Routledge Studies in Seventeenth-Century Philosophy

A PLURALIST'S GUIDE TO SOLVING MOLYNEUX'S PROBLEM

Brian Glenney

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A Pluralist's Guide to Solving Molyneux's Problem

This book presents a novel pluralist strategy for answering Molyneux's 300+-year-old conundrum: Would a person, born blind but given sight, identify a shape previously known only by their touch? The author interweaves historical scholarship with contemporary philosophical work and empirical research on animal, infant, and adult human perception.

The author argues that we need a new approach to Molyneux's problem because we do not know what the problem is really about, and it is untestable because a Molyneux subject cannot be physically realized. He criticizes Molyneux's question for its simplistic taxonomy of "the blind" that groups significant individual differences into a singular ontology. Research in the cognitive sciences confirms that various kinds of blindness can co-occur, such as ocular, cortical, and psychological blindness. Therefore, the author adopts an explanatory pluralism for answering Molyneux's problem, which includes no, yes, and "no answer" answers according to the domain of inquiry being used. This account provides a research-based answer to a long-standing problem using previously unheeded insights particularly from animal crossmodal perception studies to retell a more complex story of perception: its levels of explanation and integration.

A Pluralist's Guide to Solving Molyneux's Problem will be of interest to researchers and advanced students working in comparative psychology, epistemology, history of philosophy, and philosophy of perception.

Brian Glenney is Associate Professor of Philosophy at Norwich University. He has wide interests in the history of philosophy and sensory perception. He focuses on Molyneux's problem and co-edited the book *Molyneux's Question and the History of Philosophy* (2020), the special issue "Molyneux's Question Today" (2024), and has authored encyclopedia entries and journal articles.

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Preface

More than 300 years ago, an Irish intellect by the name of William Molyneux put to Locke a problem, which Locke subsequently published in the 2nd edition of his *Essay Concerning Human Understanding*:

> Suppose a man BORN blind, and now adult, and taught by his TOUCH to distinguish between a cube and a sphere of the same metal, and nighly of the same bigness, so as to tell, when he felt one and the other, which is the cube, which the sphere. Suppose then the cube and sphere placed on a table, and the blind man be made to see: quaere, whether BY HIS SIGHT, BEFORE HE TOUCHED THEM, he could now distinguish and tell which is the globe, which the cube?
>
> (Locke 1979, II.ix.8)

Molyneux argued "no." Unless the newly sighted man was allowed to see and touch the shapes *simultaneously*, he could never know that what touched his hands was the same object that now lay before his sight. For, "he has not yet obtained the experience, that what affects his touch so or so, must affect his sight so or so; or that a protuberant angle in the cube, that pressed his hand unequally, shall appear to his eye as it does in the cube."

People are interested in Molyneux's problem for all kinds of reasons. It provokes a fascination with what it is like to see for the first time. It can put you into the mind of humanity's greatest thinkers who have entertained the problem and ledgered an answer like an autograph. Bence Nanay suggests even that "answering Molyneux's question (and, preferably, giving an original answer) was a must for any aspiring philosopher of perception" (Nanay 2020). It teaches philosophy students about methodology: how to formulate problems and how to go about resolving them. If the context is right, biases against people with blindness can be confronted. In other contexts, there's a general humility triggered by the problem: we are strangers in a strange land. We are aliens to even ourselves. Our conditions change,

and suddenly we become different. This possibility is incredibly intriguing, even for Shakespeare:

> Sirs, I will practise on this drunken man. What think you, if he were convey'd to bed, Wrapp'd in sweet clothes, rings put upon his fingers, A most delicious banquet by his bed, And brave attendants near him when he wakes, Would not the beggar then forget himself?
>
> (Shakespeare 2008)

Like kingship to a beggar is sight to the blind. But, if these fables have truth to them, the beggar and the blind are often better suited to rule and to see.

I have tried to write a book that makes space for these and other interests. My task in this book is to resolve Molyneux's problem cooperatively. This requires a shift from philosophical practices that go about slaying individual opinions, beliefs, theories, and conjectures, leveling objections to convince others of "the right" answer. We cannot reject an answer because it does not fit some "original" version of the Molyneux problem, or for missing the underlying "intention" of Molyneux. I wish to cultivate a more synthetic practice for resolving Molyneux and incorporate Molyneux's long history. A synthetic approach revels in the insight of others for insight's sake.

Ideas, as James Van Cleve has impressed upon me, are of intrinsic interest in themselves, worth clarifying, considering, and cooperating with, a task aided with the critical insights and encouragement of Janet Levin over the years. Gabriele Ferretti's ultramarathon energy in our co-edited projects is unrivaled, and somehow is matched with endless kindness and patience. There are more people who took a chance on me with opportunities for Molyneux's problem projects, mentoring me through my fumbles, including Irv Biederman, Marjolein Degennar, Sasha Benjamin Fink, Aaron Garrett, David Howes, Adam Johnson, Michael Pohl, and Andrew Weckenmann, my editor for this book at Routledge (not to mention the six or so referees). I have tried to pass on their charity and inclusion to others working on Molyneux's problem, a disposition that is due first to my parents (the best people). These virtues are cultivated by my wife Lisa and kids Vera, Axel, Levi, and Ivan as well as my extended family and friends. This book is made possible by their generosity.

This book's content and method continue that of my late ancestor, Prof. George Glennie, who succeeded James Beattie as professor of Moral Philosophy of Aberdeen University in 1796 until 1838. Glennie was known for his study of James Mitchell, a boy born blind and deaf, whose cataract in his right eye was surgically removed, allowing him to identify a book and its distance after four days, as reported by his surgeon, James Wardrop

(1813). But his blindness soon returned, and Mitchell continued his life through touch, smell, and taste. Glennie conveyed various letters, reports, and interviews from clergy, doctors, family, and friends for Dugald Stewart's (1815) account of Mitchell given to the Royal Society of Edinburgh. Glennie's work provided Stewart a collection of *diverse* and *specialized* accounts for a fuller explanation of Mitchell's life than was achieved from Wardrop's single "surgical" perspective.

Molyneux's problem has a motley history. Its earliest solutions are found in fits and starts following in the wake of Irish, English, French, and Scottish Enlightenments that furtively developed and dissipated throughout the 17th and 18th centuries. Molyneux's is a complicated history. The French Enlightenment philosopher de jure, Condillac, observed 60 years after the problem's publication: "We set forth the question poorly, we do not even know how to set it forth, and yet we claim to have resolved it" (1754, 3.3/277). Over 200 years later, we find Gareth Evans (1985) calling Molyneux's problem a "minefield." Ryan Nichols clarifies: "All the major players differ in their statement of the problem itself, their understanding of the implications of the problem, and/or in their answers to Molyneux's original question(s)" (2007, 251). Molyneux's problem is a real cluster cuss. This chaos is a clue for why a satisfactory solution to Molyneux has yet to emerge.

Two previous books have made attempts to clarify Molyneux's problem and organize its complex history. Michael J. Morgan's *Molyneux's Question* (1977) provided a fixated exposition of previously undiscussed thinkers and technologies: from Diderot's many answers to testing the problem with devices that modify sensory experience. Marjolein Degennar's *Molyneux's Problem* (1996) provided a comprehensive survey of the major and minor thinkers and their approaches, including an incredibly insightful exposition of attempts to resolve the problem using cataract surgery experiments.

Since Degenaar's studious text, there have been around a hundred journal articles and book chapters, each of which has made a significant contribution toward resolving Molyneux. A volume of 20 papers by some of the finest philosophers today was edited by Gabrielle Ferretti and myself (2020). A conference "Molyneux's Question: A Three-Dimensional Approach" was organized by Peter West in 2021 at Trinity College, Dublin. And another dozen or so papers are set to be published in a special issue "Molyneux's Question Today" for the journal *Philosophy and the Mind Sciences* (Forthcoming).

This book engages directly and indirectly these and other contributions, attempting a resolution to Molyneux that is methodological and processional. This book begins by upsetting the traditional "binary" strategy of answering "yes" or "no," a strategy that organizes many of the past

contributions to Molyneux's problem. In its place, this book advocates an explanatory methodology of "Puzzle Pluralism," one that expands beyond science-based forms of pluralism. Explanations are pieced together from diverse specializations, sometimes in vertical levels of explanation, in a processional openness to future discoveries to form a fuller "4D" explanation. I conclude with my own "skill-based" experimental version modeled after crossmodal animal experiments, a version that exerts a complex use of Molyneux's tool in a pluralist framework that initiates a missing link in Molyneux experiments: a subject's motivation.

This novel pluralist framework can reform the complex history of Molyneux and the underlying difficulties that have stymied previous resolutions. Puzzle pluralism also provides a basis for absorbing new scientific discoveries and technologies for an "open" rather than "closed-book" resolution to Molyneux's problem.

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Plan of the Book

This book seeks to resolve whether a newly sighted subject might visually identify objects previously known only to touch. Unlike prior solutions, this is not an attempt at a single answer for all time. Nor is it a "yes" answer, nor a "no." This book's solution defends a "pluralist" answer: both "yes" and "no." Pluralism invites the help of many solutions, along with otherwise competing philosophical theories and related empirical support, integrating them and potential future discoveries into a more robust processional reply.

This book begins with seven arguments that upset the traditional "binary" strategy of answering "yes" or "no." Molyneux's problem is not so much a phenomenon to be explained. It is a multi-tool to puzzle together specialist knowledge about the mind and its senses. This novel puzzle pluralist framework can reform the complex history of Molyneux and the underlying experimental difficulties that have stymied previous solutions. This method brings novel subjects, senses, and spatialities to the table. Ants, bees, chicks, and dolphins, and their unique sensory arrays and ecological climes deepen understanding. Even seemingly arbitrary cross-modal correspondences that are purportedly versions of a New Molyneux problem fit into the classic Molyneux puzzle. A puzzle pluralism provides a basis for absorbing future scientific discoveries and technologies, as well as sociological and anthropological studies of sport, for a continuing rather than closed resolution to Molyneux's problem.

It is not easy to develop a pluralist methodology. It is even more difficult to develop an integrative framework to puzzle together various horizontal levels of explanation into a vertical explanatory system. Like the blind monk holding the ear of an elephant and claiming the elephant is like a basket, most of us can only comprehend our own perspective at one time, even if we know it is but one part. And finding a way to structure a whole out of parts is serious work—it's not like we can take all of the blind monks' ideas of the elephant and put them together to make an elephant!

The various ways that pluralism is shaped to resolve Molyneux found in this guidebook serve more as a methodological key, a coach that readers can use to make their own progress in understanding the mind and its senses and integrating explanations. The answer to Molyneux presented here is thus mostly methodological for future researchers to build on, invigorate, and integrate. Like so much of our knowledge building, we are constantly remodeling, tearing down, and rebuilding. The pluralist methodology of this book makes space for this deconstructive and constructive work.

I divide this book into ten chapters. They thread together a patchwork of how Molyneux's problem works like a multi-tool to study the mind from different perspectives in various contexts. In particular, several chapters are dedicated to the booming research on the crossmodal abilities of nonhuman animals. These subjects are nonlinguistic and non-blind, many with nonhuman senses living in nonhuman contexts with significant environmental pressures mitigated by genetically encoded developmental stages. As the last few decades of animal research reveal, immediate crossmodal recognition of a variety of stimuli is common across multiple species of animal in every class, from baboons to bees, chicks to crabs, and dogs to dolphins. Pluralism makes space for piecing together these animal studies, leading to a concluding chapter that presents a novel experimental paradigm for testing human subjects through their own meaningful movement, puzzling out rotating cubes, and rolling on round wheels.

The guiding edge of this book is to think about Molyneux's problem in the context of what Molyneux would do with his problem were he alive today. How would he retool his problem, his "sense-scope," to pick up on the various nuances of sensory perception, their discordance, and their correspondence, to better understand the mind?

Chapter 1: Seven Problems for the Two-Choice Approach to Molyneux's Problem argues that the traditional "binary" method for resolving Molyneux's problem with either a "yes" or "no" is the basis for our inability to find an explanatory resolution. I begin by arguing that there is no single "original" or "official" statement of the Molyneux problem for such a reply. Thus, traditional binary answers risk equivocation, talking past other answers and generating verbal disputes rather than head-on debate. When this equivocation is recognized by researchers, the ambiguity of Molyneux's problem is often blamed, and researchers try to make more fine-grained specifications as to the nature of the problem. But this often leads to more verbal disputes when these answers are regeneralized as solutions to the problem as a whole. A pluralist methodology, by contrast, recognizes that answers to Molyneux are at different levels of explanation and thus answers are partial solutions to the problem as a whole. These partial solutions demand an integrating framework to puzzle together the empirical and theoretical complexities involved in a reply to Molyneux, a

reply that, I argue, includes "third way" answers—"no answer" answers that reject the problem outright in a way that has explanatory value.

Chapter 2: Molyneux's Tool and the Philosophy of Perception offers a new "origin" story for Molyneux's problem as a kind of multipurpose instrument for research on the mind and its senses. Molyneux's problem is like the telescopes and microscopes Molyneux discusses in his textbook *Dioptrica Nova*, a tool that can be retrofitted and improved to gain more acute resolution to the object of interest. Those of us who work on Molyneux's problem are part of an impressive historical lineage of prior thinkers like Locke, Leibniz, and Berkeley, among others, who reappropriate the problem to suit their specific philosophical concerns. To "solve" Molyneux's problem, in this context, is not an end unto itself, but a means for unlocking new ways of knowing. We are like smiths keying a lock in our use of the Molyneux tool, opening up the riches of philosophical insight found in the black box of the mind and its senses.

Chapter 3: Puzzle Pluralism: A Broad Explanatory Account for Molyneux's Problem locates an explanatory context for resolving Molyneux called "Synthetic" philosophy, a style of philosophy that finds insight in integrating various "specialist" sciences for fuller explanations of phenomena. Seemingly simple problems like "Why is the sky blue?" or "Why am I so depressed?" reveal incredible complexity and sublime insight when answered synthetically. Using diverse explanatory levels of explanation cultivates a philosophical spirit of wonder and inquiry so often lost in professional analytic philosophy, but one I attempt to harness using a version of Mill's Method of Concomitant Variations. Finding our thoughts within this "entanglement" enlivens our endeavors to understand the world around us, revealing how best to give our explanation for it. This synthetic turn follows a recent shift in the area of research that is the focus of this book, the Philosophy of Perception, where a pluralist inclination is used to study not just vision, but smell, taste, and touch. In this puzzle pluralist context, I conclude with a most expansive synthetic resolution to Molyneux's problem, one that includes its very origin in the fertile intellectual landscape of the enlightenment whose origins are found flying a flag marked by none other than the Jolly Roger, backgrounded by the very sun that permitted piracy's golden age.

Chapter 4: A Pluralist Resolution to Molyneux's Problem presents my answer to Molyneux's problem, the task of this book. To do so, I reappropriate Dennett's three-level explanatory account of "Stances": Intentional, Design, and Physical levels of explanation. I try to be as explicit as possible about how past answers given to Molyneux's problem are only partial parts that fit like gears in a machine to churn out a fuller explanation of perception in the context of thought and action. I also add an enhancement to Dennett's Design stance that incorporates suggested changes to the

design of Molyneux's problem. I conclude by suggesting that other levels of explanation may be needed, such as an Ideological stance. This adds a level of explanation studied by social sciences and continental philosophers that tracks distinct frames of reference and conceptual schemes.

Chapter 5: Locke's Answer and a Plug and Play History of Molyneux's Problem presents a pluralist interpretation of Locke's most talked about answer to Molyneux. I follow scholars in interpreting Locke's answer to involve three stages, adding a pluralism that allows for both "no" and "yes" answers. This three-stage interpretation of Locke's answer helps idealize a new pluralist history of Molyneux's problem that takes past answers put forth to resolve Molyneux, often in reply to different versions of the problem, as partial answers at specific levels of explanation. By consulting these past pillars of human ingenuity, we can quest alongside their philosophical pursuits. We can add ingenious manipulations to past retrofits of Molyneux for a processional answer that continually updates as we accumulate future experimental and conceptual knowledge of the mind and its senses, including new kinds of mind with alien forms of sensory contact with the world.

Chapter 6: The New Molyneux Problem presents a recent version of Molyneux that flips the explanation from *whether* the senses connect to *how* they connect for a number of seemingly arbitrary crossmodal connections that lack a single multimodal external object. I argue that these crossmodal connections are not arbitrary but are *about* environmental pressures and evolutionary adaptations and developmental stages that support, among other processes, human social and linguistic practices. In other words, the New Molyneux problem is not a separate problem but rather extends the scope of the 300+-year classic Molyneux problem into indirect causes for crossmodal connections. I ground these indirect cases for crossmodal connections in Millikan's teleosemantic theory of content, a strong candidate for supplying crossmodal connections with contentful meaning, a meaning that I argue is manifest in various cases of crossmodal connections in nonhuman animals.

Chapter 7: Molyneux's Animals: Promises and Problems presents the progression of research on crossmodal abilities of nonhuman animals. These methods extend the range of Molyneux's "tool" to investigate nonlinguistic and non-blind sensorially naïve organisms. These unique subjects have the ability to behaviorally identify stimuli previously experienced only by another sense. These animal methods can potentially unlock the mystery of human crossmodal abilities which are significantly challenged by almost 300 years of cataract surgery subjects that seem to confuse rather than clarify a resolution to Molyneux's problem. The evolution of the research technique also sheds light on the methodology of Molyneux's problem, revealing potential promises and perils.

Chapter 8: Meaningful Movements of Molyneux's Animals argues that crossmodal connections involve distinct spatial meanings of sociality, sustenance, survival, and shape. These meanings are found in numerous animal species, including ants, apes, bats, cats, chicks, chimps, crows, dogs, ferrets, frogs, goats, hermit crabs, horses, lions, minnows, monkeys, moths, octopi, parasites, penguins, pigeons, rats, sea lions, sharks, snakes, spiders, and whales. Animals from every class quickly transfer sensory representations of various objects, as evidenced through various natural bodily movements, motivated by these distinctive spatial meanings. Bees fly to newly seen cube shapes previously known only through touch and the taste of sucrose, cats react with surprise to unexpected voices when linked to the look of their human companions, and chicks visually identify spiky objects imprinted by touch alone. Animals uniquely solve Molyneux's problem through meaningful movements that are correlated with specific sensory tasks and correlated spatial meanings. This reveals crossmodal recognition as a meaningful active task of the animal body, even in nonlinguistic creatures, at least from a teleosemantic content perspective. These multiple meanings also reveal a potential explanation for why infant crossmodal experiments vary regarding their behavioral propensities, sometimes toward naïve and other times familiar phenomena, sometimes for sustenance and other times for shape learning.

Chapter 9: Molyneux's Underwater Animals and the Possibility of a Supramodal Sense focuses on crossmodal connections in underwater animals that suggest the potential of a supramodal sensory array with no sensory individuation at the intentional level. While *we* observe dolphins echolocating underwater toward complex shapes previously known by sight alone above water and electric fish swimming to spheres known previously only to sight using their electromagnetic sense alone, these underwater animals may experience no sense-based differences in their perception of these objects. Might some underwater animal minds have super-integrated senses, supporting a monolithic sense field adaptation cued by significant environmental pressures in their unique ecological niche? This is not to say that some underwater senses in some species may remain individuated according to the adaptive sensory connections that sometimes benefit from sensory individuation. The upshot of this chapter is that underwater senses operate less like "essences" that find easy individuation and categorization and more like integrated adaptive tools that can assemble and disassemble for various underwater survival and social capacities.

Chapter 10: A New Skill-Based Experimental Paradigm for Testing Molyneux's Problem is offered, inspired by animal meaningful movement recognition strategies. This paradigm presents a possible escape from the experimental paradox of Molyneux's problem that has stymied its resolution. This paradox stems from the use of subjects with atypical visual

abilities, such as blind or dark-reared subjects, that create abnormalities in recovered visual abilities, technically preventing a testable subject. I argue for two kinds of escape from this problem: (1) a methodological shift away from treating sight and blindness, as well as touch, as a categorizable kind and instead as a spectrum of differences and (2) skill-based stimuli, utilized in meaningful movement experiments on Molyneux's animals, promote a kind of touch and sight that are particularly fertile for crossmodal correspondences. Based on these two possible escape routes, I propose a novel skill-based movement test on newly sighted once-blind Molyneux subjects that can solve Braille Rubik's cubes or can perform complex tricks on a skateboard with a white cane. Can they solve a color-based Rubik's cube? Might they perform complex skate tricks by sight alone?

The **Epilogue** summarizes the argument of this book, a reorientation of work on Molyneux and its related projects toward integrating a plurality of levels of explanation, rather than specific interests, into a fuller explanation of how the senses connect in us and other sensory creatures. I conclude by suggesting that the explanatory power of "human meaningful movement Molyneux problems" is found *in* its ability to include new research specialization, such as skill expertise. On a pluralist framework, a provision of explanatory success is the study of new areas of research by Molyneux's multi-tool.

1 Seven Problems for the Two-Choice Approach to Molyneux's Problem

Introduction

Imagine you've not had any optical experience of light at all. Your retinas have never been able to process visual information due to a rare genetic disorder. Also, you have a talent for clay sculpture, crafting perfect geometrical shapes like spheres and cubes by touch alone. A doctor administers gene therapy at your request, and your vision recovers. Could you tell your sphere sculptures from your cube sculptures just by looking?

This is *one* version of Molyneux's problem, a three-century-old puzzle that remains unsolved. With 300+ years and many attempts at a solution by some of humanity's greatest minds, how have we yet to find any that satisfy? I blame this dissatisfaction on a restrictive "yes" or "no" explanatory method. Philosophers and psychologists answering Molyneux do so by stating some change to the "original," and then providing a "yes" or "no" answer founded on reasons at a single level of explanation.

These answers serve as only a partial reply to Molyneux's complex query, fitting a scenario vividly sketched by William Austin.

> Suppose two people, working from within different theoretical frameworks, offer explanations of the same phenomenon (event or state of affairs). What can we say about the relation between the two explanations? Are they rivals, so that at least one must be wrong while the other might be correct and even complete? Or could both stand as "partial" explanations, at least compatible and perhaps capable of being somehow combined into a "fuller" explanatory story.
>
> (Austin 1998)

"Yes" or "no" answers usually address different versions of Molyneux's problem, though purporting to be answers to Molyneux's problem outright, even though they have changed the problem. Either way, in Austin's

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scenario, these are only "partial" answers. This diversity is a boon for the pluralist strategy, which seeks a "fuller" explanation by integrating partial accounts. This fuller explanation includes future answers to Molyneux: "explanation is a process rather than an outcome" (Mantzavinos 2016, 14).

I turn now to seven specific problems with the traditional binary methodology used to answer Molyneux's problem. I list them as follows:

1. There's no "official" or "original" version of Molyneux's problem.
2. The traditional binary method promotes verbal disputes.
3. Molyneux's problem is too ambiguous to have a single meaning.
4. Molyneux's problem is too general for specific answers and cannot regeneralize to the problem as a whole.
5. We cannot resolve Molyneux's problem with empirical experiment alone.
6. Molyneux's problem is fundamentally complex, requiring multiple levels of explanation.
7. Molyneux's problem elicits several "no answer" answers that subvert a two-choice methodology.

No "Original" Molyneux Problem

Condillac (1754), just 60 years after Locke's publication of Molyneux's problem, complained that philosophers and psychologists answering Molyneux "do not even know how to set it forth." None could pinpoint a recognized official statement of Molyneux problem. More than 300 years later, Ryan Nichols (2007) recognized this mess as well stating, "all the major players differ in their statement of the problem itself, their understanding of the implications of the problem, and/or in their answers to Molyneux's original question(s)" (Nichols 2007, 251). The basis for the lack of an official statement is that there is no "original" problem—there is no "official" statement. If anything, there are five potential official statements of Molyneux's problem.

Molyneux's First Problem

Molyneux's first sent his problem in a 1688 letter to Locke. Cohen and Matthen (2024) argue that was an *epistemic* query regarding whether the newly sighted would, "know which is the Globe and which the Cube? Or Whether he Could know by his Sight, before he stretch'd out his Hand?" (De Beer 1693/2010). In this letter, Molyneux also intertwined knowing *shape* by sight alone with knowing *distance* by sight alone, two

distinctive questions, both of which figure heavily in Berkeley's own discussion (Loaiza 2017).

Molyneux's Second Problem

Molyneux sent another version in a 1693 letter to Locke, quoted in the Preface to this book. This explicitly concerned "matching" shape previously familiar to touch with sight, a nod to sensory rather than epistemic forms of identification. This is quoted as the original Molyneux problem and rightfully so, it is the first published version, found in the second edition of Locke's *Essay* (1694). In this version, Molyneux intended that the newly sighted have as much time as they needed to visually identify the shapes. Molyneux's published version embraced an "infinite delay" (Sorensen 1992, 193). But they could not touch the shapes.

Locke's Molyneux Problem

Locke's answer to Molyneux's problem is in response to Molyneux's own answer, and it included several revisions. Locke used the problem to support his view that perception changes with experience.[1] Locke inserted Molyneux's problem in a discussion of how we learn to see a sphere: at first, we see a multicolored circle. Over time, we perceive a single-colored sphere.[2] Locke then added two conditions to Molyneux's problem: that the newly sighted must identify shapes "immediately" and "with certainty." By adding this second condition, Locke returns Molyneux's problem to an epistemic inquiry. By adding "immediacy," Locke temporally expands Molyneux's problem across several stages over which the look of the shape shifts to 3D (I discuss these stages at length in Chapter 5).

Leibniz's Molyneux Problem

In response to Locke's answer, Leibniz offers a fourth version of Molyneux's problem, returning to Molyneux's second version by adding two conditions: (1) The newly sighted has time to acquaint themselves with their new visual ability and (2) the newly sighted is given a hint as to what shapes were before them to *perceptually* match the shapes. This is due to Leibniz's insertion that reason is an apt faculty for matching previous tactile familiarity of shape to sight, a claim that several others adopt (Reid 1764/2022, 6.11; Thomson 1974; Ludwig 1996; Van Cleve 2007). Other authors anticipate Leibniz's correction of Locke's two conditions,[3] such as James Jurin who wrote, "As soon as he is made to see, [Locke] requires him to pronounce, with certainty at first sight, which is the globe, which the

cube; without giving him leave to take a second view, much less to recollect himself and to reason upon what he sees" (Jurin 1738, 28).

Berkeley's Molyneux Problem

Berkeley's version is the first to publish Locke's "at first sight" condition in his statement of Molyneux's problem. "[A] blind man from his birth would not, *at first sight*, denominate anything he saw by the names he had been used to appropriate to ideas of touch" (1709/2008, Sec. 135 my emphasis). In addition, Berkeley's concern was crossmodal connections. This combination is the most commonly considered version of Molyneux's problem. Though contemporary researchers do not attribute it to Berkeley's statement, most add the immediacy condition as part of Molyneux's original statement, and do so in discussion of crossmodal matching rather than perceptual learning (see Millikan 1991, fn16; Jacomuzzi, Kobau, and Bruno 2003; Degenaar 1996; Held et al. 2011; Schwenkler 2019; Millar 2020; etc.).[4]

Each of these five versions of Molyneux's problem has significantly different conditions, content, and context. Yet each has been considered the Molyneux problem. However, this is only confusing for the traditional binary method for answering Molyneux that ledgers a two-choice approach to an official version. The pluralist methodology is enriched by multiple versions—by "many Molyneux problems" (Matthen and Cohen 2020). Pluralism frees scholars from the burden of identifying and agreeing on an

Table 1.1 Five "original" Molyneux problems are differentiated by their author and the specifications that they used: (1) ability, (2) stimulus, and (3) design of the experimental procedure. Though each problem kind is different, each is a potential candidate for the "official" Molyneux problem.

Year	*Publication*	*Ability Tested*	*Stimulus*	*Experimental Design*
1688	Molyneux's 1688 Letter to Locke	Knowing	3D Shape & Distance	By sight alone
1693	Molyneux's 1693 Letter to Locke	Crossmodal Matching	3D Shape	By sight alone with no touching
1694	Locke's *Essay* 2.8.9	Perceptual Learning	3D Shape	At first sight with certainty
1704	Leibniz's *New Essays* 2.8	Rational Matching	3D Shape	By sight and reason giving the newly sighted time and hints
1709	Berkeley's *NTV*	Crossmodal Association	3D Shape & Distance	At first sight

original problem. Each of these five statements counts as a version of Molyneux's problem, relative to one's specialization and level of explanation.

The lack of an official Molyneux problem leaves the value of various answers, including pluralist answers, in an explanatory limbo. However, following Austin (1998), pluralist replies are always in a kind of explanatory limbo, at best partial as they require a fit with a level of explanation and then integration with other answers in a vertical ladder for a "fuller" resolution. I present an account of this fuller resolution strategy in Chapter 4.

Mere Verbal Disputes

What is "the traditional binary 'yes' or 'no' methodology?" The traditional method answers Molyneux with a single yes or a single no answer, supported by reasons that satisfy a single explanatory level of explanation. Perhaps the reasons are of the *physical* processes of visual and tactual recognition of shape or *conceptual* linkage between these senses. What's more, using this traditional method, we find rivalries—disagreements about whether Molyneux's is best answered "yes" or "no." Lastly, in this traditional method, there is a belief in a true resolution to the problem that is explanatorily satisfying. However, this traditional method motivates more verbal disputes than real rivalry.

In this traditional methodology, it is common to view the history of answers to Molyneux's problem as rivalrous (e.g. Degenaar 1996). For example, though Leibniz sought to pose an answer agreeable to Locke, his rationalist "yes" answer is viewed as opposing Locke's empiricist "no" answer (Ehli 2020), an interpretation that reflects more of the traditional "yes" or "no" binary methodology than the answers themselves. For, as argued earlier, there exist significant assumptive differences between Locke and Leibniz over what constitutes Molyneux's problem; they are not even answering the same question. More specifically, Leibniz and Locke differ not so much over their answer to Molyneux, but over assumptions of what the newly sighted have access to.

Locke (as well as Molyneux) argues that the newly sighted have access only to sensory images—a "visio-sensory" difference to the prior tactile experiences (Brogaard, Chomanski, and Gatzia 2020). Sensory images do not translate from touch to sight. Leibniz argues that the newly sighted have access to sensory ideas which *do* translate; for Leibniz, there's a "visio-perceptory" sameness between sight and touch (Brogaard, Chomanski, and Gatzia 2020).[5] This sameness is either inborn and automatic (Glenney 2012) or discovered with experience, time, and mental exertion (Ehli 2020), depending on one's interpretation of Leibniz's answer. In sum, Locke and Leibniz's "rivalry" over their answers to Molyneux is more

verbal than real. Their real rivalry concerns the assumptions that their different statements of Molyneux's problem betray, assumptions that produce distinct statements of the problem, as argued in the prior section.

Like the verbal rivalry between Locke and Leibniz, the history of answers to Molyneux's problem is often a squabble over different problem statements. The binary method is flawed in its assumption of a substantiative disagreement over definitive aspects of the mind and sensory perception revealed by probing the single official version of Molyneux's problem.

A Sensory Versus Perceptory Distinction

On the pluralist outlook advocated here, however, decomposing answers into specific levels of explanation, for example, visio-sensory versus visio-perceptory, provides an interpretative basis for new and different rivalrous answers that have yet to be discussed. In other words, there are real rivalrous claims in the history of Molyneux's problem when arranged around matching levels of explanation, conditions, and contexts, as I present in Chapter 4. For, the addition of a multiplicity of conditions and other variations, and the distinctive contexts in which it can be presented are a boon when viewed from a pluralist methodology, diversifying the pool of potential answers for a collaborative explanation.

That being said, some of these assumptive differences pose a wide gap such as ideological differences or heterogeneous sensory versus perceptory contexts, as exemplified by the Molyneux and Locke's answers versus Leibniz's discussed earlier. In other words, the answers that we find throughout the history of philosophy are most often not just semantically different, as in normal cases of verbal dispute, but exist in distinct frames of reference. For instance, to Locke and the other empiricists, the mind is a "blank slate" being furnished by experiences. To Leibniz and other rationalists, the mind is teeming with inborn ideas that need triggering experiences or hints.[6] These opposing frameworks theorize Molyneux's problem from distinctive perspectives, compounding the differences between two distinct problem sets.

Is it possible that philosophical disagreements as long-standing as those between empiricists and rationalists can be reduced to mere verbal disagreements over different epistemic contexts? Yes. On a pluralist account, these disagreements are due more to not appreciating differences in levels of explanation. In other words, some ideas are acquired developmentally, and follow an etiological pattern that fits rationalism's claim that ideas are innate but triggered by experience (Carey 2011). Other ideas are acquired experientially, particularly those that are related to specific skill sets and expertise involving perceptual learning, like the "enskilment" involved in a sailor getting their sea legs (Pálsson 1994).

What about the acquisition of 3D shape, the central concern of Molyneux's problem? On the pluralist view, both rationalism and empiricism have explanatory accounts that can explain *both* the success and failure of shape recognition by the newly sighted, given the specific contexts and assumptions being made. Molyneux's is best answered with a "yes" *and* "no" that is sensitive to contexts that shift levels of explanation. What's more, a pluralist restructuring of the empiricist versus rationalist debate leads to the discussion of ever more specific aspects of mental facilities, like visio-sensory versus visio-perceptory levels of explanation, a cooperative rather than competitive outlook that should be infused with the history of Molyneux's problem.

It should not be surprising that similar pluralist methodologies have had success in understanding the nature of religious belief (Austin 1998) and medical practices (De Vreese, Weber, and Van Bouwel 2010), including medical history (Mantzavinos 2016). To this, we might add other features to be treated in a pluralist manner, such as distinct definitions of blindness or sight that are otherwise too vague for a specific answer.

The Ambiguity Problem

Hopkins (2005) disputes the clarity of Molyneux's problem, unsure of its meaning. "[I]t is far from obvious what Molyneux's question is really about. What issue, or issues, of a more general and theoretical nature, does it raise? Since the problem is unclear, it is also unclear whether Molyneux's question still matters today" (2005, 441). We find this critical concern expressed in the title of Cohen and Matthen's (2020) essay, "What Was Molyneux's Question a Question About?" These expressions of unease are directed at the problem's ambiguity, an unease that arises in other problems.

Mpemba's Ambiguity Problem

In the 1960s, a 13-year-old Tanzanian student, Erasto Mpemba, argued with his teacher that hot water freezes faster than cold water. Mpemba's disagreement was based on his experience freezing popsicles: the popsicle mixture could freeze faster if the sugary mixture was first heated. After convincing his teacher, they published their results under the title "Cool?" (Mpemba and Osborne 1969).

Like Molyneux's problem, Mpemba's problem is an old issue. It was considered by Aristotle, Bacon, and Descartes, and similarly remains unsolved. Researchers today have many reasons why Mpemba's problem is yet to be solved. Most complain that it is an ill-posed problem, "vague and imprecise" (Burridge and Linden 2016), causing misinterpretation and mere verbal disputes (Katz 2017). Researchers endeavor to fine-tune

Mpemba's description to find a solution, like Jeng's (2006) specification of Mpemba's effect:

> There exists a set of initial parameters, and a pair of temperatures, such that given two bodies of water identical in these parameters, and differing only in initial uniform temperatures, the hot one will freeze sooner.
>
> (Jeng 2006)

We find analogous cases of fine-tuning of Molyneux's problem. Diderot proposed a specification of Molyneux's problem, which:

> [I]ncludes two others, which we shall separately consider. It may be asked, 1. Whether he who was born blind will see immediately after his cataracts are couched? 2. Whether, in case he does see, his sight will be such as to distinguish figures; whether in seeing them, he will be able to give them, with certainty, the same names which he gave them by the touch, and whether he will have any demonstration that these names suit them.
>
> (1749, 79)

Many discussions about Molyneux and Mpemba's issues focus on creating testable specifications (Kumar and Bechhoefer 2020), creating experimental analogues that offer a path to an eventual experimental solution. If Mpemba's problem is solved by specifying the conditions for the effect, then a binary "yes" or "no" answer is reasonable. It may be analogously claimed the same for Molyneux's question, particularly as cataract surgery experiments provide experimental specification of what is meant by the phrase "at first sight" or "distinguish between" or the terms "sight" or "blindness."

But there is a key difference between Mpemba's and Molyneux's problem. No experiment directly models Molyneux's problem because it is not a physical phenomenon. Molyneux's is a designed problem, existing at a different level of explanation. Specifications for an empirically testable version like Diderot's and more recently Held et al.'s (2011) lead to more dilemmas and disagreements (Schwenkler 2013; Van Cleve 2014). Mpemba's is a found phenomenon—a real-world event. This does not mean we can't use empirical data in an answer to Molyneux's problem. But, an experiment cannot resolve it.

The Vagueness of Blindness

Molyneux's focus on the visual system is fundamentally more complex than water and its freezing conditions. What counts as "blindness" versus