Mechanisms and the Contingency of Social Causality
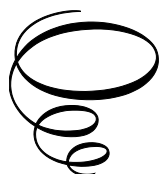
Mechanisms and the Contingency of Social Causality

By

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TABLE OF CONTENTS

CHAPTER ONE

INTRODUCTION

Hallways are filled with people wearing name tags of their titles and institutional affiliations. The smell of roasted coffee and sweet pastries circulates throughout the upper floor of an old building as a flurry of attendees wanders around trying to find their designated seminar room. Inside one of these seminar rooms, a large screen is illuminated by a projector displaying a set of images with equations, hypotheses statements, and an X Y plot. As the presenter concludes his argument, members of the audience nod and begin to raise their hands. "Interesting presentation and research question, but what's the mechanism?" ask Jane Doe and John Smith. This academic conference features typical presentations and typical follow up questions–which widely acknowledge that correlation usually does not mean causation. This is why the term mechanism is commonly used in academic discourse. Mechanisms imply causation and it is hard to come across an academic article without seeing the term mechanism being used either as a heuristic to supplement an argument or as some form of mediating force that is assumed to be operational in a causal relationship or correlation. Philosophers of science have extensively debated the utility of mechanisms in scientific explanations across disciplines throughout both the natural and social sciences (Norkus 2005).

Since the early 1990s, the use of the term mechanism has superseded the term "cause" in all English-written research papers by fifty percent. This effect is tenfold if compared to one century ago (Williamson 2011). Even earlier, for example from 1700 to 1900, the term mechanism started appearing in books and publications with great frequency–a trend that continued to not only increase across time, but bloomed into the 2000s alongside the rise of statistical applications and the data revolution. Figure 1 illustrates how the literary usage of the term mechanism transformed over the course of several centuries. This term went from being hardly mentioned in the early 1700s to being used at a much greater frequency by the 1900s and 2000s. These data are taken from Google Ngram viewer

which is a publicly accessible tool that contains data on words from all books and texts written in the English language.

Figure 1.
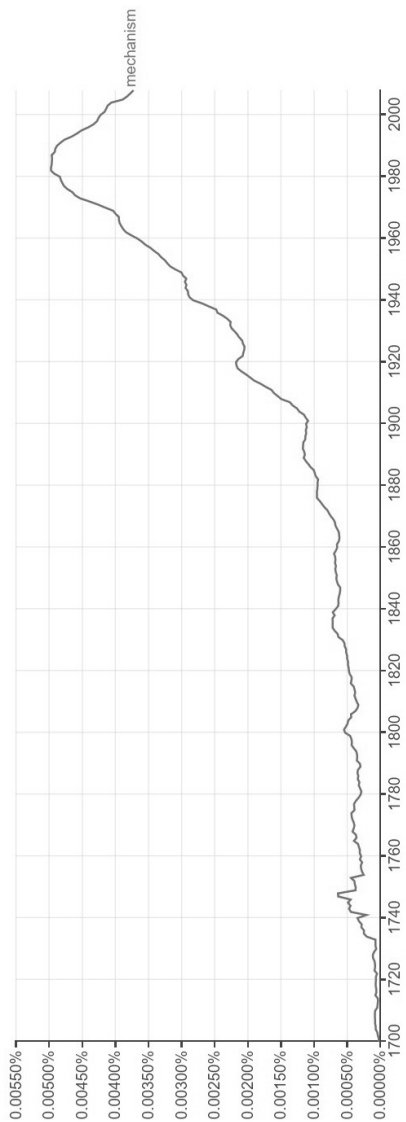
The origin of this term, like many others, stems to the Ancient Greeks. In English, German, Russian, and in Latin-based languages there is a Greek etymology of the mechanism (mekhanizm; mechanismus; mecanismo). Specifically, the contemporary usage of the term mechanism across dozens of languages has roots in the word *mechane* which was originally associated with the Ancient Greek idea of a deus ex machina; apò mēkhanês theós; God from the machine. This was a theistic plot changing tool or force that was used by authors of tragedies and comedies. From its outset, the mechanism was articulated to be a causal force that was a part of social outcomes and causality. Since then, there have been a number of semantic changes to the term, which over large periods of time, have resulted in semantic change. Civilizations have shifted from theistic to atheistic worldviews over the last two millennia, and in today's debates and discussions of mechanisms, philosophers of science and social science tend to regard mechanisms as forces that operate with varying degree of regularity in the empirical world.

Yet there is an intrinsic variance in how mechanisms are conceptualized and defined. This is widely acknowledged by scholars. Although most debates have centered around whether mechanisms can either supplement or attempt to supplement strict laws of nature as well as deductive-nomological explanation (Leuridan 2010), defining mechanisms has been problematic. Mahoney (2001) notably identified nearly two dozen of different definitions of mechanisms across disciplines. Mechanisms took on the following roles: variables that explain correlations; as forces that are within a "black box" that lays between independent and dependent variables; as "mid-level" theories that can account for different empirical phenomena under recognizable patterns or under unknown conditions; as an unobserved entity that generates a given outcome of interest (Mahoney 2001, 581). More than 20 years have passed since Mahoney's overview, and one would probably not be wrong if they were to argue that more definitions have since arisen, and greater debates have since ensued.

Similarly, decades ago, Elster issued a "plea for mechanisms" in light of prediction shortcomings (Elster 1989; 1998). Little (2012) has argued that mechanistic explanations of the social world are the best explanations we can possibly both hope for or expect (Little 2012). In scholarship on the origin of mechanisms, focus has been placed on linking mechanisms to the historical development of mechanical philosophy. Glennan and Illari (2018) identify mechanistic explanations and mechanical philosophy to date back to Democritus (460–370 B.C.), and Popa (2018) and Roux (2018) similarly trace the prehistory of the idea of a mechanism to

Democritus, the Epicureans, Aristotle, and Descartes. In these accounts, the idea of a mechanism is linked to early (and some of the first) historical instances in which mechanical philosophy (and ideas of mechanics) were formulated. While there is nothing particularly erroneous in these approaches, as this book will demonstrate, such approaches do not actually touch on the primary basis that lays behind the emergence of a mechanism–a basis that is metaphysical in its roots and was not limited to any particular philosophical framework or school of thought. In asking what the ontological source of a mechanism is comprised of, this book explores the etymology of this term and the socio-historical contexts in which it emerged.

Underlying the aforementioned discussions is something much grander that hitherto has not been acknowledged by philosophers of science, social scientists, and research methodologists. The term mechanism has historically functioned as a construct of social causality. This does not mean the mechanism is in anyway an idealist construct or something that does not exist independent of discourse. Rather, this book demonstrates that the origin of this term stems to human beings' attempts to rationalize aspects of the noumenal world [ideas of God(s) and spirit], through usage of synthetic a-priori abilities and qualities. This is how the term mechanism first arose. These processes of rationalization were initially applied to social causality by the Ancient Greeks to explain outcomes in the phenomenal world. The creation of the *mechane* came into being when a wooden mechanical device was designed for Greek theaters in Athens to holster up characters from the ground and ascend them into the sky to illustrate the deus ex machina in playwrights. The mechanism functioned to deploy an event in a story during theater shows (Papadogiannis, Tsakoumaki and Chondros 2010). A lever that was high-above stage would swing down to bring characters directly onstage or through a hidden trapped door (Ashby 1998). Historians describe the first mechane as comprising a system of a winch and pulleys containing a wooden beam with an attached harness that could both rise and swivel (Storey and Allan 2014, 45).

Populations in these ancient eras of history attributed causal forces to the works of God(s). An intriguing biblical utilization of the mechanism can be found in the parable of a large fish swallowing a prophet (Jonah) during a storm. The fish then saves him through delivering him to Nineveh, an ancient city in Upper Mesopotamia (Bell 2013). As time went on, the gradual decline of religion in social life (and the concurrent rise in science), led to posterior interpretations of mechanisms that were not tied

to the noumenal world in any purposeful way. Into the modern era of history, the mechanism became a posteriori concept based on empirical knowledge. It became a much more technical and positivistic term. The mechanism thus has constituted both discursive and material realities and has represented ideas from both the noumenal and phenomenal worlds. Throughout this book, I situate the term mechanism and its representational meaning(s) more so with understandings of social causation rather than with natural causation. The reason for this is that societal tendencies and worldviews tend to be inclusive of understandings of causation in the natural world. As such, I assume that the term social causality is synonymous with social causation and that the mechanism has historically functioned as the most integral element or component of social causality.

The idea of social causation is not straightforward or easy by any means. Kincaid (2009) argues against methodological individualism and reductionist approaches that are commonly deployed in the social sciences by stating that social causation arises from both structural entities and individual agents. I agree with this important distinction, but also situate my treatment of social causation along with discussions of natural causation–both of which are ultimately apart of the what Kant considered to be the phenomenal world or realm. This brings us to a major theme of this book. Throughout every single era of human history in the Western world (broadly conceived) ranging from Ancient Greece to our contemporary civilization, common societal-level understandings of social causation have always been coherent and constitutive of a shared apprehension of the world. There are macro trends that are intrinsic to different periods of human civilization which are reflected in discourse as well as culture. Throughout this book, evidence is presented to demonstrate that the term mechanism and its etymology as well as historical semantic change(s) are very much tied to such common understandings of social causality. The term mechanism has historically enabled populations to categorize how they perceive causal forces operate in the social world.

While there are dozens of definitions of the term mechanism, few have considered what this term actually symbolizes and means from a grander perspective. In this sense, this book's analyses echo a Heideggerian approach to philosophy (especially his works on technology) because I ask what the essence of a mechanism is? As a term in discourse and as a term that has taken on different meanings throughout different historical eras, what is a mechanism? Over the last two millennia, epochal differences can

be observed in how mechanisms were interpreted and utilized in discourse and culture. To date, no work has examined these changes nor has any work specifically addressed the etymology of the mechanism. Our lack of understanding pertaining to these topics reflects significant gaps in knowledge because the term mechanism constitutes arguably the most direct linguistic representation of human beings' understanding of causal forces. This book carries out an analysis of heterogeneous different eras of history to identify the origin of the mechanism and to trace the semantic alterations that this term has gone through. Through five chapters (which form the basis of the text) along with a seventh chapter (the conclusion) I discover that semantic alterations associated with the term mechanism can be observed directly with changes in referents (physical changes in the world) and changes in categorization (forms that associated with worldviews).

Prior to the onset of modernity, understandings of mechanisms were remarkably different because they were tied to either a polytheistic (Ancient Greek) or theistic (Christian) understanding of the social world, both of which were religious in character. Specifically, the mechanism was representative of forces that were God-like. Changes emerged in the Roman empire and early Christianity where the mechanism remained a theistic force but became epideictic of one deity, rather than a heterogeneous collection of deities. During the Middle Ages and into the era of modernity, notable novelists and writers utilized the mechanism as a metaphysical plot shifting force. However, with the era of modernity, major alterations arose in terms of how the world was categorized and this paved way for the scientific usage of the mechanism. At the time of the writing of this book, the most recent changes in the etymological and semantic characteristics of the mechanism (and in turn, social causation) are directly tied to the digital revolution and the emergence of artificial intelligence (AI). The emergence of AI, it appears, has rendered a completely new understanding of mechanistic activities and social causation due to manifestations of autonomous and non-human mechanistic actions and forces.

Theoretical Framework

This book explores these cross-historical dynamics through tracing the broad etymology of the mechanism and offers both scholars and members of the general public a different glance into the underpinning of social causality and a new innovative assessment of the contingency of social

causation. Throughout the chapters of this book, insights are drawn from a variety of different thinkers, philosophers, scientists, and regular people that contributed to historical innovations. Each chapter attempts to map out the overarching macro tendencies inherent to socio-cultural configurations that populations lived within. This approach makes this book accessible to both students and scholars, and different chapters should be drawn upon by different audiences accordingly. Moreover, the analyses presented in this book are complimented by explanations of the different philosophical and scientific contributions that groups and individuals put forward to what truly has been an evolutionary process of knowledge advancement that began thousands of years ago and continued up until the writing of this book.

It is necessary to differentiate this book from the rather large wave of anti-positivist thought and output where mechanistic explanations have been rejected. The emergence of post-modern, feminist, post-structuralist, post-colonial, and other critical traditions in social sciences and humanities have led to arguments against mechanistic approaches. My intention in this book is not to take sides with any particular school of thought or scholarly tradition. The aim of this book is to fill a major gap in knowledge through a philosophical approach that draws from specific aspects of different philosophical frameworks. While this book mentions many different thinkers and discoveries of the last two millennia, the following three figures are especially important to the different frameworks I draw on to make sense of grandiose historical eras and processes that transpired within and in some cases, throughout these eras. The first figure is Nikolai Berdyaev (1974-1948) who was a Slavophil philosopher that was exiled from the Russian Empire by the Bolsheviks and spent the remainder of his life in Western Europe. Berdyaev is considered to have been a highly original existentialist philosopher who many also refer to as a philosopher of spirituality and personalism. A particular work of Berdyaev (1952) titled, *The Realm of Spirit and the Realm of Caesar*, is drawn on and its particular categorization of the relationship that human beings have to nature and the cosmos. There are four of such periods that arose in history (a fifth was projected by Berdyaev to arise in the future). We currently are living in the fourth. This categorization helps to make sense of the changing trajectories that humans have lived through including polytheism, paganism, Christianity, modernity, science, and the advent of computational and digital realms. I also draw from Berdyaev's existentialist assumptions about personality and subjectivity.

The second major thinker whose ideas are frequently drawn on throughout this book is Immanuel Kant (1724-1804). Perhaps the most influential and important philosopher since Aristotle, Kant's contributions to philosophy are so significant that an entire encyclopedia can be written on them. For my purposes, I draw on Kant's ideas he put forward in his *Critique of Pure Reason* (1781) among other works. Kant's ([1797]; 1997) phenomenal and noumenal distinction is frequently utilized throughout different chapters of this book to describe how knowledge was attained on mechanisms in different eras of history. Importantly however, Kant's ideas on the phenomenal and noumenal realms are, as subsequent chapters of this book will reveal, incomplete. Although I assume that the phenomenal world exists and that the noumenal world also exists (but is not accessible through rationalistic categories of understanding), there is more to this book's framework than the distinction between phenomena and noumena.

One may identify potential inconsistencies with combining ideas of Berdyaev and Kant as the former was not in full agreement with the latter. Both figures were strong advocates of freedom, yet Berdyaev's faith played a much more prominent role in shaping not only his life, but his decisions in life such as accepting the Bolsheviks' proposal to send him away on the famous "philosophers ship" that purged dozens of intellectuals from the newly forged communist regime in the early 1920s. It is impossible to read a chapter of any of Berdyaev's books and not see a reference to Kant and some component of his thought. A particular difference between the two is that Berdyaev has been widely labeled as a Christian existentialist because his Orthodox faith underpinned the formation of nearly all of his arguments on philosophical topics. Perhaps the most salient difference is in Berydaev's ontological assumption of the human condition and how it relates to the noumenal realm. Berdyaev argued that, "the very fact of the existence of man is a break in the natural world and proves that nature cannot be self-sufficient but rests upon a supernatural reality" (Berdyaev 1937, 46). Only through human beings can spirit be revealed, argued Berdyaev, and this is the highest value of man. Along these lines, Berdyaev argued that being (if interpreted in an objective manner) does not have primacy over mankind, but rather, mankind has primacy over being because it is revealed "only in and through man" (Berdyaev 1937, 7). While Berdyaev did not take issue with Kant's important arguments on the limits of our knowledge, he did nevertheless believe knowledge is spiritual in its preconditions. This makes Berdyaev's position very starkly opposed to a Kantian transcendental consciousness.

Further, Berdyaev argued that the noumenal realm was eschatological and existential, and it is within this realm where God and theism subsist. According to Kant, the categories of our mind cannot adequately grasp metaphysical issues including theism (God), but we can identify the spatial and temporal characteristics of the phenomenal world through our synthetic a priori cognitive capabilities. This made Kant's reasoning kin to both the empiricism and the rationalist waves of his era. Importantly however, when considering Berdyaev's position, emphasis must be placed on his claim that, "the a priori forms which are supposed to vindicate the validity of knowledge have no direct relation to the concrete man who is the knower" (Berdyaev 1937, 10). Echoing Dostoevsky, Berdyaev believed humans were much more capable of obtaining and reaching spiritual heights through creative activities rather than through accepting the Kantian idealist postulate that a-priori transcendental consciousness is the end all. For my purposes throughout this book, I will assume there exist both phenomenal and noumenal worlds, and that God and theistic forces subsist within the latter, while materialism and causality exist within the former. The fascinating aspect about the origin of the term mechanism is that it constitutes an attempt by human beings to account for social causality through constructions and articulations that stem to both the phenomenal and noumenal worlds.

Mechanisms Across Phenomena and Noumena

Even with my adoption of the Kantian phenomenal and noumenal distinction, I do not agree with one of Kant's major points of orientation. Zizek (2012) refers to Kant's framework as being riddled by a "hidden arrogance" because of its assumptions about our restrictions to finite understanding. Since knowledge is limited in Kant's philosophy, we cannot ever know the totality of the universe. Because of this constraint, Zizek argues that the Kantian framework actually continues to represent this infinite task as a task that some other infinite understanding would be able to accomplish, "as if the problem is simply one of extending or extrapolating our capacity to infinity, rather than changing it qualitatively" (Zizek 2012, 211). As I have already noted, the implication I associate with the noumenal realm is not one that necessitates a "naturalist-determinist" idea that Zizek associates with Kant's conceptualization of noumena. Nor do noumena represent what Zizek refers to as self-limitation or pure negativity that are inaccessible to our experience.

Along these lines, a word must also be put in about Hegel, as I anticipate that some will consider the line of argumentation put forward in this book to be somehow related to a Hegelian framework and his grander philosophy of history. Indeed, Hegel shares much with Kant but he also was highly critical of him. As Priest argues, "in these philosophers, for the first time, we arrive at a general recognition of the contradictory nature of the limits of thought, together with a theorisation of how and why this occurs" (Priest 1995, 81). Yet even with their similarities, Hegel's criticisms of Kant are widely acknowledged to pertain to the "bifurcated world" and a capitulation to skepticism in Kant's philosophy (Berthold-Bond 1989, 43). The noumenal realm is an empty world, argued Hegel. As noted by Berthold-Bond (1989), "the central epistemological issue between Hegel and Kant has to do with the alteration of the object by consciousness in its activity of thinking that object" (Berthold-Bond 1989, 47). In Kant's philosophy, the altering activity is an "ultimate barrier" while for Hegel the recasting of the object by consciousness allows the object to appear in its "true light" (Berthold-Bond 1989, 47). In this sense, Hegel believed we can go into or behind the noumenal realm and to uncover things that can be seen in what he referred to as a native realm of truth (Solomon 1983, 425). Some have associated these ideas with Hegel's conceptualization of the unconsciousness. Hegel (2018) believed that a super-sensible (noumenal) realm does not exist as a separate entity because it is mirrored within the phenomenal realm. History is thus a reality of God and our ideas are a manifestation of God's ambition or will. Zizek, an earnest Hegelian, summarizes this logic as follows, "as Hegel put it with unsurpassable clarity in his Phenomenology: behind the curtain of phenomena, there is only what we put there" (Zizek 2012, 282).

Zizek's popular synthesis of Hegel's framework implies that the internal limitations of reality are in a gap that exists somewhere between phenomena and noumena. This is how Hegel was able to identify what Zizek believes to be a radical form of negativity that is within the subject itself as a form of correlative subjectivity which reflects the ontological incompleteness of phenomenal reality. Further, in Zizek's (2012) argument against the phenomenal and noumenal distinction, it is noted that, "there is no mysterious gap separating us from the unknown, the unknown is simply unknown, indifferent to being-known. In other words, we should never forget that what we know (as phenomena) is not separated from things-in-themselves by a dividing line, but is constitutive of them: phenomena do not form a special ontological domain, they are simply part of reality" (Zizek 2012, 211). Echoing Hegel, Zizek argues that the gap between proposed phenomena and noumena is "purely

cognitive" through referencing research on neuronal processes in the brain. While I agree with Hegel's claim that perceptions of "real" phenomena can be proven through identifying their logical basis or rationalized parameters, I still adhere to the assumption that a noumenal realm exists.

It would be erroneous to believe that human thought can attain knowledge of the entire scope of subjectivity. The presuppositions that are voiced by both Hegel and Zizek reflect both thinkers' entrenchment in objectification. Berdyaev argued that Kant approached the problems associated with objectification in identifying some of the limits to knowledge in the world of appearances, but did not go far enough because this was not the "true" world (Calian 1969, 116). In this sense, Berdyaev's view of the noumenal realm as being both subjective and eschatological is accommodating. Berdyaev argued that humans are in a struggle against objectification and that his own framework was a spiritual revolt of noumena against phenomena (Calian 1969, 117). The argumentation put forward in this book is much closer to Berdyaev's conception as I believe that the noumenal realm reasserts mystery into our existence which has hitherto tended to get lost in an objectified and rationalistic world, especially in the context of "modern" post-Kantian philosophy. In this respect, even though this book draws from Kant's distinction between phenomena and noumena, it is rooted in a larger framework that is neither fully Kantian nor Hegelian.

Our senses and our perceptions can produce objective measures of the phenomena, but we will never uncover the full scope of characteristics about the noumenal realm because it is marked by spirituality that can only be approached metaphysically and existentially. This is why Berdyaev argued that knowledge of noumena is through intuition and not sensory input (Collier 20014, 187), and also why he warned against scientifically ascribing noumena to the properties of phenomena (Obolevitch 2019, 122). In my view, objectifying or attempting to shoot down the noumenal realm is an erroneous epistemological maneuver. Leaving the noumenal realm to spirituality and existentialism is the only way to account for the possibility of putting forward a framework (even if limited in its ambition or scope) that will withstand the test of time and historical developments.

From early periods of history, into the Middle Ages, then leading into the modern era (rise of science), and the contemporary digital age, socio-cultural configurations and tendencies have intersected between both phenomenal and noumenal realms. Early societies put forward attempts of rationalizing the noumenal realm through a-priori synthetic knowledge

(which Kant argued is a basic tenancy of human thought) and it was a particular attempt in Ancient Greece that led to the creation of the mechanism. The Ancient Greeks had very little experimental knowledge, they did not yet conquer the natural world, and were submerged within cosmic, polytheistic worldviews. The mechanism was created as part of a process of rationalizing a polytheistic cosmos. In other words, components of the noumenal realm that were prevalent throughout the ideas and socio-cultural tendencies of Ancient Greek societies were physically transmigrated into the creation of a mechane (mechanism). As time went on, populations shifted away from articulating ideas in their cultures and understandings of social causality through theistic prisms. By the rise of the modern era, theism declined, more emphasis started being placed on the empirical (phenomenal) world. This tendency was exacerbated and excelled in the mid twentieth century and eventually turned into a morphed into our current point in history–the digital age. With these shifts and vast historical transmutations, semantic changes associated with the mechanism can be observed as can understandings of social causality. Below, the different historical time periods that this book investigates are split into sections to offer readers a preview.

Linguistic and Semantic Change

Generally, linguistic scholars agree that semantic changes of words do occur over time, especially when viewed over multiple centuries. There is regularity inherent to semantic change, and some linguists argue that terms are even predictable in how they will change (Traugott and Dasher 2001). The Ancient Greek conception of a mechanistic force was contingent on the polytheistic world views of its era. During this time period, humans were still submerged into cosmic life and their relation towards nature was based upon magic and myth (Berdyaev 1952, 47). It is in this particular milieu that the present investigation of semantic change of the term mechanism has to begin. Broadly speaking, semantic change of terms has been observed to be brought about by a heterogeneous collection of factors including those that are linguistic, psychological, socio-cultural, or encyclopedic in origin (Blank 1999). Grzega (2004) includes over a dozen different motivations that are associated with why semantic change arises–some of which are attributed to language disguising (misnomers), difficulties in attributing correct meanings to denotatives, social reasons, institutional and legal factors, morphological reasons, cultural salience, and most crucially, changes in referents and categorization. Changes in referents entail that there are physical changes in the world, whereas

changes in categorization mean that changes in world view occurred. Semantic changes associated with the mechanism have come alongside physical changes in the world and simultaneously, with changes in worldview. In Ancient Greece, mechanistic forces were mythical, cosmic, and theistic. They functioned as plot changing agents in the many tragedies, comedies, and masterpieces of early literary works and theater. The effect of mechanistic actions in theater were tied to various deities of Ancient Greek religion (polytheism). Notable works included *Clouds* (Aristophanes), *Medea* (Euripides), *Thesmophoriazusae* (Arisophanes), *Orestes* (Euripides), Elektra (Sophocles), *Oresteia* (Aeschylus) among others drew upon the deus ex machina to solve their plots or to drive the entire purpose of a given story. In the public sphere, these massively important cultural stories were portrayed via enactments in theater and were watched by thousands of attendees (archaeologists have even projected that some theaters contained more than 12,000 seats). Story lines were also re-told for centuries after they were written.

While the pre-Christian era was dominated by the belief in and worship of multiple (in some contexts, many) gods (Hellenis, Pagans), the decline of Greece and rise of Rome coincided with an eventual shift away from polytheism to one God (theism). The ascension of Orthodox and Catholic forms of Christianity were salient as the belief of Jesus Christ became widespread in the Western world and into the Byzantine empire. With these changes in worldview, the idea, usage and symbolic interpretation of the mechane made its way into Rome and here the concept remained popular. Crowds continued to witness the mechane and would react with astonishment and ponder over the gods (Cunningham 1954). Roman theater was alike to Greek theater, and the usage of mechanes on stage remained prominent. In addition, the Romans used a mechane in funeral settings. The mechane went from being bound to forces that connected the populace with deities to eventually only being illustrative of a single deity. This occurred during rather turbulent and dictatorial times in Rome, and the shift was specifically solidified in the centuries after Julius Caesar's death.

The impact of this shift in belief systems cannot be understated as this was a major change in world view. The Church merged itself with the polity, making the emperor of the Holy Roman Empire an all-powerful deity. This set the stage for a new objective reality for much of the world–a reality that Berdyaev refers to as the "Realm of Caesar." Technological advancement was limited withal, and nature was still a hierarchical order

established by a theistic power (Berdyaev 1952, 48). Hence, the mechanism remained theistic in its characteristics. Furthermore, several centuries of relative peace (Pax Romana) ensued under the sovereign Augustus and rulers after him, while religious conflicts occurred as pagans clashed with Christians until eventually (sometime in the 4th or 5th century AD) Christianity reigned paramount over paganism. Ignatius of Antioch was a disciple of John the Apostle and his articulation of the mechane can be traced in letters and teachings about Jesus Christ throughout the empire and the Middle East. As many recognize, biblical scriptures state that Jesus Christ was crucified on a Cross. The Cross for Ignatius of Antioch is a cosmic hoist and mechane that propels people to heaven. He wrote, "O Cross, thou hoist to heaven! The Cross was driven into the ground – and behold, idol worship was destroyed. No ordinary wood is this, but the wood that God used for victory" (Cardinal Ratzinger 2016). Ignatius' articulation entails that the mechane does not cast down God into the masses but that the Cross raises people from their lowest level to Jesus Christ and in turn, God. In this sense, common people can be raised out of paganism and into spiritual connection with one deity–God (at one point, the term Pagan literally meant non-urban peoples of the empire). Moreover, in Ignatius' articulation, the Cross of Jesus Christ is the figurative mechane, whereas the rope to the mechane is the Holy Spirit (Ballard and Holmes 2006, 9).

The association between the mechanism and a theistic power remained intact throughout the existence of the Roman empire. It was then carried over into the Middle Ages and was most significant in the late period of this era as observed in outstanding works of literature.

Ignatius' articulation may be even more significant than one would assume because it signified a reversal shift that enabled the mechane to be cognitively conceptualized by the masses. By the 14th century, Italian architects improved many aspects of theater engineering. For example, the *Paradiso* was a unique system of ropes hoisted by a machine that would elevate angels and other characters above stage (Brockett et al. 2007). Even with technological advances in areas such as theater and in urban life more broadly, populations still conceived and interpreted phenomena via a religious basis in daily life. Humans were still bound to mother-earth and were living in a telluric epoch (Berdyaev 1952, 48). By the time the era of the enlightenment came around, novelists, play writers, and other literary contributors already started to shift away from conceptualizing the

mechanism as a God-resembling force to simply incorporating external plot-changing forces that were not necessarily theistic.

Numerous examples can be observed in literature from the high Middle Ages in which mechanistic plot solutions were deployed but were not necessarily theistic in their character as writers still relied upon the mechanism as an articulation of a forceful action and event, but did not link it to theistic powers. Problems in a given plot were solved via the mechanism and when this transpired, the reader or viewer would be forced into a major dilemma as the structure, cohesiveness and transcendent worth of a given plot would either fall into question or be resolved. The mechanism remained influential into the great classics of literature and theater in works such as Shakespeare's *As You Like It* or in *Pericles, Prince of Tyre*, in Tolkien's *The Lord of the Rings* and *The Hobbit*, in Dickens' *Oliver Twist*, in Golding's *Lord of the Flies*, in H.G. Wells' *The War of the Worlds*, among others.

With the onset of modernity, populations in much of the Western world experienced a decline in religious beliefs. While this slow-moving process did not unfold in one year, ten years, or even one hundred years, it did open up space for what was truly a radical change in human thought. The era of the enlightenment, the onset of modernity, and the emergence of liberalism and industrialization contributed to masses perceiving themselves as being free from God's antecedent oversight of their lives. This paved way for both separation between church and state as well as the general mechanization (human control) of nature. The mechanization of nature entailed those human beings, for the first time, garnered control over natural forces. Nature ceased being a natural hierarchical order controlled by theistic forces. During this era, science and the scientific method developed and in time, became paramount in their influence on society. Nietzsche's philosophy epitomized these changes, especially in his idea of *Gott ist tot* (the Christian God is dead).

The solidification of the principle of reason (as articulated by Leibniz in the 17-18th centuries) was significant in its consequences. This principle entails that everything in the world must have some reason or cause behind it. For instance, if there is a given entity (z) then there has to be an explanation for why it exists. The same exact logic is applied to every given event and every given proposition. For the first time in history, natural phenomena could be explained and, in some cases, predicted by physical laws. For example, the *Law of the conservation of mass* was

discovered in the eighteenth century and states that in any closed system, a given mass of substances that are produced by a chemical reaction are always the same as the reactant. In other words, in any given chemical reaction, mass is unvarying and atoms do not disappear, say when say a piece of wood burns into ashes. Instead, atoms get reshuffled and reconfigured. As many other findings, this discovery helped change the status and position that science had over daily life and society.

Since nature was no longer dictated by theistic forces, understandings of causality changed greatly. No longer were causal forces in nature and daily life linked to theistic powers, but rather, the rise of scientific inquiry enabled widespread cognition to emerge about properties and material of the world. It was here where mechanisms were assumed to be operative as forces that could be discovered by human beings. Crucially, causal forces were not tied to polytheism or theism. This brings me to the primary intention behind why I wrote this book. While hundreds of studies and many different chapters in edited monograph volumes continue to be published surrounding the usage of mechanisms, attempts at defining them, and implementing mechanistic explanations within causal and scientific-based social inquiries, there currently is a grandiose lack of understanding about the contingency of this term and the relation that it has to social causality. This book takes what to my knowledge is the first step at fulfilling a cross-historical overview from Ancient Greek Theater to AI and the digital era of communication.

Causal Knowledge

Indeed, this book's investigation of social causality and semantic changes associated with the term mechanism necessitates that these concepts are made intelligible and defined with relation to previous frameworks. To understand what causal knowledge means, we first must consider Aristotle's Four Causes which has arguably formed the basis of Western philosophical thought and has underpinned the ideas of many philosophers and scientists' understandings of causality. Falcon (2022) accurately describes Aristotle's framework on causality as "causal pluralism," as it features his famous interrelated Four Causes, each of which contain a clear and distinct kind of cause. The four causes originate to Aristotle's explorations of the natural world and form the basis of what he argued must be in place for causal knowledge to arise. The four types of causation include 1) the material cause (which is the material substance out of which a cause arises); 2) the formal cause (which is the form that the cause will

take on or will arise from a cause); 3) the efficient cause (which is the primary type of change associated with the cause); 4) the final cause (the end product or purpose of the cause) (Aristotle 1966). In articulating these different types of causation, Aristotle was particularly interested in explaining causal knowledge as applied to the natural world which is why Falcon (2022) makes the crucial point that his framework was teleological and did not depend on the application of psychological concepts (desires, beliefs, intentions, etc.). Many attribute Aristotle's framework of causes to the creation of the first bonafide deductive approach to study the natural world (and in turn, one of the first scientific frameworks put forward by any human being). Gerring (2001) argues that the third of Aristotle's causes, the efficient cause, has received the most attention in modern discussions because it is commonly be associated with an agent that produces change in something else. This pertains to a very bold (and in my view, correct) observation in that definitions of the word "cause" in English dictionaries tend to revolve around the notion that a cause is an agent because it "generates, creates, produces, effects" (Gerring 2001, 133). What then, sets my exploration of the term mechanism apart from social causality, and how does the aforementioned definition of the term "cause" relate to Aristotle's four causes and current definitions of the term "cause?" Although these are quite dense questions, they must be addressed in this introduction because statements put forward in subsequent chapters run risk of being difficult to interpret for the reader. First, as outlined in previous paragraphs, this book's analyses rest on the assumption that the noumenal and phenomenal worlds are distinct from one another. Aristotle's four causes, importantly, are akin to the phenomenal world.

This leads us to the next critical point, mechanisms are not necessarily tied to either of these realms, and in different periods of history, the understanding of what constitutes a mechanism has been influenced by ideas stemming between both worlds. For example, the original "mechane" was a physical construction that was used in theater, while the idea of the deus ex machina was a metaphoric or symbolic discursive construct that led populaces to believe social outcomes were determined by the gods. As subsequent chapters of this book will reveal, early history was marked by populations' attempts of rationalizing the noumenal world and explaining social outcomes through such processes of rationalization. This sets apart the historical content of the term mechanism from the modern term "cause," because the former neither inclusive to either the phenomenal or noumenal worlds while the latter is inclusive to the phenomenal world. As such, my assumptions of what constitutes social

causality reflect what I commonly refer to as the populational level in this book or "cultural tendencies." This does not mean I disagree or take issue with Aristotle's four causes or any modern definition of the term "cause," but rather, when the idea of social causality is brought up throughout this book, it is not concerned with identifying an objective topic or specific outcomes as this idea is used to reflect cultural tendencies and belief systems. It is only through such an approach that the great historical heterogeneity inherent to human thought can be analyzed.

Contingency

The title of this book contains the word "contingency" and the inclusion of this word into the title is not random. Importantly, it does not mean the book is in anyway linked to post-structuralist thought. Post-structuralist strands of philosophy arose sometime in the 1960s as a critique of long-standing structuralist modes of thought and subsequently gained more prominence, especially in the prism of continental philosophy (which is frequently differentiated from analytical, American-styled philosophical schools in contemporary discourse). My initial interest in mechanisms and the philosophy of science stems to engagement with Glynos and Howarth's (2007) *The Logics of Critical Explanation in Social and Political Theory*, a work that can be considered to fall under the classification of post-structuralism because it built on Laclau and Mouffe's numerous works and put forward a "retroductive" (rather than inductive or deductive) form of inquiry for the social sciences. I have also published research on regime transitions, mobilization, and repression utilizing such an approach (Anisin 2014; 2017; 2021). Yet this is not the approach I adopt in this book because the topic is not necessarily a political one nor can it be analyzed through paying attention to only discourse.

Glynos and Howarth engaged with Jon Elster's widely influential mechanistic plea and deconstructed the underpinning of causal mechanisms in social science. The aim of their book was to develop an approach that could be sensitive to the self-interpretations of social actors while not reducing explanation to subjective viewpoints and qualitative cases. Glynos and Howarth's crucial contribution, alas, is rare among public post-structuralist debates and discussions, especially in academic contexts that I have come across both virtually and in person. Most post-structuralist strands of thought assume that entities cannot exist independent of discourse and that social reality (including things such as gender, race, economies, etc.) are social constructs. The different schools

that can be classified under this umbrella (cultural geography; linguistics; post-marxism, feminist literatures, some psychoanalytic approaches, among others), tend to assume that all of social reality is highly contingent, and that meaning is not fixed. I agree with the latter assumption; however, I disagree with the overarching post-structuralist logic that states causality in the social world is not intelligible or identifiable. For example, a commonly held position by post-structuralist scholars is that if one assumes contingency exists (in say, the global political system), then this excludes direct causality and linear temporality (Nabers 2015). In exchange, the post-structuralist assumes that our understanding of the social world rests on difference and a lack of stable foundation(s) because of the intrinsic condition of dislocation in social structures. From these suppositions, post-structuralists attempt to investigate how discourses and identities get constructed and articulated which often results in analyses that arrive at a certain degree of validity because they capture how meanings get fixated by political actors and how they can also get disrupted and changed. Yet such approaches capture only a partial set of characteristics about the social world, and contribute little to understanding why there exist cross-generational tendencies and cross-historical stability for some discursive terms and societal inclinations.

The ontological assumptions I hold about social reality may appear to be contradictory to readers because different parts of this book emphasize contextual dynamics and the importance of paying attention to qualitative cases, time periods, and discourses, while other parts of the book attempt to abstract away into general tendencies and overarching societal dispositions. The last two millennia of history have shown that human beings have a profound ability in their usage of synthetic a-priori abilities to identify different forms of truth about the phenomenal world. Indeed, some discoveries have been overridden and often, new discoveries have proven old ones false, but the predominant pattern to scientific history is that there has been a technical, biological, and physical evolution in our abilities to observe, predict, and control the natural and social worlds (the phenomenal realm). Throughout these evolutionary processes, different forms of truth have been identified and the lack of stability of social foundations did not prevent these discoveries from being made nor did subsequent changes in social foundations and discourse nullify these truths. For example, Mendeleev's identification of the periodic table of chemical elements represents the discovery of a form of truth about the natural world. Yet in the near two centuries since this discovery, scientists have been able to go much deeper in their observations of specific elements to the point in which they now are able to detect new particles

and characteristics that subsist within a given element due to advances in technological measurements (e.g. the Higgs boson particle). This does not mean that Mendeleev's discoveries are false, but rather, that there are different degrees or forms of truth in the phenomenal world.

Of my time analyzing different philosophies and writings of many thinkers, I tend to concur with Berdyaev's supposition that there are different levels and types of truth, and that truth is not and can never be a universal concept. For example, with reference to the splitting of the atom and the advent of the atomic bomb, Berdyaev noted that, "Science if it does not reveal the Truth, at least reveals truths, and our modern world is plunged ever deeper into shadow" (Berdyaev 1952, 21).

This is also why the ideas put forward in this book are not akin to the critical realist traditions which assume there can be a "meta-theory" for explaining our world (especially as applied in the context of social science). Critical realists hold ontological assumptions of akin to realism in that entities and tendencies in the world are real, but are not constitutive of law-like and functional characteristics (Bhaskar 1986; 2008; Collier 1994). An epistemological aim of critical realism is to analyze empirical reality and uncover causal mechanisms which sets it apart from the aforementioned discursive approach that seeks to "deconstruct" the meanings associated with social structures and identities. While I sympathize with the critical realist claim that not all entities are discursive constructs and that structures are ever-present in the world and get reproduced by human agency throughout time, I completely disagree with the assertion that topics such as morality (Ash 2022) or any aspect of the noumenal world can (or should) be rationally addressed.

Order of Chapters

The order and makeup of this book is as follows. The second chapter sets readers on a path towards understanding the history of social causality. In order to accomplish this, it begins with an exploration of the advent of discoveries that were made in early history and in early civilizations including Ancient Egypt and Mesopotamia. The Ancient Greeks are then given attention which includes the works of Aristotle, Plato, Pythagoras, among others. The chapter then delves into discoveries that were made during the so called "dark ages" of history followed by the Middle Ages. Afterwards, the advent of modern science is explained along with the key early debates that were held by philosophers in the 17th and 18th centuries, including Hume and Kant. The chapter finishes with a section on the

emergence of social science and introduces readers to the major differences between natural and social sciences. The third chapter identifies the historical origin of the mechanism through tracing this term's etymology to the Ancient Greek context. A categorization of theatrical structure in which mechanisms were used as physical plot-shifting tools is presented through observation of early Greek theater settings. This assessment is complimented by an explanation of religious and socio-cultural tendencies of the time. The chapter reveals how mechanisms were used in some of history's most noteworthy Ancient Greek theater stories. The fourth chapter identifies the changing etymological characteristics of mechanisms in the Middle Ages in a time period that was marked by war, famine, and the eventual emergence of the enlightenment. The fifth chapter then delves into the emergence of the scientific era and the natural sciences. This is an era that marked the total elimination of theistic and metaphysical interpretations of causality as observed through the etymological characteristics of mechanisms. The sixth chapter identifies new historical processes in the specific realm of artificial intelligence (AI), and presents evidence that causality is bound to become, for the first time, independent of human cognition. Likewise, this chapter explains the advent of computation, the emergence of the digital era, and the basis of artificial intelligence. It concurrently draws on Martin Heidegger's essays on technology and identifies how mechanisms of artificial intelligence are bringing about social outcomes and causal processes. The final chapter, chapter seven, concludes and overviews the findings of this book. It overviews the implications of the book for the humanities and social sciences, and puts forward possible routes for future interdisciplinary research on social causation.

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