's internalism. Stich and Tobia (2016) caution that experimental philosophy carries the risk of turning descriptive—mapping what people think—without normative force to settle disputes. Experimental philosophy must, in addition to mapping people's intuitions, address the normative implications of these intuitions. In this case, while identifying what people believe is an essential first step, these findings must be integrated with philosophical analysis to assess the plausibility and normative significance of such beliefs. Experimental philosophy, therefore, does not aim to independently determine the truth value of intuitions, but rather provides an empirical foundation to inform and enrich broader philosophical debates. By so doing, experimental philosophy can move beyond purely descriptive goals to one in which it tangibly engages with the normative elements of philosophical disagreements, thereby enhancing its role in resolving these disputes. For example, a respondent's opinion regarding Otto's notebook may depend on wording or context, as Nagel (2012) demonstrates with framing effects, rather than on the essential issues of the debate such as neural causation or functional integration. Opponents would argue this confines experimental philosophy to peripheral results, incapable of examining intrinsic content's nature. Yet these boundaries do not rule out the approach—they inform its refinement. Knobe and Nichols (2008) stress that experimental philosophy reveals psychological motivators of philosophical disagreement, providing a place to begin, not conclusions. Combining folk data with science may bridge the gap—brain imaging may examine whether tool use is altering patterns in the brain, bridging intuitions and biology. Alexander et al. (2010) support mixed methods, for instance, using questionnaires alongside behaviour tasks, in a bid to capture cognition's richness. Extending its scope, experimental philosophy can shed light on how people's perspectives accommodate Clark or Adams and Aizawa, making both theories sharper with empirical knowledge.

5.4. Implications for Philosophy and Cognitive Science

These objections do not stand in the way of the strategy—these reveal its potential. If SES constructs intuitions, theories of cognition might need to explain setting, not strict rules. The higher SES groups believing tools to make up the mind might lead cognitive science to Clark's (2010) perspective on distributed processing—maybe the brain evolves in adaptation with increased usage of technology. Lower SES following brain-only theories might keep Adams and Aizawa's (2001) model in place for a few. Such a divergence in intuitive judgments suggests not that cognition itself differs across groups, but that people's conceptualizations of cognition—shaped by SES and technological familiarity—may align with different theoretical models, such as those of Clark (2010) or Adams and Aizawa (2001). This supports Menary's (2006) view that cognitive boundaries are redefined through enculturation. Practically, designers of technology can design AI or apps more embedded—like Otto's notebook—asking questions about privacy or how we will think of ourselves when our minds move outwards. Although this research is not yet ready to offer empirical findings, it indicates a direction for the use of experimental philosophy to the extended mind thesis. By asking whether cognitive boundary intuitions vary along socioeconomic status, subsequent research can explore how cultural, technological, and educational background influence individuals' mind-extension judgments. This would offer not a direct explanation of extended cognition itself, but rather a socially embedded account of how people conceptualize cognitive boundaries—highlighting the influence of real-world contexts on intuitive judgments about the mind's extension. This type of strategy puts experimental philosophy not as an alternative to conceptual analysis but as an additional methodology that has the potential to highlight how abstract ideas are lived and known across various populations. In so doing, it retains the possibility of refining or even rethinking the extended mind theory depending on how cognition is lived and not just theorized.

5.5. Future Directions

Building on Machery et al. (2004), future research would cross-verify intuitions in different locations—urban vs. rural, or between countries—to address such challenges and ascertain whether SES impacts are global in nature. Long-term research would track how intuitions change over time as technology advances, supporting Clark's theory of adaptability. For instance, fMRI scans can measure whether tool use, like Otto's notebook, activates neural patterns associated with memory retrieval, similar to biological memory, thus bridging folk intuitions and measurable cognitive processes.

Such measurements would add to experimental philosophy's contribution, determining whether intrinsic content is an invariant neural thought, or something constructed in our world.

These methodological extensions would not only enhance the validity of findings but also enable a multidimensional understanding of cognition that integrates neural, behavioral, and phenomenological levels. By contrasting neuroimaging with culturally sensitive surveys, future studies can determine whether tool-related cognition is a universally shared resource or contextually regulated by variables such as SES, education, or exposure to technology. This would be to test whether the parity principle is a cognitive universal or a class-based artifact.

Furthermore, coupling qualitative interviews with behavioral data could potentially show how individuals articulate their sense of cognitive boundaries in everyday life. This sort of triangulation of quantitative, qualitative, and neurobiological methodologies could push experimental philosophy's contribution to the resolution of debates like that between Clark and Adams and Aizawa to a new level. Extended mind theory would then be put to the test not in a laboratory but in the messiness of lived, social, and embodied experience.

6. Conclusion

This investigation sought to address the extended mind theory in a twofold manner: initially, through scrutiny of its theoretical foundation; secondly, through examination of the potential of experimental philosophy in its empirical testing of assumptions regarding intrinsic content and bounds of cognition. By reading Clark and Chalmers (1998) and Adams and Aizawa (2001), I have raised the philosophical objections between externalist and internalist explanations of cognition. Clark's externalist view of cognition, utilizing tools like Otto's notebook, counteracts the traditional assumption that cognition is an in-head process. Adams and Aizawa's insistence on intrinsic content as the essential aspect of cognition reinforces the unique contribution of the brain. This argument, rather than theoretical, asks very profound questions regarding how the mind is to be defined during a period when technology is increasingly blurring the lines between internal and external processes.

Experimental philosophy appears to be a great tool to make these abstract conflicts with common sense concrete. By scientifically examining folk intuitions, as outlined in Section 4, I suggest that it can be experimentally examined if people judge cognition to be brain-bound or extended and hence determine the impact of socio-economic status (SES) on such judgments. The data from the Section *The Role of Socio-Economic Status* in

Shaping Intuitions suggests that those who are higher in SES, with technology around them, may naturally resonate with Clark's (2008) distributed view, viewing devices as an extension of cognition. Those lower in SES, with less at their disposal, may favor Adams and Aizawa's (2010) internalist view, appreciating neural stability. Such differences, Section 5 argues, do not invalidate experimental philosophy but enhance it, demonstrating how cognition is understood through experiential living. The objections overcome—temporal variability, subjectivity, and methodological constraints—still underscore the method's strengths, calling on wider, more rigorous designs to be able to capture the complexity of intrinsic content. These designs may venture into philosophical questions, for example, whether overdependence on external means undermines cognitive independence or extends social inequalities if availability of technology is still unequal.

The implications of this work are its applicability beyond philosophy to the investigation of the mind and design in technology. Supposing SES conditions awareness of cognitive limits, theories of cognition must allow for contextual dependencies, refuting universalistic claims. That is in line with Menary's (2006) conception of enculturation and Newen et al.'s (2018) account of 4E cognition. Practically, when tests verify tools to be cognitive to some extent, designers can then design less bumpy technologies—like Otto's notebook—enhancing human function. It comes with ethical problems, however: embedding has the potential to create dependency on machinery and intrude upon privacy if individual data is plugged into cognitive process and enlarge SES gaps if unequal access exists. These exerted necessary restraint through good policy and design to protect individual autonomy and social equality as enhancement is occurring.

Looking ahead, future work should capitalize on these foundations. Cross-cultural studies, expanding Machery et al. (2004), might investigate whether SES effects are found everywhere, while longitudinal designs might investigate how intuitions evolve as technology evolves. Adding neural data, as outlined in Section 5, would ground intuitions in biological facts, entrenching experimental philosophy's contribution. By pursuing these paths, we can make progress toward answering whether intrinsic content is a hardwired neural property or an ever-shifting, context-variable phenomenon—a question at the heart of the extended mind debate. In short, this work shows that experimental philosophy not only enriches theoretical discussion but also changes it, situating theoretic problems in human life. The extended mind theory is less of an abstraction, in short—not so much an intellectual problem as a conceptual tool for understanding cognition in the era of technology. Borrowing the problems and promises of this method, we construct a foundation for philosophies of mind that are richer and more diverse.

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