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# Science and Sibyls: An Exploration of Consultation of Sibylline Books at Rome

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Science and Sibyls: An Exploration of Consultation of Sibylline Books at Rome

by

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A THESIS

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## **ABSTRACT**

This thesis explores the consultation of the sibylline books at Rome in relation to six characteristics of science. The characteristics considered are “Expertise”, “Analysis”, “Regimentation”, “Record Keeping”, “Defined Scope”, and “Observation”. It is argued that all of these characteristics are displayed in consultation of the sibylline books, although to varying degrees. It is further demonstrated that consultation of the sibylline books influenced roman public policy in much the same way that science affects public opinion and policy today.

## **PREFACE**

This thesis is original, unpublished, independent work by the author, Kathrine Bertram.

## **ACKNOWLEDGEMENTS**

This project would never have been completed without the gracious and generous support I received along the way. My supervisor, Dr. Lindsay Driediger-Murphy has provided invaluable guidance, encouragement, and reassurance from the very first time I came to her office hours during my BA, for which I am profoundly grateful. I would like to sincerely thank everyone in the Department of Classics and Religion for facilitating my joining the program in January and always finding ways to make sure this worked. In the same vein, thank you to my fellow students who immediately made me a part of the community when I showed up in the middle of the year. Above all, I am grateful for the opportunity to express gratitude to my family for their tremendous support and encouragement in all my undertakings. An especial thank you to Rebeka, Viktoria, and Krista, and my parents for the unflagging willingness to read drafts and indefatigable readiness to talk about dead Romans.

## **DEDICATION**

*For my family*

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## EPIGRAPH

*Gentem quidem nullam video neque tam humanam atque doctam neque tam immanem atque  
barbaram, quae non significari futura et a quibusdam intellegi praedicique posse censeat.*

Cicero *De Divinatione* 1.2



## INTRODUCTION

In the first century BCE, the Greek historian and rhetorician Dionysius of Halicarnassus wrote “in short, there is no possession of the Romans, sacred or profane, which they guard so carefully as they do the Sibylline Oracles.”<sup>1</sup> This passage highlights the importance of the Sibylline Books for the Romans. Despite their renown, we know relatively little about the Sibylline Books and how they were used. In this thesis, I will examine Roman use of Sibylline Books by considering to what extent, if any, it is appropriate to consider consultation of the Sibylline Books a scientific undertaking. In order to accomplish this, I will present the following: first, a brief introduction of the Sibylline Books, what they were and where our information about them comes from. Next, I will consider the history of science, philosophy of science and establish a definition of scientific for the purposes of this thesis. In Chapters One and Two, I will examine whether Roman consultation of the Sibylline Books matches this definition. Finally, in Chapter Three, I will explore the roles Sibylline Books played in Roman society and compare these to the roles filled by science in contemporary Canadian and Western culture.

### Sibylline Books

What were the Sibylline Books? These mysterious books formed a part of the official state religion at Rome.<sup>2</sup> Other forms of divination were also key elements of Roman religion and Romans occasionally consulted various oracles throughout the ancient world. However, the Sibylline Books played a special role as they were consulted on a regular basis and housed at

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<sup>1</sup>Dion. Hal. *Roman Antiquities*, 4.62. Trans. Cary.

<sup>2</sup>Orlin 1997, 78

Rome itself.<sup>3</sup> According to tradition, as recorded by Aulus Gellius in the second century CE, the first Sibylline Books were purchased by one of the Kings of Rome from a shadowy old woman.<sup>4</sup> Initially, the king refused to buy the books, but after the woman burned several volumes, never offering any reduction in price, the value of the books was impressed upon the king and he agreed to buy the remainder.

By the time the republic was established, the college of the *Viri Sacris Faciundis*, charged with keeping and interpreting the Sibylline Books, was one of the four main official priesthoods at Rome.<sup>5</sup> The number of *Viri Sacris Faciundis* grew from two to ten to fifteen and eventually beyond.<sup>6</sup> Before the 104/3 BCE *Lex Domitia*, members were chosen by co-optation and afterwards by election from a list of candidates presented by the existing members of the college.<sup>7</sup> Members served for life once selected.<sup>8</sup> The *Viri Sacris Faciundis* were among Rome's ancient priesthoods with roots in the regal period. Moreover, as Satterfield observes, access to the divine and worldly power were closely interconnected at Rome. In the case of the *Viri Sacris Faciundis* a close relationship existed with the consuls who were often responsible for carrying out the expiations presented by the *Viri*.<sup>9</sup> This close connection to the highest officials of the Republic further emphasises the importance of the Sibylline Books and the prestige associated with access to them.

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<sup>3</sup>Scheid 1985, 53.

<sup>4</sup>There is disagreement over which Tarquin this story refers to. Aulus Gellius, *Attic Nights*, 1.12.

<sup>5</sup>Scheid 1993, 60.

<sup>6</sup>Scheid 1993, 64.

<sup>7</sup>Elections took place at a special assembly of seventeen of the tribes selected by lot. Cic. *Leg. Arg.* 2.17-19; Scheid 1993, 62-4.

<sup>8</sup>Scheid 1993, 62-4.

<sup>9</sup>Satterfield 2014, 217-9; 232-4.

The exact contents of the Sibylline Books are obscure, intentionally kept out of the public knowledge as a matter of state security. However, ancient reports and one purported oracle recorded by Phlegon of Tralles reveal that the Sibylline Books were written in Greek hexameter (a typical prophetic meter) and included an acrostic.<sup>10</sup> Unlike many other oracles, the Sibylline Books did not claim to predict the future.<sup>11</sup> Rather, they contained information on how to restore good relations between the Romans and their gods.<sup>12</sup> Once a prodigy (some sign of divine displeasure) was brought to the attention of the senate, if they so chose, they issued instructions to the *Viri Sacris Faciundis* to consult the Sibylline Books and report back with a suggestion for propitiating the gods and restoring the *Pax Deorum*.<sup>13</sup> The Sibylline Books were closely controlled by the senate and only the *Viri Sacris Faciundis* had access to them.<sup>14</sup> As Beard notes, despite the fact that the Sibylline Books were not used to predict the future, a strong conviction that the ultimate fate of Rome could be found within them thrived.<sup>15</sup> This is no doubt connected to the vibrant Sibylline tradition that flourished throughout the ancient Mediterranean world and developed within Pagan, Jewish and Christian communities. The role of Sibylline prophecy as an intersection for diverse cultural traditions is fascinating; however, the scope of the present thesis

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<sup>10</sup>Cic. *De Div.* 1.4; 2.54 & Phlegon FGH 257 f 36. Scheid suggests that only the reports issued by (Quin)decemviri contained acrostics (1998, 15.) However, this assertion is uncommon and convincingly refuted by Satterfield (2011, 118.)

<sup>11</sup>At times, the contents of the Sibylline Books do seem to contain a prophetic element this is explored further in Chapter Two, 44-5.

<sup>12</sup>Beard et al. 1998, 62.

<sup>13</sup>Orlin 1997, 81-5.

<sup>14</sup>Orlin 1997, 97.

<sup>15</sup>Beard et al. 1998, 62.

requires that the focus be placed squarely on the official collection of prophecies kept by the Roman government, referred to throughout this thesis as the Books.<sup>16</sup>

Previous academic explorations of the consultation of the Sibylline Books including those undertaken by Orlin, Beard, North and Price, and Satterfield have tended to focus on the political aspects of their use.<sup>17</sup> This thesis explores new ground by using a scientific lens to consider the use of Sibylline Books at Rome.

### Science

On initial consideration, science may appear to be a self-explanatory term. However, upon closer reflection, many complex questions present themselves. Is science invented or discovered? Is there any one science, perhaps a set list of sciences? What makes something scientific? What makes something unscientific, for that matter? Will these defining scientific characteristics always be the same? Is anything absolutely and unquestionably science regardless of time or place?

To begin to answer these questions let us consider some proposed definitions of science. Although the complete entry stretches over a page, the primary definition of science in the *Oxford English Dictionary* is: “The intellectual and practical activity encompassing the systematic study of the structure and behaviour of the physical and natural world through observation and experiment.”<sup>18</sup> This definition certainly encompasses modern western society’s general conception of science. It aligns well with Ede and Cormack’s study of the history of

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<sup>16</sup>For more on Sibylline Oracles in general see Parke 1988.

<sup>17</sup>Orlin 1997; Beard et al. 1998; Satterfield 2014.

<sup>18</sup>OED online <https://en.oxforddictionaries.com/definition/science>

science in society, that defines science as the idea that humans can understand the physical world.<sup>19</sup> However the omission by Ede and Cormack of the words “systematic,” “observation,” and “experiment” from this broader statement is important and telling. One of the key aspects in which the definition of science alters from culture to culture is indeed the emphasis placed on observation and experimentation. Johnson succinctly summarizes, the definition of science alters through time.<sup>20</sup> As Verdenius notes, in contrast to the modern scientific method, experimentation played a secondary role to abstract reasoning in Greek science, which focussed on the internal logic of a complete theory over observation or experimental results.<sup>21</sup> Strikingly, to those more familiar with modern science’s emphasis on empirical evidence, Greek science places equal value on perception and thought.<sup>22</sup>

In the study of the history of science, there are currently two principal models regarding the alteration of the conception of science through history: Falsification and Revolution. In the Falsification model, famously championed by Popper,<sup>23</sup> initially everything that can be formulated into a falsifiable statement is scientifically possible. Over time, certain statements are proven wrong through either passive observation or active experimentation. The traditional example of a falsifiable statement is: All swans are white. The observation of one black swan would falsify the statement. In this model, scientific knowledge becomes more and more

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<sup>19</sup>Ede & Cormack 2017, xiii.

<sup>20</sup>Johnson 2012, 6.

<sup>21</sup>Verdenius 1962, 320-2.

<sup>22</sup>Verdenius 1962, 327.

<sup>23</sup>Popper 1968.

accurate as statements are falsified and over time humans gain a more and more complete understanding of the physical world.

The second major model for understanding the development of science is the Revolution model proposed by Kuhn. In this model, science in any given culture consists of an established set of ideals, methodologies, and assumptions explicitly or implicitly shared by any particular group of practitioners to form a paradigm. While a paradigm can gloss over small anomalies, if over time it fails to adequately explain observed phenomena repeatedly, practitioners will abandon it, establishing new ideals, methodologies and assumptions and thus creating a new paradigm. In the Revolution model this paradigm shift is radical and nearly absolute; subsequent paradigms are only loosely, if at all connected to their predecessors.<sup>24</sup> The Revolution model is closely related to the concept of “Ways of Knowing” prevalent in the field of history of science, in which paradigms are presented as “Ways of Knowing.” However, “Ways of Knowing” are thought to coexist and overlap with varying emphasis placed on different “Ways” by different cultures rather than utterly replacing one another as in the Revolution model.<sup>25</sup> As highlighted by Johnston, both the Falsification and Revolution models are highly theory based and it is very difficult in practice to find a historical example that is fully explained by either one.<sup>26</sup> Therefore, it seems most likely that changes in science over time can best be understood through a combination of the two models. For the purpose of this thesis, it is not necessary to choose to

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<sup>24</sup>Kuhn 1970.

<sup>25</sup>E.g. Pickstone 2001; Kwa & Mackay 2011.

<sup>26</sup>Johnston 2012, 186.

advocate for either of these models; what is important is that both models highlight the changing nature of “science” over time.

Another academic field which perhaps has some bearing in this thesis is the philosophy of science. To begin, it should be noted that philosophy of science is an expansive field whose main concerns at the present time, both overlapping and in discourse with metaphysics and epistemology, are complex and far beyond what it is possible to explore here. However, Psillos and Curd state: “ By and large, modern philosophy of science has been the product of philosophically informed scientists who, in the midst of fierce theoretical battles over the credentials of emerging scientific theories (e.g., atomism and quantum mechanics), felt the need to understand better the aim and structure of scientific theories, the role of hypotheses and experiment in science, the origins and justification of central scientific concepts, and the nature and limits of explanation.”<sup>27</sup> This suggests that considering philosophy of science may provide insight in the project of considering the consultation of the Sibylline Books.

One of the earliest expressions of the philosophy of science is that science is a “systematic and reliable knowledge of the world as opposed to mere opinion or ungrounded belief.”<sup>28</sup> Aristotelian philosophy of science, which was prevalent until the 17<sup>th</sup> century and saw a resurgence in the latter part of the 20<sup>th</sup> century, holds that science is deductive and has an ultimate aim of providing causal explanations.<sup>29</sup> As the age of reason progressed, a tendency to place extreme value on personal observation emerged as did a general disregard for any attempts

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<sup>27</sup>Psillos and Curd 2008, xxii.

<sup>28</sup>Psillos and Curd 2008, xx.

<sup>29</sup>Psillos and Curd 2008, xx; xxvi.

to offer non mathematical explanations for phenomena.<sup>30</sup> However, this centrality of personal observation proved limiting and as championed by Kant, the notion “that there are unchanging, universal, and a priori principles of knowledge (synthetic a priori truths) that lie at the heart of empirical science and that they can be revealed by philosophical investigation” returned to vogue.<sup>31</sup> By the 1930s, strong distinction between the context of discovery and the context of justification had become the dominant view and the central objective of philosophy of science aimed at a unification of science into the “language of physics” resulting in a sharp division between the fields of history of science and philosophy of science.<sup>32</sup> This division, however, was brought into question by Kuhn’s Revolution Model explored above and a drastic change occurred.<sup>33</sup> After the wide spread acceptance of the Revolution Model, it was no longer considered desirable or even possible to completely separate scientific activity and knowledge from the people engaged in seeking it. At the present time, a more pluralistic understanding of science is prevalent in the philosophy of science including influence of and discourse with metaphysics, psychologism and historical studies.<sup>34</sup>

This more pluralistic view of science has had important implications for the present project. First and perhaps most fundamentally, the more pluralistic understanding of what science is has led to a flourishing interest in how a wide range of human activities are scientific.

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<sup>30</sup>Psillos and Curd 2008, xxi.

<sup>31</sup>Psillos and Curd 2008, xxi.

<sup>32</sup>Psillos and Curd 2008, xxiii; xxiv-xxv; Bird 2008, 67.

<sup>33</sup>Despite the rejection of the division between history and philosophy of science in principal Vickers questions how far the divide between the disciplines have been bridged in practice. (2013, 252.)

<sup>34</sup>Psillos and Curd 2008, xxiv-xxv; Bird 2008, 70. Ziman describes the current state of the philosophy of science as: “meta-scientific pluralism” in reaction to attempts to “encompass a complex human enterprise in a single formula.” (2000, 3.) In this he paints a picture evocative of the pluralistic approach to Roman religion laid out in Beard, North and Price’s *Religions of Rome*, 1998.



In particular, the renewed interest in historical studies and tracing how different forms of science have developed resulted in a wave of scholarship regarding science, magic and divination in the ancient world. This scholarship will be considered further in the following pages. The present state of the philosophy of science is certainly not independent of many of its earlier precepts. Some earlier understandings of the nature of science continue to hold sway, for instance although personal observation is no longer seen as the only source of scientific knowledge it is still understood as an important one. However, the once central assertion that science aims to define causal relationships and establish universal laws is now a subject of debate in the field. This has been reflected in the characteristics of science selected for consideration in this thesis.

Having underscored both the changes in science and philosophy of science over time, at this point it is appropriate to discuss the role of god or gods in science. To many modern observers, science and divine entities are utterly incompatible, as one of the defining features of science for them is a rejection of supernatural intervention.<sup>35</sup> However, as discussed above, on the most basic level science is concerned with understanding the natural world. As Rasmussen highlights, from some perspectives (including many Romans') there is no clear delineation between the divine and natural.<sup>36</sup> From these view points, seeking to understand the physical world includes consideration of gods, which are understood as an integral element of the natural

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<sup>35</sup>Dixon has highlighted that although the idea of science and religion in conflict "remains widespread and popular" the actual relation between the two has been and is dynamic and multifaceted. He further highlights that the primary focus of a substantial part of recent scholarship on the subject has been the rejection of "inevitable conflict" between the two. (Dixon 2008.) Polkinghorne's "Science and Religion in the Twenty-first Century" presents a clear example of this nonconfrontational outlook, closing with the statement: "We live at a time of great potential for gaining insight from the meeting of science and religion in respectful dialogue." (2012, 113.)

<sup>36</sup>Rasmussen 2003, 207. On the changing understanding of nature Rochberg 2017, 4-10.

world.<sup>37</sup> It is important to remember that what is considered “natural” is a cultural construction rather than an utter absolute, as highlighted by Lloyd.<sup>38</sup> Lehoux further expands this notion by emphasising that it is necessary to situate science within social and cultural factors rather than considering it as an isolated ideal.<sup>39</sup> In a Roman context, this includes not only nature and the gods, but also Roman law.<sup>40</sup>

### Why Consider Consultation of the Sibylline Books in Relation to Science?

Considering science and divination (particularly divination as part of organized religion) in tandem is based on their shared characteristics in particular their ability to generate “quantities of knowledge” and their roles as social institutions.<sup>41</sup> In recent years, scholarly interest in the relation between divination and science has grown. Examples include, Walsh’s *Scientists as Prophets*, Hankinson’s “Stoicism, Science and Divination,” Rasmussen’s “Divination as Science,” The Fifth Annual University of Chicago Oriental Institute Seminar *Science and Superstition: Interpretation of Signs in the Ancient World* and Fincke’s edited volume on *Divination as Science*.<sup>42</sup> There has been particular concentration on Ancient Nearer Eastern divination, in part due to the abundance of textual evidence in the form of cuneiform manuals and ledgers.<sup>43</sup> These types of studies which consider divination and science highlight new aspects of ancient divination than those which have focused on the religious and political aspects of divination. By considering this new information in conjunction with previous studies it is

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<sup>37</sup>Rasmussen 2003, 207.

<sup>38</sup>Lloyd 1991, 420.

<sup>39</sup>Lehoux 2012, 1; 9-10.

<sup>40</sup>Lehoux 2012, 1; 9-10.

<sup>41</sup>Ziman 2000, 4.

<sup>42</sup>Hankinson 1988; Rasmussen 2003; Walsh 2013; Annus 2010; Fincke 2016.

<sup>43</sup>For example, Rochberg 2017; 2010; Frahm 2010; Noegle 2010.

possible to develop more complete understandings of how ancient divination functioned.

Despite this advantage there are causes for caution in utilizing these comparative approaches. For instance, Koch argues that although both are systems for the generation of useful knowledge, they are fundamentally different. Koch contends science aims to understand the natural world, while divination aims to communicate with the supernatural.<sup>44</sup> While it is important to recognize this difference it should also be remembered, as explored above, that the division between natural and supernatural can be uncertain over time and between cultures. Further, Delnero cautions against placing undue emphasis on ancient divination's potential similarities to modern science at the expense of considering each instance of ancient divination as an element of an integrated cultural societal system. In particular, he highlights that many ancient activities cannot be readily divided along modern categories such as science, religion, and art. Rochberg summarizes the case neatly: "We do not want to project the defining features of modern science back into antiquity where knowledge takes other form, is based on other methods, and has other aims. Nevertheless, in full awareness of the anachronism, ancient divination, astrology, and magic are now readily classified as science on the grounds that some characteristics of science are considered to be continuous over the course of history, even while its content or aim is discontinuous."<sup>45</sup> Bearing the above cautions in mind, I agree with Hankinson and Rasmussen, Rochberg and others, that it is valuable to consider if and how divination can be considered scientific. This lens allows for the investigation of divination from a different perspective and invites meaningful consideration of how knowledge is generated in both ancient times and today.

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<sup>44</sup>Koch 2016, 11.

<sup>45</sup>Rochberg 2016, 25.

## How to Define Science in Consideration of the Sibylline Books?

A broad definition such as “a project to understand the natural world” is a useful starting point, but its breadth makes meaningful comparison between the modern use of science and the consultation of the Sibylline Books challenging. It encompasses many other fields of human endeavour that fall outside of the commonly held modern definitions of science, while relying on the culturally dependant understanding of nature. From the philosophy of science standpoint, a similar dilemma is highlighted by Ziman who notes that science as “the search for understanding” may be true but is not sufficient for action.<sup>46</sup> The goal of this thesis is not to create a new definition of science for the modern world but rather to offer new tools with which to explore the use of the Sibylline Books at Rome.<sup>47</sup>

Doppelt presents factors on which scientific knowledge is contingent from the perspective of three branches of the philosophy of science: “the way the world is – as realists argue; how effectively scientific groups are able to renegotiate their common values, when they conflict – as social constructivists argue; and the ability of scientific groups to develop theories, techniques, etc. that provide empirical success and meet their standards – as empiricists stress.”<sup>48</sup> Rasmussen, in her investigation of Roman divination as science, establishes five key criteria for science: 1) empirical observation 2) systematic classification 3) application of critical criteria 4) completion of comparative analysis and 5) performance of investigation.<sup>49</sup> These are useful

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<sup>46</sup>Ziman 2000, 291.

<sup>47</sup>For an overview of modern science and how to classify its quality see Daempfle 2013. This comprehensive book is aimed at presenting an accessible account of how to judge science in the modern world. It offers a wide selection of case studies on the subject; it is perhaps more interested in exploring individual examples than providing an overarching frame work.

<sup>48</sup>Doppelt 2008, 306-7.

<sup>49</sup>Rasmussen 2003, 207.

categories for examining the relation between ancient divination and modern science as they simultaneously create limits for the project while allowing for multiple different understandings of what should be considered natural. An alternative way of defining science for the purposes of both modern and historical investigations is proposed by Scurlock. She places all human endeavour on a continuum. At one extreme she places Science, at the other Religion. Science, as defined by Scurlock, seeks to explain and solve physical world problems and while it seeks regularity and patterns it can never achieve 100 per cent certainty.<sup>50</sup> At the other extreme, Religion places lower value on observed reality and seeks to discover eternal and certain truth.<sup>51</sup> She further states that Science represents a more pragmatic “do what works” approach before considering causality, while Religion seeks to establish ultimate control over events either by an external force or immutable natural laws.<sup>52</sup> This method of defining science is useful as it has limited reliance on culturally loaded ideas of nature and can be applied over a wide range of cultural milieus. However, the choice to place Science and Religion on opposite ends of the spectrum may unintentionally reinforce the idea of opposition between the two.

Building on studies of Ancient Near Eastern divination as science, Rasmussen’s criteria, and Scurlock’s definition, I propose six areas of examination to establish the extent to which consultation of the Sibylline Books can be considered scientific: Defined Scope, Regimentation, Record Keeping, Analysis, Observation, and Expertise. These characteristics of science are interconnected, and build off one another.

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<sup>50</sup>Scurlock 2016, 2.

<sup>51</sup>Scurlock 2016, 2.

<sup>52</sup>Scurlock 2016, 2.

*Observation:* This section will focus on observation of the physical world. Observation is a cornerstone of the modern scientific method. As highlighted by Verdenius, observation is of secondary importance to Ancient Greek science.<sup>53</sup> Nevertheless, some link to the physical world is requisite to meet even the broadest definitions of science.

*Analysis:* This characteristic distinguishes science from simple observation. It requires expertise and transforms the input data provided into potentially useful information. “Analysis” is the heading under which science would generally demonstrate cause and effect. Lack of demonstrable cause and effect is often considered a weakness of divination and is part of Marcus’ argument against it in *De Divinatione*.<sup>54</sup> However, I propose that this is not the only possible kind of analysis. For example, Burkert suggests that divination is an attempt to transpose unknowns such as the future into known and controllable terms.<sup>55</sup> In essence this transposition represents the creation of a model; in much the same way as observations of complex dynamic systems are used to create mathematical models in control engineering.<sup>56</sup> Both of these modeling exercises require substantial analysis.<sup>57</sup>

*Regimentation:* Under this heading the presence or absence of method will be addressed. A typical manifestation of regimentation in modern science is control of variables during experimentation. More rigid conformation to a set methodology would suggest that an undertaking is more scientific. This characteristic has been labeled *Regimentation* instead of

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<sup>53</sup>Verdenius 1962.

<sup>54</sup>Hankinson 1988, 123-160.

<sup>55</sup>Burkert 2005, 30; 41.

<sup>56</sup>On modeling and systems control Franklin 2009, 20; 140-141.

<sup>57</sup>For more on the role of models in modern science see Portides 2008; Contessa 2011.

*Method* to avoid fostering the misconception that all science utilizes a single method; rather as Ziman highlights, the techniques used in accepted ‘good science’ are vast and on the surface incompatible with one another.<sup>58</sup>

*Expertise:* Training, or at the very least some specific type of knowledge on the part of practitioners is suggestive of scientific pursuit. Moreover, the presence of experts suggests an active and purposeful inquiry beyond the passive observation and experience of the physical world. Indeed, the importance of a scientific community in order to generate scientific knowledge in the modern world is often stressed.<sup>59</sup>

*Defined Scope:* While sciences generally encompass a desire to understand the natural world, each individual science must operate in some delineated field. The laws of fluid dynamics are not applicable to the mechanics of solids nor do the principals of acoustics govern vertebrate biology; each operates in a different area under specific conditions.

*Record Keeping:* Adam Savage of the popular television program *MythBusters* once stated “the only difference between screwing around and science is writing it down.”<sup>60</sup> This may be somewhat over simplifying the case, but it does highlight the importance of record keeping in the understanding of science in the contemporary world. Measurement has been called “one of the most distinctive and pervasive features of modern science” by Chang and Cartwright who also note how problematic correctly identifying measurement can be.<sup>61</sup> Considering both the secrecy surrounding the actual act of consulting the Sibylline Books and the intervening

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<sup>58</sup>Ziman 2000, 14.

<sup>59</sup>Daempfle 2013, 169-173.

<sup>60</sup>Savage 2012.

<sup>61</sup>Chang and Cartwright 2008, 367.

centuries, there is no possibility of recovering what measurements might have been taken unless records were kept. For this reason, *Record Keeping* rather than *Measurement* has been selected for evaluation. While record keeping alone is certainly insufficient to constitute science, a complete lack of it would tend to prevent classification as a scientific activity. Particularly in a society as literate as Rome, a complete lack of record keeping would tend to suggest a lack of regimentation.

Of course, many other characteristics of science could have been selected. The absence of *Experimentation* warrants comment due to its centrality in many modern definitions of science as seen above. One reason to exclude this characteristic is the different levels of importance attached to experiment throughout the history of science. However, the principal factor in not selecting *Experimentation* as a characteristic is its limited role in applied sciences. Certain academic traditions and indeed current practitioners seek to draw clear and absolute distinctions between pure science and applied sciences such as medicine and engineering.<sup>62</sup> However, throughout this thesis both pure and applied science are considered under the heading science.

The scope of the present project limited the number of characteristics it was possible to fully explore. Some of the other possible characteristics and the considerations for not selecting them for detailed exploration are noted above. Ultimately, the six characteristics were chosen in accordance with the norms of studies of ancient divination as science in general and

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<sup>62</sup>Ziman though he maintains a division between pure and applied science for the purposes of his project, notes the reduction of the barriers between pure and applied science of late and the social credibility of including both under the simple heading of science. (2000, 13-4.) This social understanding is important for this thesis as perceptions outside of those of the practitioners themselves will be addressed in Chapter 3.



the possibility of exploring them using the evidence available regarding the Sibylline Books. The state of evidence available will be further discussed below.

### Roles

After exploring the relationship between consultation of the Sibylline Books and the six characteristics of science outlined above, the final chapter of this thesis will compare the role that consultation of the Sibylline Books played in Roman society and the role filled by science in modern society. In particular, the relation between science/the Sibylline Books and policy will be explored as will the general populace's perception of science and the Sibylline Books.

### Sibylline Books, Science and Sources

As suggested in the discussion above, undertaking an exploration of Sibylline Books through a scientific lens carries the risk of bringing anachronism and confirmation biases to the analysis. However, any form of exploration of ancient practice bears these risks and previous studies considering Sibylline Books through a political or religious lens are certainly not immune. Recent studies of Roman divination by Santangelo and Driediger-Murphy have highlighted the multifaceted nature of divinatory practice and challenged long held consensus that divination was regularly manipulated to obtain only the desired results.<sup>63</sup> This thesis contributes important information on how consultation of the Sibylline Books interacted with the larger religious system at Rome and highlights the presence of regularities in expiation which are evidence against unbridled manipulation.

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<sup>63</sup>Santangelo 2013; Driediger-Murphy 2019.

Recalling Dionysius' statement above concerning the security surrounding the consultation of the Sibylline Books, it is unsurprising that the sources available for study are sparse.<sup>64</sup> As a result, this project has relied primarily on textual sources of the outcomes of consultation recorded in Roman historical narratives rather than sources directly linked to the act of consultation.

This thesis contends that all six of the selected characteristics of science are displayed in the consultation of the Sibylline Books at Rome. "Expertise" and "Record Keeping" are less prevalent than "Observation" and "Regimentation", while "Defined Scope" and "Analysis" are most prominent. The similarity between the Sibylline Books' influence of Roman public policy and science's effect on public policy and public opinion today will also be demonstrated in this thesis.

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<sup>64</sup>Dion. Hal. *Roman Antiquities*, 4.62.

## CHAPTER ONE: “OBSERVATION”, “RECORD KEEPING”, AND “DEFINED SCOPE”

The opening chapter will delve into three of the characteristics of science outlined in the introduction: “Observation”, “Record Keeping”, and “Defined Scope”. In order to examine these characteristics, analysis will focus on three types of prodigies associated with Sibylline consultation: eclipses, earthquakes, and flooding.

“Observation” will be the first characteristic of science explored. There is a clear connection between consultation of the Sibylline Books and observation of the natural world. Reporting unusual occurrences such as earthquakes, lightning strikes or defective births was the catalyst for consultation. The earthquakes of 193 BCE offer an ideal case through which to consider “Observation” and consultation. Livy describes this episode as follows:

In the beginning of this year, the consulship of Lucius Cornelius and Quintus Minucius, earthquakes were reported with such frequency that people grew tired, not only of the cause itself, but of the ceremonies prescribed on that account; for the senate could not be convened nor public business transacted, since the consuls were busy with sacrifices and rites of expiation. Finally, the Decemvirs were directed to consult the Books, and in accordance with their report a three-day period of prayer was ordered. Men with garlands on their heads made supplications at all the couches of the gods, and a decree was published that all who were of one family should offer their prayers collectively. Likewise, on the recommendation of the senate, the consuls proclaimed that on any day on which an earthquake had been reported and rites ordained, no one should report another earthquake. Then the consuls first, and afterwards the praetors drew lots for the provinces.

principio anni, quo L. Cornelius Q. Minucius consules fuerunt, terrae motus ita crebri nuntiabantur, ut non rei tantum ipsius sed feriarum quoque ob id indictarum homines taederet; nam neque senatus haberi neque res publica administrari poterat sacrificando expiandoque occupatis consulibus. postremo decemviris adire libros iussis, ex responso

eorum supplicatio per triduum fuit. coronati ad omnia pulvinaria supplicaverunt, edictumque est, ut omnes, qui ex una familia essent, supplicarent pariter. item ex auctoritate senatus consules edixerunt, ne quis, quo die terrae motu nuntiato feriae indictae essent, eo die alium terrae motum nuntiaret. provincias deinde consules prius, tum praetores sortiti.<sup>65</sup>

This case is in many ways a quintessential example of the use of the Sibylline Books: a prodigy was observed and duly referred to the (Quin)decemviri through the Senate. The (Quin)decemviri then consulted the Sibylline Books and presented methods of propitiation to the magistrates who then performed them. Of special note is the decree that only one earthquake per day ought to be reported.<sup>66</sup> As interpreted by both Briscoe and Davies, this places the emphasis on the importance of the announcement of a prodigy (here earthquakes) over the actual existence of a prodigy.<sup>67</sup> Liebeschuetz also highlights the importance of recognition and formal acceptance of signs in Roman divination.<sup>68</sup> This emphasis on reporting may seem to suggest that the link between observation of the natural world and divination is not a strong one. However, while the role of acknowledging signs in Roman divination is certainly central, in this case the limitation of reporting appears to be largely a practical measure since one of the concerns in this instance was that the senate was not able to function properly due to continued interruption. Once an earthquake had been brought to the attention of the authorities, subsequent announcements were unnecessary since the propitiation process had already been triggered. Briscoe, in his

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<sup>65</sup>Livy. 34.55.1-5. Trans. Heinemann.

<sup>66</sup>This decree comes at the advice of the senate but seems closely linked to the propitiation advised by the (Quin)decemviri. It is *item*, just so or in like manner to the propitiation outlined immediately before it thus potentially it was part of the results of the consultation of the Sibylline Books.

<sup>67</sup>Briscoe 1981, 136; Davies 2004, 35.

<sup>68</sup>Liebeschuetz 1979, 24-5.

commentary on Livy, highlights that the earthquakes were all over Italy not just in Rome proper.<sup>69</sup> He postulates that there is exaggeration in the account regarding the level of disruption of the senate caused by attempted propitiations. Despite the wide geographical spread of these earthquakes, the occurrence of even one such disaster in densely populated Rome would have had major consequences. There is little doubt that earthquakes and the attendant efforts to prevent further damage would substantially impact the workings of the senate. The disruption was likely especially egregious as the earthquakes reportedly took place at the beginning of the year before provinces were assigned to the magistrates.<sup>70</sup>

Clearly, consultation of the Sibylline Books was connected to observation of the natural world. However, this link was not straightforward nor a direct one. As the case of the earthquakes of 193 BCE illustrates, observed phenomena were filtered through several intermediate steps before interacting with the contents of the Sibylline Books. First, observed phenomena had to be reported to the senate. This could take a considerable time as prodigies (including some of these earthquakes) could occur a significant distance from Rome. Second, the senate, basing their decision on perhaps a firsthand but equally likely a second or thirdhand account of events, chose whether or not to refer the matter to the Books. Only then could the observed phenomenon interact with the Sibylline Books through the (Quin)decemviri. Moreover, additional filters could be imposed, such as the limit of one report of an earthquake per day. The connection between Sibylline consultation and observation of the natural world, while perhaps

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<sup>69</sup>Briscoe 1981, 135.

<sup>70</sup>The timing of expiation is explored further in Chapter Three, 49-50.

stronger than that found in some Ancient Greek science,<sup>71</sup> is more diffused and complex than the relation between modern science and observation of the natural world.

Beyond “Observation”, the case of the 193 BCE earthquakes also contributes to evaluation of the next characteristic of science under consideration: “Record Keeping.” Livy, writing more than 100 years after these earthquakes, relates details about the propitiation such as duration (three days), use of garlands, instructions for location, and organization of the supplication. This is strong evidence that there were records available to Livy and likely at least as many to the (Quin)decemviri. However, this is not strictly conclusive as it is always possible that Livy or his sources simply filled blanks or added details from their imaginations. Therefore, it is necessary to consider, if only briefly, Livy’s credibility as a source. In his introduction to *Early Roman History*, Cornell concluded that Livy had access to an annalistic tradition drawn from Greek writing, family records, oral tradition, and ancient documents/archives dating back to about 200 BCE, although the contents and the reliability of this tradition is far from certain.<sup>72</sup> Levene posits that Livy was fundamentally involved in shaping his narrative. In particular, he suggests that Livy’s reports of prodigies are crafted rather than simply parroted from previous sources.<sup>73</sup> By contrast, MacBain contends that the prodigy lists were not actively modified but rather were the product of a natural process of attrition of details as time passed.<sup>74</sup> Therefore, general outlines traced by following the prodigy lists may exaggerate the situation but do not

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<sup>71</sup>Verdenius 1962.

<sup>72</sup>Cornell 1995, 7.

<sup>73</sup>Levene 1993, 35-6.

<sup>74</sup>MacBain 1982, 22-3.

directly contradict the facts.<sup>75</sup> Based on the interest in creating annals from at least 200 BCE, it seems probable that Livy would have had considerable records for all periods after this, since the same interest that drove the creation of these annals, would likely also have resulted in a desire to create records for future generations. However, it seems impossible to definitively assess the accuracy of any single detail. MacBain's strategy of considering Livy's prodigy material as representative of general tendencies which may be exaggerated but are likely not contrary to fact seems sensible.

As an element of prodigy expiation, the outcome of Sibylline consultation is among the best documented aspects of Roman religion, appearing frequently in annalistic histories as well as biographies and even featuring in some of Cicero's letters and speeches.<sup>76</sup> If there is ample evidence of external recordkeeping, any internal records of the (Quin)decemviri themselves are more elusive. Scheid strongly advocates for very complete internal record keeping. He contends that each consultation produced three distinct documents: an "édit sacerdotal", a *senatus consultum* and an "édit du magistrat."<sup>77</sup> He further posits the (Quin)decemviri regularly consulted their archives as part of their process for determining expiations.<sup>78</sup> However, if such extensive internal records did exist, there is little evidence of them that survived to the present. Key pieces of evidence to suggest such archives may have been possible are the inscriptions regarding the *Ludi Saeculares*, the tombstone commemorating a record keeper of the Quindemviri (*commentariis XVvirorum*), and a statement in Censorinus that he is reporting

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<sup>75</sup>MacBain 1982, 22-3.

<sup>76</sup>See appendices in Orlin 2004 and MacBain 1982 for detailed listings of known consultations.

<sup>77</sup>Scheid 1998, especially 26.

<sup>78</sup>Scheid 1998, especially 26.

information from these records (*ad XV virorum commentarios*).<sup>79</sup> There is cause for caution when treating these sources as proof of extensive internal record keeping of the process of Sibylline consultation by the (Quin)decemviri. First, considering the long history of Sibylline consultation, the number of sources that attest to internal record keeping is small. More importantly, there is no way of knowing what exactly a *commentarius XVvirorum* recorded in his *commentarii*. As Beard astutely notes, any combination of details regarding ritual activity, religious decisions, and mundane financial bookkeeping could have been the subject of these records.<sup>80</sup> She also highlights that finding information in these archives could have been very challenging as there is no evidence that dating norms were established within colleges.<sup>81</sup> A final element to consider when evaluating the likelihood that the (Quin)decemviri kept internal records of their consultations, is the close resemblance between the expiations suggested for similar prodigies.<sup>82</sup> Weighing the available evidence, it seems certain that the (Quin)decemviri did keep records of some sort and that they were able to refer back to previous decisions when making new ones. It is less clear if these records differed greatly from the expiations included in the *senatus consulta* and logged in public record or if they contained any information on the techniques used to come to these decisions.

The last characteristic of science to explore in this chapter is “Defined Scope.” The lunar eclipse of 168 BCE offers fascinating insight into the scope of Roman divination. This is perhaps a surprising case to select since the Sibylline Books were not in fact consulted on this occasion.

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<sup>79</sup>CIL VI 32326 – 32335 & CIL VI 2312, Censorinus, *De die Natali*, 17.11. See Lieberman 1998.

<sup>80</sup>Beard 1998, 90.

<sup>81</sup>Beard 1998, 84.

<sup>82</sup>The relation between prodigies and expiations is further explored in Chapter Two, 34-6.



However, there are two significant reasons for considering this episode. First, this celebrated event is recorded in a wide variety of sources ranging from the annalistic histories of Polybius and Livy to Plutarch's *Lives* and Pliny's *Natural History*, and even seemingly unrelated works such as Quintilian's oratory manual. This episode is frequently highlighted by both modern and ancient scholars as the seminal example of Roman rationality, attributing the eclipse to astronomical phenomena in contrast to foreign credulity and superstition. As such this incident merits and facilitates exploration in this thesis. As previously noted, the Sibylline Books were closely guarded. Their contents were generally regarded as state secrets<sup>83</sup> and the procedure not only of consultation but even the criteria required to initiate this process is unknown to modern scholars. Therefore, it is necessary to consider the Roman practice of divination more broadly in order to cautiously draw conclusions regarding the Sibylline Books.

The barest details of the event are as follows: On the eve of the battle of Pydna in 168 BCE, during a conflict with King Perseus of Macedon, a lunar eclipse occurred. What makes this episode of interest is the interpretation of the event by Romans and how these interpretations contrast with those of the Macedonians in some of our sources. Based on accounts it is possible to establish three general scenarios for the interpretation of the eclipse:

- 1) Both the Romans and the Macedonians consider a lunar eclipse a bad omen for a king, in this case, a disaster for the Macedonians. In this situation an astronomical explanation is hardly necessary from the perspective of a Roman commander. If anything, such an

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<sup>83</sup>Two notable exceptions included the publication of a Sibylline Oracle from the Books by C. Porcius Cato in 56 BCE (Dio 39. 15) (This incident is discussed further in Chapter Three, 57;59-60) and the lone surviving republican oracle recorded by Phlegon of Tralles (Phlegon Mir. 10 = FGrHist 257 F 36 X).

explanation could be detrimental to the Roman cause as the common soldiers would no longer see their victory as preordained. This is the case in Polybius (the author writing closest to the events described), *Histories* 29.16.1-2 and Justinus' *Epitome of Pompeius Trogus* 'Philippic Histories' 33.1.7.

2) The eclipse is seen as a portent of destruction by both sides. None of the accounts directly meet this scenario, although perhaps this could approach the case in Plutarch who writes: "The Romans, according to their custom, tried to call her light back by the clashing of bronze utensils and by holding up many blazing fire-brands and torches towards the heavens." Plutarch also records Aemilius making propitiation sacrifices.<sup>84</sup>

3) The eclipse is seen as a sign of destruction by the Macedonians, but as a part of the natural order of things by the Romans. This is the case in Livy Book 44.37, Valerius Maximus' *Memorable Doings and Sayings* 8.11.1, Cicero's *De Re Publica* 1.23-24, Quintilian's *The Orator's Education* 1.10.47, Zonaras' *Extracts of History* 9.23, Pliny the Elder's *Natural History* 2.53 and Frontinus' *Stratagems* 1.12.8.

It is the third scenario that is of most interest to exploration of the scope of the Sibylline Books since it suggests that at least some Romans delineated between when observations were part of a predictable, if infrequent, natural course of events and when phenomena required further investigation and interpretation through divination. This effectively created a limited scope in which divination could be expected to function. Livy's detailed account in his *Ab Urbe Condita* falls squarely into this category:

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<sup>84</sup>Plut. *Aem.* 17. Trans Perrin.

When the camp had been thoroughly fortified, Caius Sulpicius Gallus, a military tribune of the second legion, who had been praetor the year before, with the consul's permission collected the soldiers in assembly, and gave them notice, lest they should any of them consider the matter as a prodigy, that, "on the following night, the moon would be eclipsed, from the second hour to the fourth." He mentioned that, "as this happened in the course of nature, at stated times, it could be known, and foretold. As, therefore, they did not wonder at the regular rising and setting of the sun and moon, or at the moon's sometimes shining with a full orb, and sometimes in its wane, showing only small horns, so neither ought they to construe as a portent, its being obscured when covered with the shadow of the earth." When on the night preceding the day before the nones of September, at the hour mentioned, the eclipse took place, the Roman soldiers thought the wisdom of Gallus almost divine; but the Macedonians were shocked, as at a dismal prodigy, foreboding the fall of their kingdom and the ruin of their nation; nor did their soothsayers explain it otherwise. There was shouting and yelling in the camp of the Macedonians, until the moon emerged forth into its full light.

castris permunitis C. Sulpicius Gallus, tribunus militum secundae legionis, qui praetor superiore anno fuerat, consulis permissu ad contionem militibus vocatis pronuntiavit, nocte proxima, ne quis id pro portento acciperet, ab hora secunda usque ad quartam horam noctis lunam defecturam esse. id quia naturali ordine statis temporibus fiat, et sciri ante et praedici posse. itaque quem ad modum, quia certi solis lunaeque et ortus et occasus sint, nunc pleno orbe, nunc senescentem exiguo cornu fulgere lunam non mirarentur, ita ne obscurari quidem, cum condatur umbra terrae, trahere in prodigium debere. nocte quam pridie nonas Septembres insecuta est dies, edita hora luna cum defecisset, Romanis militibus Galli sapientia prope divina videri; Macedonas ut triste prodigium, occasum regni perniciemque gentis portendens, movit nec aliter vates. clamor ululatusque in castris Macedonum fuit, donec luna in suam lucem emersit.<sup>85</sup>

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<sup>85</sup>Livy 44.37.5-9. Trans. McDevitte.

This contrasts sharply with Polybius' account of the same events:

When there was an eclipse of the moon in the time of Perseus of Macedonia, the report gained popular credence that it portended the eclipse of a king. This, while it lent fresh courage to the Romans, discouraged the Macedonians.<sup>86</sup>

Levene argues that Livy includes Gallus' explanation as a means of limiting the role of the supernatural on the battlefield.<sup>87</sup> However, the outcome of the battle is nevertheless affected by the eclipse in Livy's version, since Livy also states that the Macedonians were disheartened by it. Moreover, even in our sources where there is no mention of a rationalized explanation, such as in Polybius, there is no indication that the Romans received any supernatural aid beyond the fact that their opponents' confidence was shaken and perhaps their own bolstered. The eclipse is presented as a sign of the outcome of the battle, not as the cause of it. Since the Macedonians interpreted the eclipse as a sign that their efforts were futile, the Romans received a similar advantage from the eclipse regardless of Gallus' explanation. If anything, making such an explanation is harmful to the Roman cause since the soldiers would be less assured of victory. This raises the question of why the Roman commanders would choose to share their knowledge of the astronomic cause of the eclipse. In fact, in Plutarch's account, Aemilius keeps this information to himself.<sup>88</sup> Perhaps the choice to share this information suggests that the Romans valued knowledge and understanding of the natural world for their own sake and that not all decisions to use or not to use divination were determined by strictly cynical or pragmatic means.

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<sup>86</sup>Poly. *Hist.* 29.16.1-2. Trans. Paton.

<sup>87</sup>Levene 1993, 118-20.

<sup>88</sup>Plut. *Aem.* 17.

Davies convincingly interprets Gallus' explanation in the 168 BCE eclipse episode as a recasting of the eclipse. Instead of a marker of the gods' displeasure and *ira*, Gallus redefines the eclipse as part of the usual *naturalis ordo* simply a marker of the on-going *Pax Deorum*<sup>89</sup> outside the realm of prodigy.<sup>90</sup>

One other account of the 168 BCE eclipse of particular interest to consider in greater detail is that presented by Cicero in his *De Re Publica*:

(Scipio) and on the next day he unhesitatingly made a public statement in the camp that this was no miracle, but that it had happened at that time, and would always happen at fixed times in the future, when the sun was in such a position that its light could not reach the moon.

(Tubero) Do you really mean to say that he could convince men who were little more than simple peasants of such a thing, or that he dared even to state it before the ignorant?

(Scipio) He certainly did, and with great... [lacuna]

for his speech showed no conceited desire to display his knowledge, nor was it unsuitable to the character of a man of the greatest dignity; in fact, he accomplished a very important result in relieving the troubled minds of the soldiers from foolish superstitious fear.

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<sup>89</sup>Recent scholarship has questioned how usual it was for the *Pax Deorum* to be considered to be in effect. The key element in this revaluation of the *Pax Deorum* is whether it is the absence of the *Ira Deorum* or something more. The idea that the *Pax Deorum* was more than just the absence of active divine anger seems very reasonable. The Romans strove to achieve the *Pax Deorum* and there is no reason to think that it was understood as the default state of affairs. (Santangelo 2011, 165.) On the other hand, it seems that perhaps the Romans felt that quite often they were successful in achieving it. The confidence in having achieved the *Pax* likely fluctuated through Rome's history as did her fortunes. See further Satterfield 2005; Santangelo 2011 and on the understanding of *Pax* more generally, Cornwell, 2017.

<sup>90</sup>Davies 2004, 98-9.

(Scipio) haud dubitavit postridie palam in castris docere nullum esse prodigium, idque et tum factum esse et certis temporibus esse semper futurum, cum sol ita locatus fuisset ut lunam suo lumine non posset attingere.' 'ain tandem?'

inquit Tubero; 'docere hoc poterat ille homines paene agrestes, et apud imperitos audebat haec dicere?'

(Scipio) 'ille vero, et magna quidem cum... [lacuna]

<neque in> solens ostentatio neque oratio abhorrens a persona hominis gravissimi; rem enim magnam <erat> adsecutus, quod hominibus perturbatis inanem religionem timoremque deiecerat.<sup>91</sup>

In this extract, Tubero is surprised that the common soldiers accepted Gallus' astronomic explanation of the eclipse, but Scipio assures him that Gallus was able to calm the soldiers' fear and save them from *inanis religio*, which we could perhaps best translate as "hollow religion". Though it is challenging to conclusively reconstruct the author's personal opinions in rhetorical works such as Cicero's *De Re Publica*, Arena suggests that Scipio's opinion closely matches Cicero's own.<sup>92</sup> Therefore, this passage suggests that Scipio and by extension Cicero, considered taking eclipses of the moon as prodigies as incorrect and more likely among the uneducated. This account highlights the possible different interpretations of a phenomenon by different societal groups at Rome.

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<sup>91</sup>Cic. *De Re Pub.* 1.23-24. Tans. Keye.

<sup>92</sup>Arena 2016, 78.

The 168 BCE eclipse suggests that there was a limitation on what observances should be considered prodigious.<sup>93</sup> Yet, on at least two occasions (in 344 BCE and 188 BCE<sup>94</sup>) the Sibylline Books were consulted due to eclipses. This inconsistency might seem to discredit the notion that eclipses were outside the scope of divination and perhaps by extension the entire premise that Sibylline Books had a limited scope at all. However, both these occasions involved solar rather than lunar eclipses. Moreover, both occurred before Gallus' explanation of eclipses, according to Pliny the first by a Roman.<sup>95</sup> This suggests that eclipses while once within the purview of the Sibylline Books came to be beyond it in essence an evolution of scope. This notion of an evolving scope is thought provoking. According to one of the defenses of divination laid out by Quintus in Cicero's *De Divinatione*, the relevance of divination is proven by the fact that it works; the users' ability or inability to understand the causal link between the observations and the final outcomes is irrelevant.<sup>96</sup> In this view, the revelation of the mechanism of an eclipse as a shadowing of the moon would not have any influence over its nature as a prodigy. This matches the Stoic tenet that given the same

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<sup>93</sup>The limitation on what should be considered prodigious was multifaceted: beyond the ruling out of events explained by other means (for example the 168 BCE eclipse) prodigies also had to occur in public and in Roman territory. Livy reports that in 196 BCE two prodigies were rejected by the senate because they failed to meet the specifications (Livy 43.13. 6: "Two prodigies were not attended to: one, because it happened in a place belonging to a private person; Titus Marcius Figulus having reported, that a palm sprung up in the inner court of his house; the other, because it occurred in a foreign place, Fregellae" Trans. McDevitte) As McBain has highlighted "public" and "Roman territory" were open to a substantial degree of interpretation. This interpretation could have considerable political implications. Prodigies from Fregellae were expiated at Rome before 196 BCE and the rejection of this prodigy came at a time of significant friction between Rome and Fragellae, which was undergoing demographic changes. (MacBain 1982, 28-30) This suggests that politics and religious concerns were closely intertwined at Rome.

<sup>94</sup>Livy 7.28; 38.36.

<sup>95</sup>Pliny the Elder, *Natural History*, 2.53.

<sup>96</sup>Cic. *De Div.* 1.15-16.

circumstances there will always be the same outcome, as outlined by Frede.<sup>97</sup> This also corresponds well with the general, modern, scientific understanding that if all variables are controlled and remain constant so will the outcomes on which the scientific method is based. On initial inspection, it appears that an evolving scope is in direct contradiction of both Quintus' stoic argument and modern scientific principles. In essence it requires an understanding in which signs are a part of a divinatory system until the physical explanation for them is found, then they are no longer part of the system. This of course violates the principle of predictable outcomes as outlined above. The contradiction is largely resolved, however, if divination is considered an evolving process in which the system is constantly being improved by the removal of signs that were included in error and afterwards proven to be a part of the natural course of events.<sup>98</sup> This process of improvement is highly compatible with Stoic epistemology, which Hankinson outlines as the process of refining and perfecting our knowledge of the world by replacing false opinions and assumptions with true ones.<sup>99</sup> It is also remarkably similar to the process of refinement found in modern scientific theories. A well-known example is the evolution of the atomic model from *plum pudding* through *planetary* to *electron cloud* and beyond.<sup>100</sup>

Analysis of the different times earthquakes are mentioned as prodigies in Livy also suggest a “Defined Scope” for Sibylline consultation. It appears that only when earthquakes

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<sup>97</sup>Frede 2003, 181.

<sup>98</sup>This development aligns with the Falsification model outlined in the Introduction, 5-7.

<sup>99</sup>Hankinson 2003, 59.

<sup>100</sup>The beginnings of atomic theory can be found in Ancient Greek sources, the historical development of the different models is neatly summarized in Justi & Gilbert 2000, 995-8.



occur as groups are the Sibylline Books explicitly recorded as having been consulted.<sup>101</sup> While this is not definitive proof, it suggests that there was a limited scope in which the Sibylline Books were utilized. While groups of earthquakes fall into the scope of the Sibylline Books, single occurrences do not. In addition to the 193 BCE instance discussed above, Livy also reports a series of earthquakes in 436 BCE which also resulted in the consultation of the Sibylline Books as follows:

But the virulence of the disease now becoming worse, was more an object of concern to them, as also the terrors and prodigies, more especially because accounts were being brought, that houses were falling throughout the country, in consequence of frequent earthquakes. A supplication was therefore performed by the people, according to the form dictated by the decemvirs.

*Ceterum magis vis morbi ingravescent curae erat terroresque ac prodigia, maxime quod crebris motibus terrae ruere in agris nuntiabantur tecta. Obsecratio itaque a populo duumviris praeuntibus est facta*<sup>102</sup>

On this occasion, Livy reports that the primary cause for concern was a pestilence. A series of repeated earthquakes seems to have been seen as a corroborating prodigy. There is far less detail regarding this expiation than the 193 BCE instance. This is likely due to the much earlier date of the event and, as Satterfield notes, Livy had very little evidence for such an early period.<sup>103</sup>

Iulius Obsequens does record an instance when one earthquake combined with milk rain and a swarm of bees resulted in a consultation of the Sibylline Books.<sup>104</sup> The lack of context in

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<sup>101</sup>See Livy 4.21.5; 35. 40.7 for instances of earthquakes mentioned without explicit reference to the Sibylline Books.

<sup>102</sup>Livy 4.21.5. Trans. Spillan.

<sup>103</sup>Satterfield 2012, 70.

<sup>104</sup>In 118 BCE Obs. 35.

Obsequens' bare prodigy list makes it impossible to determine if this is an exception to the trend found in Livy or if it is the combination of prodigies that precipitated the consultation.

Another potential type of prodigy where we can turn to examine the scope of Sibylline consultation is floods of the Tiber. There are two accounts in which the consultation of the Sibylline Books is linked to such events. In 193 BCE Livy recounts:

There were great floods that year, and the Tiber overflowed the flat parts of the City; around the Porta Flumentana certain buildings even collapsed and fell. Also, the Porta Caelimontana was smitten by a thunderbolt and the wall in several places round about was struck by lightning; and at Aricia, at Lanuvium and on the Aventine there were showers of stones; it was also reported from Capua that a great swarm of wasps had flown into the forum and settled in the temple of Mars; the wasps, it was said, were carefully collected and consumed by fire. By reason of these prodigies the decemvirs were directed to consult the Books, and a nine-day sacrifice was performed, a supplication proclaimed, and the City purified.

*aquae ingentes eo anno fuerunt, et Tiberis loca plana urbis inundavit; circa portam Flumentanam etiam collapsa quaedam ruinis sunt. et porta Coelimontana fulmine icta est, murusque circa multis locis de caelo tactus; et Ariciae et Lanuvii et in Aventino lapidibus pluit; et a Capua nuntiatum est examen vesparum ingens in forum advolasse et in Martis aede consedis; eas collectas cum cura et igni crematas esse. horum prodigiorum causa decemviri libros adire iussi, et novemdiale sacrum factum, et supplicatio indicta est atque urbs lustrata*<sup>105</sup>

Note that in this account, the flooding is part of a list of prodigies that triggers the consultation of the Sibylline Books and is not on its own the catalyst. The second occasion occurs in 54 BCE and is recorded by Cassius Dio as follows:

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<sup>105</sup>Livy 35.9.2-5. Trans. Sage.

They decided, therefore, that the verses of the Sibyl should be read, in spite of Pompey's opposition. Meantime the Tiber, either because excessive rains had occurred somewhere up the stream above the city, or because a violent wind from the sea had driven back its outgoing tide, or still more probably, as was surmised, by the act of some divinity, suddenly rose so high as to inundate all the lower levels in the city and to overwhelm many even of the higher portions. The houses, therefore, being constructed of brick, became soaked through and collapsed, while all the animals perished in the flood. And of the people all who did not take refuge in time on the highest points were caught, either in their dwellings, or in the streets, and lost their lives. The remaining houses, too, became weakened, since the mischief lasted for many days, and they caused injuries to many, either at the time or later. The Romans, distressed at these calamities and expecting others yet worse, because, as they thought, Heaven had become angry with them for the restoration of Ptolemy, were in haste to put Gabinius to death even while absent, believing that they would be harmed less if they should destroy him before his return. So insistent were they that although nothing about punishment was found in the Sibylline oracles, still the senate passed a decree that the magistrates and populace should accord him the bitterest and harshest treatment.<sup>106</sup>

This account is far more involved than the excerpt from Livy above. In this instance, it seems that the Sibylline Books were already consulted before the Tiber flooded<sup>107</sup> and that the flooding was not interpreted as a prodigy, but rather as the punishment resulting from the ruptured *Pax Deorum*.

Floods of the Tiber somewhat challenge the concept of a defined scope for Sibylline consultation, since at times they seem to be seen as prodigies requiring consultation of the

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<sup>106</sup>Dio 39.60.4-39.61.4. Trans. Cary.

<sup>107</sup>The exact prodigy precipitating the consultation is not immediately evident in Dio, though the text suggests it is the mishandling of the Ptolemy affair in 65 BCE by Gabinius. The Ptolemy affair itself will be considered at greater length in the Chapter Three 57; 59-60.

Sibylline Books, and at other times do not even seem to be considered matters of divine communication at all. As Aldrete highlights in his extensive study on ancient Tiber flooding, there was a strong connection between water (particularly flowing water) and the sacred, both at Rome and in ancient culture more generally.<sup>108</sup> Despite this, of the 42 accounts of Tiber flooding collected by Aldrete from 18 different authors, only 23 link the flooding with the divine either as a portent, prodigy or punishment.<sup>109</sup> The split between associating inundations with the divine or not is not based on either period or author, as clearly illustrated in the cases of Livy and Cassius Dio (the two authors who recorded the most accounts of flooding). Five accounts in Livy (414 BCE,<sup>110</sup> 363 BCE,<sup>111</sup> 202 BCE,<sup>112</sup> 193 BCE,<sup>113</sup> and 192 BCE<sup>114</sup>) associate flooding with the gods, while three (215 BCE,<sup>115</sup> 203 BCE,<sup>116</sup> and 198 BCE<sup>117</sup>) do not. There is a similar mix of association and non-association in Cassius Dio where ten reports associate the flooding with the gods and two others do not.<sup>118</sup> It would seem that ancient opinion on how to interpret flooding rarely reached consensus on each event, even over the course of time. This is clearly illustrated in Dio's account of the 15 CE floods:

When now the river Tiber overflowed a large part of the city, so that people went about in boats, most people regarded this, also, as an omen, like the violent earthquakes which shook down a portion of the city wall and like the frequent thunderbolts which caused

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<sup>108</sup>Aldrete 2007, 217.

<sup>109</sup>Aldrete 2007, 223.

<sup>110</sup>Livy 1.4.4.

<sup>111</sup>Livy 4.49.2.

<sup>112</sup>Livy 30.38.9-13.

<sup>113</sup>Livy 35.9.3-5.

<sup>114</sup>Livy 35.12.2-5.

<sup>115</sup>Livy 24.9.6.

<sup>116</sup>Livy 35.21.6.

<sup>117</sup>Livy 38.28.4.

<sup>118</sup>Aldrete 2007, 223.

wine to leak even from vessels that were sound; the emperor, however, thinking that it was due to the great over-abundance of surface water, appointed five senators, chosen by lot, to constitute a permanent board to look after the river, so that it should neither overflow in winter nor fail in summer, but should maintain as even a flow as possible all the time.<sup>119</sup>

In this account, we once again see a tendency to group flooding and other prodigious activity.

Tacitus' account of the same 15 CE flooding also highlights divided opinions on how to proceed:

In the same year the Tiber, swollen by continuous rains, flooded the level portions of the city. Its subsidence was followed by a destruction of buildings and of life. Thereupon Asinius Gallus proposed to consult the Sibylline books. Tiberius refused, veiling in obscurity the divine as well as the human. However, the devising of means to confine the river was entrusted to Ateius Capito and Lucius Arruntius.

Eodem anno continuis imbribus auctus Tiberis plana urbis stagnaverat; relabentem secuta est aedificiorum et hominum strages. igitur censuit Asinius Gallus ut libri Sibyllini adirentur. renuit Tiberius, perinde divina humanaque obtegens; sed remedium coercendi fluminis Ateio Capitoni et L. Arruntio mandatum.<sup>120</sup>

In both these accounts we see the split opinion on the nature of the flood. Dio's account seems to suggest that while the credulous general populace saw it as prodigious, the more educated emperor sought a practical solution, echoing the divide between the common soldiers and their educated leaders emphasized in Cicero's account of the 168 BCE eclipse.<sup>121</sup> However, in Tacitus, Asinius Gallus, firmly a member of the senatorial class (presumably with the highest levels of education) champions the use of Sibylline Books. This challenges the assumed split

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<sup>119</sup>Dio 57.14.7-8. Trans. Cary.

<sup>120</sup>Tac. *Ann.* 1.76. Trans. Church et al.

<sup>121</sup>Cic. *De Re Pub.* 1.23-24.

along lines of class/education. Rather, it seems more likely, as suggested by Aldrete, that there was a high degree of ambiguity throughout Roman society and history on how best to both understand and mitigate flooding. This often resulted in a “hedging of bets” where both temporal measures such as raising the banks of the Tiber, and those more divine such as consulting the Sibylline books, were employed.<sup>122</sup> This latent contradiction is far from uniquely Roman, as the common saying “God helps those who help themselves” attests.

Another aspect to consider in the 15 CE case is political motivations behind Tiberius’ reluctance to consult the Sibylline Books. Liebeschuetz has suggested that from the time of Augustus, emperors were disinclined to support the traditional prodigy expiation system in general as it placed the power of accepting or rejecting and expiating prodigies in the hands of the senate.<sup>123</sup> Additionally, Tiberius may not have wished to accept the flooding as a prodigy since this could easily have been interpreted as a sign of divine disapproval of his rule.<sup>124</sup>

One potential avenue to explore the response to the flooding of the Tiber is as a system developing over time in accordance with trends in general religious and divinatory practice at Rome. For instance, MacBain observes a tendency beginning in the late republic and stretching through the principate and the empire to shift from public prodigies to personal omens for

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<sup>122</sup>Aldrete 2007, 224.

<sup>123</sup>Liebeschuetz 1979, 58. Liebeschuetz suggests that Tacitus intentionally played down prodigies in the reign of Tiberius in order to emphasize the difference between it and the disastrous and prodigy rich rule of Nero. However, in this case as Dio also notes that the emperor is against consulting the Books this literary factor does not seem to be at play. (Liebeschuetz 1979, 166.)

<sup>124</sup>Davis highlights that Tiberius often provided material support to those affected by natural disasters to prevent these disasters being interpreted as signs of divine displeasure. (Davies 2004, 163-5.)

leading figures.<sup>125</sup> The account of Octavian taking the title of Augustus presented by Cassius

Dio seems to fit this trend exactly:

Caesar, as I have said, received the name of Augustus, and a sign of no little moment to him occurred that very night; for the Tiber overflowed and covered all of Rome that was on low ground, so that it was navigable for boats. From this sign the soothsayers prophesied that he would rise to great heights and hold the whole city under his sway.<sup>126</sup>

This account can also be seen as fitting the tendency in the imperial period to see signs from the gods as positive.<sup>127</sup> However, while the 36 CE floods were interpreted as a portent for the emperor Tiberius, rather than a comment on his superiority, they were said to foretell his death.<sup>128</sup> This reading, depending on your stance on Tiberius as emperor, could still potentially be seen as fitting a trend of positive interpretation of signs, but it is certainly not consistent with the interpretation offered in regard to Augustus.

Nor are the instances of associating Tiber flooding and Sibylline consultation a progressive refining of a divinatory system, compatible with Stoic epistemology as suggested for eclipses above. At the height of the crisis of the Second Punic War, Livy matter-of-factly described floods at the end of 215 BCE then moved directly to the account of 214 BCE:

When the election of the praetors was finished the senate passed a resolution that Quintus Fulvius should have the City as his special province, and when the consuls had gone to the war he should command at home. There were two great floods this year; the Tiber inundated the fields, causing widespread destruction of farm-buildings and stock and much loss of life. It was in the fifth year of the second Punic war that Q. Fabius Maximus

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<sup>125</sup>MacBain 1982, 81.

<sup>126</sup>Dio 53.20.1.

<sup>127</sup>See further on this shift in Davies 2004, 48-50.

<sup>128</sup>Dio 63.27.1

assumed the consulship for the fourth time and M. Claudius Marcellus for the third time. Their election excited an unusual amount of interest amongst the citizens, for it was many years since there had been such a pair of consuls.

comitiis praetorum perfectis senatus consultum factum, ut Q. Fulvio extra ordinem urbana provincia esset isque potissimum consulibus ad bellum profectis urbi praeesset. aquae magnae bis eo anno fuerunt Tiberisque agros inundavit cum magna strage tectorum pecorumque et hominum pernicie. quinto anno secundi Punici belli Q. Fabius Maximus quartum M. Claudius Marcellus tertium consulatum ineuntes plus solito converterant in se civitatis animos; multis enim annis tale consulum par non fuerat.<sup>129</sup>

There is no suggestion that these two floods are interpreted as either prodigious or punishment and of course no expiation is attempted. However, much later in 54 BCE, senators called for consultation of the Sibylline Books in response to the prodigious flooding of the Tiber in the far more stable period of the early empire.<sup>130</sup>

Weighing the varying evidence from the primary sources, it appears there was limited consensus among the Romans themselves on how floods of the Tiber should be interpreted. The lack of complete agreement on what fell into the scope of the Sibylline Books does not necessarily preclude the existence of a delineated scope altogether. 196 BCE represents the only occasion on which floods are directly linked to consultation. Additionally, in this case, the flood is not the only prodigy but rather a part of a long list including thunderbolts and “showers of stones”, which are consistently linked to consultation of the Sibylline Books.<sup>131</sup> Therefore, I

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<sup>129</sup>Livy 24.9.5-7 Trans. Roberts.

<sup>130</sup>Tac. *Ann.* 1.76.

<sup>131</sup>Livy 35. 9. 2-5.



propose that while flooding of the Tiber could support other prodigies, on its own, it fell outside the scope of the Books in the eyes of the majority.

Considering earthquakes, Tiber flooding and eclipses suggests that there was a defined scope in which Sibylline consultation was used at Rome. These case studies highlight that this scope evolved over time and that many factors including political considerations were at play in defining this scope. Consultation of the Sibylline Books displays the scientific characteristic of “Defined Scope”, although this scope is not rigidly delimited and the important role of political factors in setting this scope is different than the modern ideal of separation of politics and science.

In summary, consultation of the Sibylline Books displays the scientific characteristics of “Observation”, “Record Keeping”, and “Defined Scope”. However, this statement is not unqualified. Observation of the natural world was mitigated through intermediate filters. The evidence of external record keeping is prevalent, yet any details of internal records remain elusive. The scope of consultation evolved over time and could have been shaped by political factors. Through the examination of these characteristics a complex image of the consultation of the Sibylline Books begins to emerge. The following chapter will explore the remaining scientific characteristics: “Regimentation”, “Expertise”, and “Analysis”,

## CHAPTER TWO: “REGIMENTATION”, “EXPERTISE”, AND “ANALYSIS”

This chapter will investigate the remaining three characteristics of science established in the introduction: “Regimentation”, “Expertise”, and “Analysis”.

First “Regimentation”: under this characteristic I will explore whether there is any evidence for methodology in Sibylline Consultation. A key element of the definition of “science” in the *Oxford English Dictionary* is “systematic study.”<sup>132</sup> Method and systemization are central to the modern conception of science; therefore, it is important to consider how systematic the consultation of the Sibylline Books might have been.<sup>133</sup> As previously discussed, the way in which the (Quin)decemviri actually consulted the Books is shrouded in mystery as this practice was considered the privilege of the priesthood alone. In his *De Divinatione*, Cicero adjured that it was best to:

keep the Sibyl under lock and key so that in accordance with the ordinances of our forefathers her books may not even be read without permission of the Senate.

quam ob rem Sibyllam quidem sepositam et conditam habeamus, ut, id quod proditum est a maioribus, iniussu senatus ne legantur<sup>134</sup>

Any documentation which may have recorded the actual mechanism of consultation would never have been intended for wide circulation or general publication. Bearing this in mind, it has sometimes been suggested that there was no formal method of consulting the Sibylline Books. Proponents of this theory suggest that the Books were simply opened at random and the first

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<sup>132</sup>Definitions of science are further explored in the Introduction, 5; 7-10.

<sup>133</sup>There is debate on the degree to which ancient science should be considered systematic by both modern scholars and ancient practitioners. For the difference between ancient and modern science see Verdenius 1962, 320-322; Taub 2017, 7.

<sup>134</sup>Cic. *De Div* 2.112. Trans. Falconer.

propitiation that caught the consulter's eye was presented as the requisite expiation in a kind of *Sortes Virgilianae*.<sup>135</sup> However, the record of prodigies and their expiations does not seem to support this random selection theory. There is evidence of correlation between the type of prodigy and the suggested expiation.

Some expiations are clearly linked to the prodigies they are meant to expiate. Examples for this type of connection are abundant throughout the history of official use of the Sibylline Books. For instance, drought and resulting crop failure were propitiated by the construction of a temple to the grain goddess Ceres, following the consultation of the Sibylline Books in 496 BCE.<sup>136</sup> Examples of linked expiation from more historic periods include supplications to Jupiter following lightning strikes in 179 BCE and 172 BCE.<sup>137</sup>

Other evidence of regimentation to consider involves the linking of prodigy and expiation, not in terms of offering a propitiation to a deity associated with the prodigy in question. Rather this correlation identifies trends of propitiating certain types of prodigy with a particular type of expiation as demonstrated by the case of “showers of stones.” Of the ten instances where the expiation of “showers of stones” is recorded in conjunction with consultation of the Sibylline Books half are *novemdiale sacrum*.<sup>138</sup> A particular concentration of “showers of

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<sup>135</sup>See Orlin 1997, 81. *Sortes Virgilianae* themselves seem first to be recorded in the *Scriptores Historiae Augustae* (Loane 1928, 185.) As Usher notes; however, there is no clear indication in these early instances of how the consultation took place. (2015, 559.) Moreover, all of the passages recorded in the *Scriptores Historiae Augustae* as *Sortes Virgilianae* come from prophetic sections of the *Aeneid*. (Usher 2015, 559.) This suggests that they were not obtained by random selection from the entire works of Virgil or the *Aeneid*. Therefore, the understanding of allowing the *Aeneid* to fall open and selecting a passage by pricking the page with a pin appears to be a later development and as such perhaps little help in understanding consultation of the Sibylline Books.

<sup>136</sup>Dion. Hal. 6.17; 6.94.

<sup>137</sup>Livy 40.45; 42.20.

<sup>138</sup>Cases with *novemdiale sacrum*: Livy 27.37; 35.9; 36.37; 38.36; Obs.44 without: Livy 7.28; 10.31; 29.10; 42.2; 43.13.

stones” expiated through these nine-day festivals occurs in 193 BCE, 191 BCE, and 188 BCE.<sup>139</sup>

It is also interesting to note, at times the connection between the nine-day festival and the “shower of stones” seems to be almost automatic, hardly requiring consultation of the Sibylline Books or any of the priesthoods. This is evident in the events of 207 BCE which Livy records as follows:

Before the consuls set out there were nine days of rites, because stones had rained from the sky at Veii...Then again, the nine days of rites were repeated, because in the Armilustrum men saw a rain of stones.

priusquam consules proficiscerentur nouendiale sacrum fuit quia Ueiis de caelo lapidauerat...inde iterum nouendiale instauratum quod in Armilustro lapidibus uisum pluere.<sup>140</sup>

In fact, Livy states that this was the usual means of dealing with a “shower of stones”:

This year the sea appeared on fire; at Sinuessam a cow brought forth a horse foal; the statues in the temple of Juno Sospita at Lanuvium flowed down with blood; and a shower of stones fell in the neighbourhood of that temple: on account of which shower the nine days' sacred rite was celebrated, as is usual on such occasions, and the other prodigies were carefully expiated.

mare arsit eo anno; ad Sinuessam bos eculeum peperit; signa Lanuui ad Iunonis Sospitae cruore manuere lapidibusque circa id templum pluit, ob quem imbrem nouendiale, ut adsolet, sacrum fuit; ceteraque prodigia cum cura expiata.<sup>141</sup>

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<sup>139</sup>Livy 35.9; 36.37; 38.36.

<sup>140</sup>Livy 27.37. Trans. Moore.

<sup>141</sup>Livy 23.31. Trans. Spillan & Edmonds.

In this instance it is not clear if the (Quin)decemviri were involved in any of the other careful expiations as they were in 207 BCE. However, Livy's assertion "as is usual on such occasions" may suggest not only the presence of correlation between prodigy and expiation but also the participation of the (Quin)decemviri.

In other cases, the connection between the prodigy observed and the propitiation is less obvious, but there still seems to be some link between them. Perhaps the most fascinating of this type of relation is the 216 BCE<sup>142</sup> & 114/113 BCE<sup>143</sup> unchaste Vestal Virgins.<sup>144</sup> This prodigy is expiated, not only by punishing the guilty Vestals, but also by sacrificing a pair of Gauls and Greeks. The burial of the unchaste Vestals conforms to the typical pattern of completely destroying prodigies: throwing hermaphrodites into the sea and burning other *monstra*.<sup>145</sup> As Schultz effectively demonstrates, this disposal was not considered human sacrifice and as such elicited relatively little concern.<sup>146</sup> However, the subsequent propitiation (burial of Greeks and Gauls) in fact was understood as human sacrifice and as such only acceptable in extreme circumstances.<sup>147</sup> On initial consideration, the propitiation of sacrificing foreigners may seem quite unrelated to the Vestals' misconduct. Yet, both the punishment and the sacrifice were carried out by burying the victims alive within the boundaries of the city suggesting a greater interconnection than chance selection.<sup>148</sup> Indeed, the extreme dearth of human sacrifice in

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<sup>142</sup>Livy 22.57.

<sup>143</sup>Plut. *Quaest. Rom.* 83; Obs. 37; V.M. 8.15.

<sup>144</sup>In 228 BCE Greeks and Gauls were buried alive, though the evidence is not conclusive, it is possible that this event was also linked to Vestal unchastity. Cf. Schultz 2010, 532.

<sup>145</sup>Cornell 1981, 36.

<sup>146</sup>Schultz 2010, 534.

<sup>147</sup>Schultz 2010, 534-5.

<sup>148</sup>Satterfield contends that hermaphrodites and "showers of stones" were the only prodigies associated with Sibylline Consultation which had predictable expiations (2011, 120.) "Showers of stones" will be considered in the

Roman religion highlights the connection between this type of prodigy and its expiation as it was so different from routine practice in the historical period.

Lastly, when considering the “Regimentation” of Sibylline consultations, it is valuable to consider Roman state religion more generally, particularly those elements for which there is more evidence available. It is known that in the case of public sacrifice and taking of auspices, form and detail were considered vital. Even slight errors could be judged to invalidate the entire undertaking and require the whole process to be repeated.<sup>149</sup> Famously, the consular elections of 163 BCE were considered unacceptable due to an error in the taking of the auspices before the elections.<sup>150</sup> With this in mind, it seems probable that a closely regimented methodology would also be applied to the consultation of the Sibylline Books.

While it is difficult to ascertain with any certainty exactly how consultation took place, by considering other documented elements of Roman state religion and the recorded prodigies and expiations, it seems likely that the process for consultation was regimented and not a matter of random chance.

The following section will address the scientific characteristic “Expertise”. Taub, in her study of science writing in antiquity, has noted that there does not appear to be any direct equivalent to the term “scientist” in either Greek or Latin and indeed the term does not appear in print in English until the mid-nineteenth century.<sup>151</sup> However, at least by the end of the republic

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following paragraphs; however, the repeated association of Vestal unchastity and burial of Gauls and Greeks also seems to suggest a predictable pattern. Moreover, the connection between prodigy and expiation as highlighted above, while perhaps less predictable than the “showers of stones” or hermaphrodites, seem far from random.

<sup>149</sup>Rosenstein 1990, 57-9.

<sup>150</sup>Plut. *Marc.* 5. 1-3.

<sup>151</sup>Taub 2017, 7.

at Rome, specialization and expertise had begun to develop in many fields of intellectual activity including religion.<sup>152</sup> The nature of Roman priesthood in general has long been a matter of scholarly inquiry. Some have contended that these positions, particularly in the republic, were primarily a part of a larger political career. These positions are supposed to have taken relatively little of the holder's time and energy as they required little, if any, special knowledge or ability. Others have seen the importance of the priesthoods to the holders as greater, requiring training and a high degree of dedication.<sup>153</sup> The many priesthoods at Rome were often very different from one another: each likely calling for a different level of commitment, not only of time from its members but also of expertise. Further, each individual priest may have had a different understanding of the level of expertise the position required.

The priestly college responsible for the Sibylline Books was the (*Quin*)*decemviri Sacris Faciundis* whose membership varied from two to ten to fifteen and beyond. Satterfield has convincingly argued that the inclusion of plebeians in this college was a critical step towards their eventual ability to hold the consulship.<sup>154</sup> While this certainly attests to the prestige of this college, it does little to illuminate the level of expertise that might have been required of its members. One avenue to explore the degree of expertise required is to consider the college's mode of recruitment. New members were chosen by co-option (selection by the existing members of the college) and after the 104/3 BCE *Lex Domitia* by election from a list of

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<sup>152</sup>Beard et al. 1998, 151. In "The Limits of the "Religious" in the Roman Republic" North, questions how far developed this process may actually have been (2014).

<sup>153</sup>For discussion of Roman Priesthoods generally: Scheid 1993, 55-6; Beard et al. 1998, 18-30; Driediger-Murphy 2019, 11-20.

<sup>154</sup>Satterfield 2014, 217-219; 232-4.

candidates approved by the members of the college.<sup>155</sup> Once appointed, the position was held for life.<sup>156</sup> This selection method could support a huge variation in expertise required. At one extreme the members of the college could have selected new members/candidates exclusively based on their possession of a particular, though unclear to modern scholars, set of skills, abilities, and aptitudes. At the other extreme, members of the college may have made their selection based wholly on political, familial or personal ties and preferences. Equally, any combination of these two extremes could have been employed. Rüpke emphatically states that “Roman priests were not recruited on the basis of knowledge or intellectual qualities.”<sup>157</sup> Despite this, there clearly was a certain level of education required to undertake the role of a (Quin)decemvir. The Sibylline Books were written in Greek and there is no suggestion that a Latin translation was ever made;<sup>158</sup> therefore, a command of that language would be necessary at a minimum. However, Greek was a part of most elite boyhood educations and does not narrow the field of possible recruits much beyond the social restriction expected of such a prestigious priesthood.

There is evidence that circumstances beyond an individual’s personal characteristics were also major factors in selecting members of the priesthods. As North has highlighted, for at least the last 200 years of the republic, it was conventional to spread priesthods between elite

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<sup>155</sup>On the *Lex Domitia* North 1990; 2011.

<sup>156</sup>Scheid 1993, 60-64. Cooption was briefly restored under Sulla, but elections resumed following the 63 BCE *Lex Labiena*. Cf. North 2011, 44-5.

<sup>157</sup>Rüpke 2011, 29.

<sup>158</sup>Orlin 1997, 115.



families and following the 104/3 BCE *Lex Domitia* this division was stipulated by law.<sup>159</sup>

Moreover, Cicero in his letter to Appius Claudius Pulcher discussing Augurs states:

but no cooption into the priesthood was permissible, of one who was the enemy of any of the existing members

sed ne cooptari quidem sacerdotem licebat, qui cuiquam ex collegio esset inimicus<sup>160</sup>

If a similar rule applied to the (Quin)decemviri, the most qualified candidates from the perspective of knowledge and aptitude may have been barred from entry due to their personal and family relationships.

In his fascinating study of the fate of defeated Roman generals, Rosenstein proposes that ascribing success or failure to the expertise of an individual would have made the continual turn over of high office unappealing and so imperiled the entire republican system. For it to function, all members of the senate in theory needed to be seen as equally capable.<sup>161</sup> This assertion of equally capable elite raises questions concerning the likelihood of the (Quin)decemviri being perceived as having particular expertise. Indeed, as North has noted, no evidence suggests particular families were perceived as having inherited characteristics or knowledge which linked them to specific priesthoods.<sup>162</sup> In contrast to generalships, appointment to the (Quin)decemviri was permanent. Rüpke has estimated that on average a (Quin)decemvir held office for 19 years.<sup>163</sup> Therefore, the need for trust in a wide variety of holders was absent. While

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<sup>159</sup>North 2011, 46-7; 58. There was a suspension of this restriction under Sulla.

<sup>160</sup>Cic. *Fam.* 3.10.9. North highlights that this rule applies specifically to the Augurs and that Cicero discusses it as something in the past not necessarily in force at the time of this letter (1990, 530-1.)

<sup>161</sup>Rosenstein 1990, esp. 172.

<sup>162</sup>North 1990, 532.

<sup>163</sup>Rüpke 2011, 32.

all members of the elite were potentially perceived as equally qualified to be named to the college, there is no reason that they could not develop expertise while they held the position, likely for years. There is little to suggest that any specific qualifications were needed to join the (Quin)decemviri, yet they were considered experts. One of the earliest instances of consultation of the Sibylline Books reported was following the 496 BCE drought.<sup>164</sup> Even at this early date it is not Aulus Postumius, the dictator, who Dionysius of Halicarnassus records proposing a propitiation but rather the “Keepers of the Books.”<sup>165</sup> This suggests that the Romans considered consultation of the Sibylline Books to be the preserve of a select group.

Evidence of expertise can also be found in Augustine’s account of the c.272 BCE pestilence as recorded in his *City of God*:

Despite the presence of Aesculapius, it only grew worse in its second year, till at last recourse was had to the Sibylline books — a kind of oracle which, as Cicero says in his *De Divinatione*, owes significance to its interpreters, who make doubtful conjectures as they can or as they wish.

Quae cum in annum alium multo grauius tenderetur frustra praesente Aesculapio, aditum est ad libros Sibyllinos. In quo genere oraculorum, sicut Cicero in libris de diuinatione commemorat, magis interpretibus ut possunt seu uolunt dubia coniectantibus credi solet.<sup>166</sup>

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<sup>164</sup>This is the same drought noted earlier in the chapter, 34.

<sup>165</sup>Dion. Hal. 6.17, 6.94. It is important to remember that Dionysius was writing long after the events he describes, and his account may better reflect the way the Books were understood to have been used in his own time rather than in the early days of the republic.

<sup>166</sup>Augustine *City of God*, 3.17. Trans. Dods lightly modified. It seems that Augustine is referring to *De Div.* 2.110-120 and does accurately portray the sceptical tone found there. For more on Cicero’s personal views on use of the Sibylline Books see Chapter Three, 56-8; 60.

It must not be forgotten that both Cicero and Augustine were writing long after the events described, and that Augustine was writing with the express purpose of discrediting the Roman state cult and uses a very disparaging tone throughout. However, it is clear that he understood Cicero's description of consultation of the Sibylline Books to mean that the (Quin)decemviri had a great deal of influence over how they were interpreted. While this may not clearly demonstrate expertise, it does emphasise that the practitioners were an important part of the process.<sup>167</sup>

Other instances which may suggest that the (Quin)decemviri were experts include cases when they were called on to verify the veracity of other divinatory methods as in the incident of the *carmina* Marciana in 212 BCE.<sup>168</sup> Expertise is also evident when the (Quin)decemviri return different suggestions for expiation of the same prodigy compared to other groups such as the senate in general or the Haruspices. For instance, after the senate was presented with an extensive list of prodigies in 217 BCE, Livy reports:

the consul consulted the fathers on religious affairs. It was decreed that those prodigies should be expiated, partly with full-grown, partly with sucking victims; and that a supplication should be made at every shrine for the space of three days; that the other things should be done accordingly as the gods should declare in their oracles to be agreeable to their will when the Decemviri had examined the books.

consul de religione patres consuluit. decretum ut ea prodigia partim maioribus hostiis, partim lactentibus procurarentur, et uti supplicatio per triduum ad omnia pulvinaria haberetur; cetera, cum decemviri libros inspexissent, ut ita fierent quem ad modum cordi esse divis e carminibus praeferrentur.<sup>169</sup>

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<sup>167</sup>The role of practitioners in science will be further explored in Chapter Three, 62-4.

<sup>168</sup>Livy 25.12.

<sup>169</sup>Livy 22.1. Trans. Spillan & Edmonds lightly modified.

Here we see certain expiations undertaken on the recommendation of the senate augmented by the result of the (Quin)decemviri's consultation of the Books. This suggests that they had expertise beyond that of the senate as a whole, though to what degree this additional knowledge was simply access to the Sibylline Books is difficult to judge. Livy also reports a case in 172 BCE when an extensive list of prodigies was presented to both the Haruspices and the (Quin)decemviri and each group returned different interpretations:

Whilst the citizens were in a state of tense expectancy of a fresh war, the column erected on the Capitol during the Punic war by the colleague of Ser. Fulvius was shattered from top to bottom by a stroke of lightning. This accident was regarded as a portent and reported to the senate. The fathers both referred it to the Haruspices and ordered the Decemviri to consult the Books. The Decemviri announced that the City must undergo a lustration; that intercessions and special prayers must be offered; and that full-grown animals must be sacrificed both at Rome in the Capitol and in Campania at the Promontory of Minerva. Games were also, as soon as possible, to be celebrated for ten days in honour of Jupiter Optimus Maximus. The reply of the Haruspices was to the effect that the portent would prove to be favourable, for it portended the widening of frontiers and the destruction of enemies; those ships' beaks which the storm had thrown down had been taken as spoils from the enemy.

*in suspensa civitate ad expectationem novi belli, nocturna tempestate columna rostrata in Capitolio bello Punico priore posita ob victoriam M. Aemilii consulis, cui collega Ser. Fulvius fuit, tota ad imum fulmine discussa est. ea res prodigii loco habita ad senatum relata est; patres et ad haruspices referri et decemviros adire libros iusserunt. decemviri lustrandum oppidum, supplicationem obsecrationemque habendam, victimis maioribus sacrificandum et in Capitolio Romae et in Campania ad Minervae promunturium renuntiarunt; ludos per decem dies Iovi optimo maximo primo quoque die faciendos. ea omnia cum cura facta. haruspices in bonum versurum id prodigium, prolationemque*

finium et interitum perduellium portendi responderunt, quod ex hostibus spolia fuissent ea rostra, quae tempestas disiecisset.<sup>170</sup>

In this example, we see two groups, both considered to be experts in interpreting lightning, returning very different verdicts on its meaning. This suggests that they each had different training and interpretation procedures.

Putting aside the (Quin)decemviri themselves, were there other experts involved in the consultation of the Sibylline Books? The equivalent of the *victimarius* or perhaps official clerks and record keepers? Censorinus reports that (Quin)decemviri kept records of some kind and an epitaph commemorating a keeper of these records has survived to the present.<sup>171</sup> However, there is nothing to suggest that anyone outside of the (Quin)decemviri were involved in the actual consultation. Further, the often repeated concern with the safe guarding and secrecy of the Sibylline Books, and the ghastly punishment (being sewn into a sack and tossed in the sea<sup>172</sup>) allegedly inflicted on those caught divulging the contents of the Books illicitly<sup>173</sup> makes the existence of additional participants in consultation unlikely.

In conclusion, while there is evidence that the (Quin)decemviri were considered experts and certainly they alone were seen as qualified to consult the Sibylline Books, beyond a knowledge of Greek there is little to indicate what, if any skills or training were required.

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<sup>170</sup>Livy 42.20. Trans. Roberts.

<sup>171</sup>Censorinus, *De die Natali*, 17.11; CIL VI 2312. Record keeping by the (Quin)decemviri is explored in Chapter One, 15-7.

<sup>172</sup>Dion. Hal. 4.62.

<sup>173</sup>As Satterfield notes, when an oracle was published without permission in 56 BCE no one seems to have been punished at all, but the brutality of the punishment traditionally associated with this crime effectively highlights the seriousness with which publishing Sibylline material was taken (2011, 117.) The 56 BCE incident will be considered further in Chapter Three, 52; 59-60.

“Analysis” is the final characteristic of science which will be examined. This aspect transforms science into something more than simple observation, allowing it to produce potentially useful information and offer explanations of the natural world. This characteristic of science includes demonstration and explanation of causal relations between observed phenomena. A powerful criticism of divination in the ancient world was the apparent lack of any attempt to demonstrate credible links between signs and their purported meanings.<sup>174</sup> Indeed, many modern attempts to predict the future remain susceptible to such censure. This forms a key part of Marcus’ argument against divination in Cicero’s *De Divinatione*, he states:

But what course of reasoning is followed by men who predict the finding of a treasure or the inheritance of an estate? On what law of nature do such prophecies depend? But, on the other hand, if the prophecies just mentioned and others of the same class are controlled by some natural and immutable law such as regulates the movements of the stars, pray, can we conceive of anything happening by accident, or chance?

Qui thesaurum inventum iri aut hereditatem venturam dicunt, quid sequuntur? aut in quarum natura inest id futurum? quodsi haec eaque, quae sunt eiusdem generis, habent aliquam talem necessitatem, quid est tandem, quod casu fieri aut forte fortuna putemus?<sup>175</sup>

The Sibylline Books do not strictly<sup>176</sup> claim to predict the future and are sometimes understood to contain exclusively proscriptive information. However, as Santangelo rightly highlights, the division between prophecy and proscription is not always obvious.<sup>177</sup> There is considerable

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<sup>174</sup>Hankinson 1988, 123-60.

<sup>175</sup>Cic. *De Div* 2.18. Trans. Falconer.

<sup>176</sup>Orlin 1997, 92-3.

<sup>177</sup>Santangelo 2013, 143.

evidence that the Sibylline Books contained some prophetic element. Cicero's direct discussion of them in both books of *De Divinatione*<sup>178</sup> suggests he considered their use to fall squarely under the heading of divination. Even more explicit is Livy's statement:

The Decemviri for the performance of sacred duties, the interpreters of the songs of the Sibyl and the fate of this people

decemuiros sacris faciundis, carminum Sibyllae ac fatorum populi huius interpretes<sup>179</sup>

As Mazurek notes, the Sibylline Books are sometimes referred to as *libri fatales*, which makes perfect sense, as Sibyls were famous in antiquity for their prophetic powers.<sup>180</sup>

From the evidence available, it appears that that the (Quin)decemviri never attempted to offer any semblance of an explanation for the mechanism of the expiations presented. There are, however, several cases which demonstrate some form of analysis by (Quin)decemviri. First, when faced with the 293 BCE pestilence after consultation of the Books the (Quin)decemviri prescribed the summoning of Aesculapius. Livy relates:

a pestilence which raged in the city and country districts alike. The disaster it caused was looked upon as a portent. The Books were consulted to see what end or what remedy would be vouchsafed by the gods. It was ascertained that Aesculapius must be sent for from Epidaurus and brought to Rome.

pestilentiae urentis simul urbem atque agros, suffecit; portentoque iam similis clades erat, et libri aditi quinam finis aut quod remedium eius mali ab dis daretur. inuentum in libris Aesculapium ab Epidauro Romam arcessendum<sup>181</sup>

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<sup>178</sup>Cic. *De Div.* 1.4; 1.97; 1.98; 2.110 -112.

<sup>179</sup>Livy 10.8.3.

<sup>180</sup>Mazurek 2004, 164.

<sup>181</sup>Livy 10.47. Trans. Roberts lightly modified.

It is possible, based on the direct reference to Demeter and Persephone in the oracle reported by Phlegon of Tralles,<sup>182</sup> the Books contained an outright statement: “summon Aesculapius.” However, Cicero’s insistence that their contents were “a maze of obscurity” (*latebra obscuritatis*)<sup>183</sup> makes this seem unlikely. It appears that the (Quin)decemviri would have needed to analyze the information in the Books using their unknown methods to select the correct section and then return the suggestion of summoning the Greek god.<sup>184</sup> This step was unprecedented and could not be repeated. This means that the (Quin)decemviri were not acting on precedent nor strictly speaking setting new ones since in the case of future plagues Asclepius could not be summoned again. The reason this could not be repeated is that once a god was thought to have been called to Rome successfully, they usually were considered permanent residents of their new home.<sup>185</sup>

“Analysis” can also perhaps be seen in the case of the unchastity of the Vestal Virgins in 216 BCE.<sup>186</sup> Rosenstein has suggested that while this incident was initially seen as a crime that needed to be punished, only after the military disaster at Cannae was it recognized that their unchastity was a prodigy that needed to be expiated.<sup>187</sup> In this instance, the senate and the (Quin)decemviri analyzed the outcomes of their actions (or in this case inaction) and then adapted their system based on the results by reclassifying unchastity of Vestal Virgins as

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<sup>182</sup>Phlegon of Tralles *On Wonders*, 10 = FGrHist 257 F 36 X.

<sup>183</sup>Cic. *De Div* 2.111.

<sup>184</sup>The choice of a god closely associated with healing to remedy a plague further supports the thematic regimentation explored earlier in this chapter, 34.

<sup>185</sup>Although the Sibylline Books would be used again to usher new deities into the Roman fold, notably the addition of the Magna Mater in 205 BCE (Livy 29.10) and some have even suggested that the Sibylline Books were the primary means of introducing foreign elements into state religion. Cf. Orlin 1997, 93-5.

<sup>186</sup>Livy 22.57.

<sup>187</sup>Rosenstein 1990, 69-70.



prodigious.<sup>188</sup> The evaluation of the success of certain propitiations is illustrated by the expiations ordered in response to monstrous births in 200 BCE. Livy records:

the senate ordered the decemvirs to consult the Books about this portent. Following the instructions found there, they ordered the same ceremonies to be observed as on the occasion of its last appearance. A hymn was to be sung through the City by three choirs, each consisting of nine maidens, and a gift was to be carried to Queen Juno.

nihilo minus decemviros adire libros de portento eo iusserunt. decemviri ex libris res divinas easdem, quae proxime secundum id prodigium factae essent, imperarunt. carmen praeterea ab ter novenis virginibus cani per urbem iusserunt donumque Iunoni reginae ferri.<sup>189</sup>

In this instance, it appears that the previous expiation ordered in 207 BCE in response to monstrous births (also sacrifices and processions to Juno Regina on the Aventine<sup>190</sup>) was considered successful. As a result, the same propitiations were carried out on subsequent occasions, albeit with certain modifications in the particulars, in response to the exact situation.

In fact, as Rosenstein deftly illustrates, the flexibility to adapt based on the observed outcome of different sacred actions was a key characteristic of Roman state religion which allowed it to flourish over a long period.<sup>191</sup> Given the complex nature of faith and belief in Roman religion this flexibility is particularly important. In her in-depth exploration of Roman and Christian faith, Morgan has highlighted the far less central role of faith and belief language

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<sup>188</sup>Subsequent instances of Vestal Virgins' unchastity resulted in consultation of the Sibylline Books and based on the response of the (Quin)decemviri the construction of a temple to Venus Verticordia. Obs. 37; V.M. 8.15.

<sup>189</sup>Livy 31.12. Trans. Sage lightly modified.

<sup>190</sup>Livy 27.37.

<sup>191</sup>Rosenstein 1990, 73-75.

in Greco-Roman religion when compared to Christianity.<sup>192</sup> She also notes the lack of doctrinal or credal statements pertaining to Roman religion.<sup>193</sup> Without any clearly established statements of belief, Roman state religion, while conservative by nature, was also able to adapt over time based on the outcomes of religious actions. At Rome, public religion operated on the hypothesis that certain actions would result in favourable outcomes for the city by assuring the benevolence of the gods. If this proved ineffective, the actions were altered until more favourable outcomes were obtained. Through this lens, all of Roman public religion, including the use of the Sibylline Books, bears a striking resemblance to the modern understanding of the scientific method. In this method, a hypothesis is formed, experiments carried out, and the hypothesis refined based on the outcomes.

There is little to suggest that any serious attempts were ever undertaken to explain how consultation of the Sibylline Books expiated prodigies or the connection between prodigies and the *Pax Deorum*. Yet there does seem to be evidence of considerable analysis concerning what propitiation should be employed as well as evaluation of the efficacy of these measures. This is illustrated by the 293 BCE summoning of Aesculapius and the inclusion of unchastity of Vestal Virgins as prodigies.

In summary, there is considerable evidence for regimentation in consultation of Sibylline Books as highlighted by the connection between “showers of stones” and *novemdiale sacrum*. Although any attempt to provide cause and effect or establish universal rules seems to be absent, it appears that a high degree of analysis surrounding the efficacy of expiation was undertaken.

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<sup>192</sup>Morgan 2015, 2; 125.

<sup>193</sup>Morgan 2015, 2; 125.

When necessary, changes to the consultation system were put into practice, as seen in the development of the expiation of monstrous births and inclusion of unchastity of Vestal Virgins as prodigies. By contrast, there is relatively little evidence for any expertise among the (Quin)decemviri beyond the need to read Greek and indeed there is evidence that restriction existed that could have prevented the most apt candidates joining the priesthood due to family and personal relations. To varying degrees, all six characteristics of science outlined can be found in the consultation of the Sibylline Books, this highlights the similarity which exists between Sibylline consultation and modern science.

### CHAPTER THREE: ROLES AND PERCEPTIONS

Thus far, Chapters One and Two have explored the extent to which Roman consultation of the Sibylline Books exhibit the six characteristics of science established in the Introduction. This chapter widens the lens and considers the role consultation of Sibylline Books played in Roman society and how this role may compare to that of modern science in the present day. This chapter should be prefaced with a note highlighting that “Science, Technology and Society” is a vibrant and growing field of study in its own right. Universities offer it as a Major to both Arts and Science students, there are several journals devoted to it and in the forward to a recent volume on the subject, Vamos states that whole libraries could be devoted to this field.<sup>194</sup> Bearing this in mind, I do not aim to treat the role of science in modern society in its entirety as this would fall well beyond the scope of this thesis. This chapter will explore the similarities between the interconnection of policy and science and policy and the Sibylline Books. It will also consider contemporary popular understanding of science and scientists and Roman conceptions of Sibylline Books and the (Quin)decemviri.

To begin, let us consider when the Sibylline Books were used at Rome. As Dionysius of Halicarnassus reports, the Books were turned to:

when the state is in the grip of party strife or some great misfortune has happened to them in war, or some important prodigies and apparitions have been seen which are difficult of interpretation, as has often happened.<sup>195</sup>

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<sup>194</sup>For instance University of Alberta & Stanford University ( <https://www.ualberta.ca/interdisciplinary-studies/science-technology-and-society> <https://sts.stanford.edu/about/about-us>). Journals include *Bulletin of Science, Technology & Society*; *Engaging Science, Technology, and Society*; *Science, Technology & Society: An International Journal Devoted to the Developing World*. Vamos 2015, vii.

<sup>195</sup>Dion. Hal. 4.62.5. Trans. Cary.

The majority of recorded instances of Sibylline consultation are found in Livy. On all but two occasions, Livy associates Sibylline consultation with prodigies. In 390 BCE following the sack by the Gauls, and in 212 BCE in conjunction with prophecies by Marcius, the Sibylline Books were consulted without any connection to prodigies.<sup>196</sup> Based on Dionysius' description and the recorded instances of Sibylline consultation, it is clear that the use of the Books was somewhat extraordinary. Orlin suggests that the Sibylline Books were seen as the direct written word of the gods and thus less reliant on potentially fallible interpretation than other means of communication such as haruspicy.<sup>197</sup> Therefore, they were the ideal tool for improving relations with the gods when confidence in the good standing of these relations was most shaken.<sup>198</sup> Orlin further develops the concept of the Sibylline Books as a kind of emergency measure called upon only in extremis. He suggests that the senate could choose not to consult the Books as a means of quelling public panic thus signaling to the masses that the situation was insufficiently dire to warrant their use.<sup>199</sup> It appears that consultation of the Sibylline Books was only undertaken in reaction to seemingly significant occurrences in the Roman world. In this way, consultation of the Sibylline Books seems to differ from many other forms of Roman divination. For instance, in *De Divinatione*, Cicero states that from at least the time of the kings: "no public business was ever transacted at home or at war without first taking the auspices" (*nihil publice sine auspiciis nec domi nec militiae gerebatur*). It should be noted that here Quintus is speaking of the past; elsewhere Cicero describes augury in his own time, as in major decline and often absent from the

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<sup>196</sup>Livy 5.50; 25.12.

<sup>197</sup>Orlin 1997, 90.

<sup>198</sup>Orlin 1997, 90.

<sup>199</sup>Orlin 1997, 91.

process of important undertakings.<sup>200</sup> Despite the uncertainty regarding the regularity of augury in the late republic it is clear that taking of auspices was conceived as a regular element of civil practice rather than an extraordinary measure. Other examples of more daily types of divination include dice and lot oracles. Dice oracles consisted of numbered responses displayed for instance on an engraved stone pillar. Those who wished to consult the oracle, rolled numbered dice to determine which of the responses applied to their situation. Though the exact mechanism is obscure and likely varied, lot oracles consisted of random selection of an inscribed lot (*sortes*) to obtain an oracular response. These types of oracles could be consulted on matters private or public. Mitchell convincingly argues that the public position of one such dice oracle in the forum of Cremna indicates that it was used on a regular basis for public consultations.<sup>201</sup> Closer to Rome, *sortes* have been discovered inscribed in Latin, Etruscan and Oscan.<sup>202</sup> In *De Divinatione*, Cicero claims that in his time no magistrate or man of consequence takes this type of oracle seriously, but as Santangelo astutely asserts, Cicero's rejection is so vehement as to raise questions of its veracity and there is no evidence in the archeological record of decline.<sup>203</sup> Divination was integrated into daily life at Rome and its use was certainly not an indication of emergency.

There are some indications that use of the Sibylline Books may have been less exceptional than perhaps initial consideration of Dionysius' statement might suggest. First, it is

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<sup>200</sup>Cic. *D.N.* 2.9-10. Cf. Rüpke 2005, 222. Further on the theme of decline: Engels 2009. For caution against over emphasis of the image of decline: Santangelo 2011, 72-3.

<sup>201</sup>Mitchell 1995, 65-7. Cremna is a Greek speaking town a long distance from Rome; however, Latin dedication inscriptions to the emperor Hadrian were found in its forum commissioned by the Fabricus-Vibius family. This indicates that to some extent Roman traditions were being kept in this veterans' colony.

<sup>202</sup>Cic. *De Div.* 2.86-87. Santangelo 2013, 75.

<sup>203</sup>Santangelo 2013, 73-5.

important to note the Dionysius records that it has “often” happened that difficult prodigies were referred to the Books. Moreover, as Orlin highlights, the apparent concentration of consultation around the Second Punic War may be the result of the high survival rate of Livy’s text for that period, rather than an actual increase in use of the Sibylline Books.<sup>204</sup> In the period 218-167 BCE, for which we have the complete text of Livy, there is a fairly regular average of one consultation every two years.<sup>205</sup> This frequency suggests that although it was certainly not a daily activity, consultation of the Sibylline Books was hardly an epoch defining event reserved for only the gravest calamities.

The time of year when consultation is recorded to have taken place also indicates that this practice occurred more regularly than suggested by Dionysius. As noted above, the vast majority of instances of Sibylline consultations are associated with prodigies. In Livy, prodigy expiation usually occurs at the beginning of the year before the consuls depart for their provinces. It has previously been proposed that this placement is not an accurate representation of when expiation took place. Livy’s desire to present a stable, consistent picture of the republic and the striking literary impact of presenting all of a year’s prodigies to the reader at the same time have both

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<sup>204</sup>Orlin 1997, 85

<sup>205</sup>Orlin 1997, 85. Ultimately, it is very difficult to know how accurate this number may be. Though Satterfield convincingly argues that there is no reason to “assume that [Livy] is inventing or manipulating prodigy material” (Satterfield 2012, 86-87) there is no way to be certain if instances of Sibylline consultation have been omitted. MacBain has suggested that while the surviving prodigy lists may be inaccurate in detail, they still paint an accurate general outline of the ebb and flow of prodigy report and expiation. (MacBain 1982, 22-23.) Bearing this in mind, Livy ostensibly states that he is interested in recording prodigies and their expiations to highlight the wisdom and religious conscientiousness of days gone by (Livy. 43.13). Given that consultation of Sibylline Books was deeply rooted in the republican religious system that Livy set out to describe in his history, it seems very unlikely that he would have omitted any instances of consultation in his account. Therefore, while it is difficult to be sure how accurate the once per two years consultation average is it is likely that it errs in the direction of recording more consultations than actually took place rather than fewer.

been suggested as possible motivations to move expiation to the beginning of the year.<sup>206</sup>

However, Satterfield has convincingly argued that expiation largely did take place at the beginning of the year. This not only served to limit the potential manipulation of the system for political gains but was also highly practical since many of the prodigy expiations required the participation of the consuls.<sup>207</sup> I propose that the regimentation highlighted in the previous chapter also suggests that the use of Sibylline consultation was more systematic than previously speculated.<sup>208</sup> The consistent association of the Books with certain types of prodigies such as “showers of stones” means that when such an event took place the senate would be expected to call on the (Quin)decemviri.

The frequency with which the Books were consulted, the fixed time in the year, and the regimentation evident in the expiations recommended by the (Quin)decemviri suggests that use of the Sibylline Books was not an uncommon or unpredictable element of Roman public religion. It is clear that the Sibylline Books were consulted in the face of very serious dangers to Rome that could elicit terror and fear of the ire of the gods<sup>209</sup> including plague, natural disaster and military catastrophe. However, evidence does not suggest that this consultation was an emergency measure only, nor that all prodigies raised the same spirit of frantic crisis.

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<sup>206</sup>See Satterfield 2012, 67-9; Kajanto 1957, 47; Rawson 1971, 159; Frier 1999, 272; Davies 2004, 42-4.

<sup>207</sup>See Satterfield 2012, 86 -87.

<sup>208</sup>On Regimentation see Chapter, Two 33-7.

<sup>209</sup>Satterfield has highlighted that while all prodigies needed to be addressed, not all were considered as manifestations of *ira deum* (although some, especially plagues were interpreted this way.) Less immediately harmful prodigies could be seen as foreshadowing dangers that had yet occurred and could be prevented if the prodigy was properly mitigated. (Satterfield 2015.) These warning prodigies could have been expiated through consultation of the Sibylline Books in an atmosphere of trepidation, but also some degree of calm considered response to a known danger.



Rather, it appears that the use of the Sibylline Books was an integrated part of, not only, the regulated Roman prodigy expiation system, but also Roman public religion in general. While the expiations suggested through consultation of the Sibylline Books were conducted under the direction of the (Quin)decemviri, they were rarely completed by the (Quin)decemviri alone. A wide range of groups including matrons, maidens, and families are explicitly recorded as taking part.<sup>210</sup> Further, Satterfield has astutely noted the close connection between expiation and the consulship. Discussing the events of 197-196 BCE, Livy reports:

Before the praetors set out for the new war ...or the consuls themselves left the city, they were ordered to expiate prodigies that were being reported, as was the custom.

Priusquam aut hi praetores ad bellum prope novum, ... proficiscerentur aut ipsi consules ab urbe moverent, procurare, ut adsolet, prodigia quae nuntiabantur iussi.<sup>211</sup>

Consuls frequently performed expiation before leaving for their provinces in order to secure divine favour and in turn success in subsequent military action.<sup>212</sup> Beyond the initial expiation rites performed by diverse groups, at least eight temples were constructed based on the consultation.<sup>213</sup> In addition, new cults including that of Magna Mater and Asclepius were ushered into Rome under the sponsorship of the Sibylline Books.<sup>214</sup> The ongoing presence of these cults and temples served as a link between the “extraordinary” act of consulting the Sibylline Books and the more routine religious life of the city. In these ways, the Sibylline Books

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<sup>210</sup>For example, Matrons Livy 21.62, households Livy 34.55, maidens Livy 37.3.

<sup>211</sup>Livy 33.26.

<sup>212</sup>Satterfield 2014, 232.

<sup>213</sup>Orlin 1997, 97.

<sup>214</sup>Livy 29.10 & 10.47.

were firmly tied into the larger Roman religious system and interconnected with the most important republican magistracies.

A potential conceptualization of Roman use of Sibylline Books is as a *state sponsored systemized long-term response to potential crisis*. At least some elements of modern science, especially its relationship to policy can be conceptualized in much the same way. Governments invest in science in the hopes of either averting or mitigating disaster for their citizens. While at times of crisis this is more prevalent, it is not absent in the intervals between publicized landmark events. In his farewell address as president to the American Physical Society in 1995, Burton Richter proposed two key assumptions had provided the impetus to invest in science in America since the end of World War Two: science would both improve the lives of citizens and keep them secure in a dangerous world, particularly in the face of their foreign enemies.<sup>215</sup> He further suggested that at least since the time of Galileo, science had met those assumptions remarkably well. Similarly, speaking at the World Summit on the Information Society at CERN, Geneva in 2003, the president of Romania called science “the foundation for the economic and social development of society.”<sup>216</sup> In this role, as safeguard to public wellbeing in matters foreign and domestic, science offers much the same benefits ascribed to the *Pax Deorum* by the Romans. As previously explored, the Sibylline Books were understood to be a key tool in the maintenance (or creation) of the *Pax Deorum*.

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<sup>215</sup>Richter 1995, 43.

<sup>216</sup>Iliescu 2004, 87.

In his address, Richter stressed the need for government investment in science, particularly in long term research with timelines beyond the five to seven year timescale found in private enterprise.<sup>217</sup> Perhaps in this another similarity to Sibylline consultation can be seen. Large scale expiations such as the transfer of Magna Mater in 205 BCE or the 216 BCE burial of Greeks and Gauls could only have been undertaken with the direct support of the state.<sup>218</sup> Nor could the establishment and long-term integration of foreign cults have occurred in the face of state opposition. Both consultation of the Sibylline Books and the modern relation of state and science can be understood as a *state sponsored systemized long-term response to potential crisis*.

Roman perception of consultation of the Sibylline Books will now be considered. It is difficult to ascribe a single Roman opinion to the consultation of the Sibylline Books, considering their extended period of use and the diverse groups affected. As is the case for the majority of Roman religious or even political affairs, very few first-hand statements of opinion regarding perception of the Sibylline Books and their consultation exist. Cicero's treatise on divination which touches on the Sibylline Books may be an exception. In *De Divinatione*, Marcus argues that since the Sibylline Books were identified by the use of acrostics and thus not the work of a seer in a frenzy, they were of questionable validity.<sup>219</sup> The entirety of Marcus' treatment of the Sibylline Books is marked by an overt tone of scepticism. However, it is very important to bear in mind that *De Divinatione* is not a statement of Cicero's personal beliefs.

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<sup>217</sup>Richter 1995, 45.

<sup>218</sup>Livy 29.10; 22.57.

<sup>219</sup>Cic. *De. Div* 2.112. Throughout this thesis, the consultation of Sibylline Books rather than the generation of the material contained within the Books is the focus. However; it is interesting to note that if the presence of an acrostic does rule out *furor*, even the creation of the contents of the Books may have been more regimented than previously held.

Rather, as both Schofield and Beard have underlined, it is a rhetorical and philosophical text in which Cicero argues both for and against divination to the fullest possible extent.<sup>220</sup> Therefore, Marcus' views do not necessarily represent Cicero's own views. Beard further argues that interpreting Quintus' pro divination stance as naïve gullibility, in contrast with the older more distinguished Marcus' well-founded scepticism, is misplaced. Rather, she suggests that by choosing two brothers to argue for and against divination, Cicero intended to present two equal interlocutors to prevent the greater eminence of one lending undue credibility to either case.<sup>221</sup> In fact, in *De Legibus*, Cicero's Marcus states that divination exists and that there is ample evidence from both Rome and abroad that it is effective.<sup>222</sup> Despite this, it seems unlikely that Cicero chose to argue against divination under his own name in *De Divinatione* purely by chance. Rather, it suggests that to some extent Cicero was sceptical of divination.

Cicero's letter to Spinther, concerning the senate's refusal to deploy military force to restore Ptolemy Auletes due to a Sibylline oracle exudes disgust.<sup>223</sup> In 57/6 BCE Ptolemy XII Auletes was seeking Roman assistance in regaining the throne of Egypt following a revolt. The (Quin)decemviri discovered an oracle in the Sibylline Books suggesting that Rome should assist a king of Egypt when asked but not by means of military might. The tribune, C. Porcius Cato,

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<sup>220</sup>Schofield 1986; Beard 1986. For more on *De Divinatione* in general Pease 1923; Wardle 2006; Schultz 2014.

<sup>221</sup>Beard 1986, 44-5.

<sup>222</sup>Cic. *De Leg.* 2.32-33. It should also be noted that *De Legibus* is not intended as a confession of Cicero's private opinions, but as a text exploring the ideal application of laws. *De Divinatione* was likely published between Mid-April and Mid-May 44 BCE (although much of the text was likely composed before Caesar's death). (Wardle 2006, 37-43.) *De Legibus* seems to have in large part been written earlier beginning in around 54 BCE although, it is not clear if it was ever published during Cicero's lifetime. (Dyck 2004, 5-7; Walker Keyes 2014, 2-3.) Therefore, it is possible that Cicero's view of divination had evolved between the writing of the two texts. Cicero also uses the power of Sibylline Books as a source of authority as a rhetorical device in his speech against Verres delivered in 70 BCE, Cic. *Ver.* 2.4.108.

<sup>223</sup>Cic. *Fam.* 1.1.

convinced the Romans to take no further action to help Ptolemy. However, Cato fearing that the oracle would be suppressed, and an army sent into Egypt, shockingly, had a Latin version of the oracle read out without the consent of the senate.<sup>224</sup> This episode was an anomaly, as the prophecy was illicitly presented to the public. Therefore, it is not possible to determine conclusively what Cicero thought about the use of the Sibylline Books under normal operating procedure. All that can be definitively concluded from his letter to Spinther is that on this particular occasion he considered the prophecy to be trumped up (*calumnia*). Cicero appears to have felt that the senate was not acting on true *religio* but had contrived a convenient reason to deny Pompey another command.

During his discussion of the Sibylline Books in *De Divinatione*, Cicero states that recently a rumour had circulated that it was necessary to name a king in order to ensure the safety of Rome.<sup>225</sup> Behind this passing reference lies a significant episode of the late republic. Reported by Suetonius, Plutarch, and Cassius Dio, it was rumored that L. Aurelius Cotta, one of the Quindecimviri, was going to announce in the senate that, according to the Sibylline Books, Rome required a king to defeat the Parthians and that Caesar was the ideal candidate.<sup>226</sup> Dio and Plutarch both emphasise that this rumour was actively spread by Caesar's agents. This active dissemination demonstrates the powerful persuasive nature attributed to the Sibylline Books. According to Suetonius, the conspirators moved forward with their plan to assassinate Caesar in order to avoid being forced to agree to his appointment as king under the weight of Sibylline

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<sup>224</sup>Dio 39.15-16

<sup>225</sup>Cic. *De Div.* 2.110.

<sup>226</sup>Suet. *Iul.* 79.7; Plut. *Caes.* 60.1; Dio 44.15.3; Santangelo 2013, 147.

authority.<sup>227</sup> Bearing in mind not only his ardent support of the republic and the tumultuous repercussions of Caesar's death, there is little wonder that Cicero concludes his discussion of the Sibylline Books: "let us plead with the priests to bring forth from those books anything rather than a king" (*cum antistitibus agamus, ut quidvis potius ex illis libris quam regem proferant*).<sup>228</sup> Cicero's adamant desire to prevent the public from believing that the Sibylline Books foretold a king at Rome, and the extremes to which the conspirators went to prevent the announcement of such a prophecy, highlight the earnestness with which information from the Books was received. Quite simply Cicero states, "we Romans venerate the verses of the Sybil" (*Sibyllae versus observamus*).<sup>229</sup>

Describing events in the early stages of the Second Punic War, Livy provides further potential insight into the general perception of the Sibylline Books at Rome:

The making of these vows and expiations, as prescribed by the Sibylline Books, went far to alleviate men's anxiety concerning their relations with the gods.

haec procurata votaue ex libris Sibyllinis magna ex parte levaverant religione animos.<sup>230</sup>

This passage suggests, at least in Livy's estimation, that the Roman populace saw the consultation of the Sibylline Books as a valuable and effective means of propitiating the gods assuring Rome's wellbeing. Evidence suggests that respect for Sibylline consultation was not confined to those of lesser social status. The ideal statesman, according to Cicero as summarised by Linderski, upheld the laws and institutions of Rome, including state sponsored divination,

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<sup>227</sup>Suet. *Iul.* 80.1.

<sup>228</sup>Cic. *De Div.* 2.112. Trans. Falconer.

<sup>229</sup>Cic. *De Div.* 2.110. Trans. Falconer.

<sup>230</sup>Livy 21.62 Trans. Foster.

since they were in close accord with the laws of nature.<sup>231</sup> Although certainly not considered an ideal statesman by Cicero, P. Cornelius Lentulus Sura presents an example of a member of the senatorial class placing credence in Sibylline oracles. During Catiline's conspiracy, Lentulus used Sibylline prophecy as a means of attracting others to the revolt. Based on Plutarch's account, Lentulus was not callously manipulating others, he personally took these oracles seriously.<sup>232</sup> In Bowden's in-depth exploration of the relationship between the oracle at Delphi and Classical Athens, he persuasively argues that even at the height of its democracy Athens consulted oracles with genuine respect. Credence was given to oracular responses on such critical concerns as agriculture, war, and the defense of the city.<sup>233</sup> While there are of course important differences between fifth to fourth century Athens and republican Rome, the sincerity with which elite Athenians treated divination suggests the Romans of senatorial class may have held similar views on the use of the Sibylline Books.

The political power of the Sibylline Books at Rome is illustrated by Cicero in a subsequent letter to Spinther also concerning the appointment of a general to reinstate Ptolemy XII Auletes in Egypt. Cicero states that the "religious question" meaning the Sibylline oracle, "was past being opposed" (*cui quidem rei iam obsisti non poterat*).<sup>234</sup> In this complex case, Cicero himself strongly implied that the senate manipulated the system for their own political aims. However, the effectiveness of this tactic highlights the respectability of consultation of the

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<sup>231</sup>Linderski 1995, 26-7.

<sup>232</sup>Cic. *Cat.* 3.9; Plut. *Cic.* 17.5. It is important to note that in Plutarch's version, Lentulus' gullibility is a matter of derision. It is not clear if Lentulus claimed that the oracles were part of the official collection of oracles in the Sibylline Books. See Santangelo 2013, 144.

<sup>233</sup>Bowden 2005, esp. 63-4; 159.

<sup>234</sup>Cic. *Fam.* 1.2

Sibylline Books in general. Perhaps further evidence of the respectability and even independence of Sibylline oracles in the Roman mind can be found in the longevity and multifaceted nature of their influence. In the fourth century CE, the emperor Constantine chose to include Sibylline oracles in his “Oration to the Saints” as a key argument in favour of his defense of Christianity.<sup>235</sup> This inclusion underscores the long duration of the importance of Sibylline oracles at Rome. It also highlights the high degree to which these statements continued to be seen as authoritative and persuasive. In summary, it appears that despite the possible scepticism by certain factions of the elite, throughout their use, consultation of the Sibylline Books was generally regarded as a reliable and valuable tool to understand the divine and safeguard Rome.

Modern perceptions of science bear a striking resemblance to Roman conceptions of the Sibylline Books. In her exploration of gender, science, and technology, Kitetu claims that science has become the “primary mode of interpreting human existence world wide.”<sup>236</sup> As such, science is often, and in a wide range of settings, hailed as a sign of credibility and legitimacy. During a study conducted by Turnhout et al. at Wageningen University and Research Centre (WUR) in the Netherlands, which claims to be a leader in connecting science and society, members of WUR reported that being perceived as part of the scientific community was important to establish authority and credibility with external partners.<sup>237</sup> In a rather different

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<sup>235</sup>Constantine, “Oration to the Saints”, 18.7-9. Note that this event occurs much later than the majority of other recorded Sibylline consultations; this oracle is likely not a part of the official Sibylline Books and does not match any of the oracles in the exiting corpus. For more on this oration and Sibylline oracles generally Parke, 1988; Edwards 1999.

<sup>236</sup>Kitetu 2008, 13.

<sup>237</sup>Though this was not necessarily true of all respondents, some felt that over emphasising their connection to science created too much distance between themselves and potential partners. However, I suggest that this perceived



context, writing in the controversial fringe science journal, *Journal of Scientific Exploration*, Bauer has argued that “science is almost universally regarded as the ultimate intellectual authority.”<sup>238</sup> Although Bauer and Turnhout are addressing very different audiences (those interested in science beyond the main stream in one case and those considering the confluence of policy and science in the other), both highlight the ability of science to lend credibility and engender respect in the community at large.

Perhaps the most compelling testament to science’s persuasive power is the frequency with which it is simultaneously used by opposing parties as a source for public legitimacy. Navarro cogently presents early examples of this phenomenon. In his exploration of naturalists and theists in the nineteenth and early twentieth centuries, he demonstrates that both strove to be perceived as on the side of science, considering it a necessity for public validation.<sup>239</sup> In fact, the force of science is so compelling, that beginning in the 1950’s, the tobacco industry’s campaign to maintain a positive public image was centered on the principal that the only way to “fight science was *with science*”.<sup>240</sup> Perhaps the contemporary issue where the subject of science as a mark of authority is foremost in the public mind is climate change. This is a hugely involved topic that extends well outside the scope of this discussion. However, for the purposes of this thesis, the key takeaway is that both mainstream and peripheral groups claim that science either

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distance only serves to underline the authoritative image of science held by the general public. Turnhout et al. 2013, 357; 359.

<sup>238</sup>Bauer 2014, 96.

<sup>239</sup>Navarro 2017, 187.

<sup>240</sup>Michaels 2008, 3-10.

supports their views or at least does not support the views of their opponents.<sup>241</sup> The above examples may seem eclectic and far flung. However, their wide variance supports the ubiquity of the perception of science as a stamp of legitimacy and a source of public authority. Cases in which multiple groups claim credibility via science recall the Emperor Constantine's use of pagan Sibylline oracles to support Christianity. It is once again possible to see a connection between Sibylline Books and science, as both serve to lend credibility in the eyes of the public.

By considering the roles of objectivity and judgment in science it is possible to continue to develop an understanding of the modern perception of science. The general public may often consider science fundamentally objective without room for personal judgment. As Van Bendegem points out in "It Takes Two to Do Science", there is a tendency to see scientists as largely equal or at least as interchangeable modules.<sup>242</sup> Interestingly, this modularity parallels the picture of Roman republican generals painted by Rosenstein.<sup>243</sup> However, as Van Bendegem is quick to point out, this is not an accurate representation of how science operates in society. In one of the earliest explorations of the role of scientists in science, *Personal Knowledge*, Polanyi (both a philosopher of science and a professional chemist), stresses the importance of judgment and expertise in scientific endeavour. A key piece of evidence presented for this position is the large amount of energy spent by students, not only of medicine, but also of biology and chemistry, learning practical "skills and connoisseurship" from masters.<sup>244</sup> This emphasis on

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<sup>241</sup>There is a vast and growing bibliography on this subject. Overviews include Eggleton 2012; Maslin 2004. With greater focus on the political component of the issue: Howe 2014. Suggesting the intentional manipulation of the reception of the scientific data in order to serve particular agendas: Oreskes et al. 2008; Lahsen 2008; Oreskes & Conway 2010.

<sup>242</sup>Van Bendegem 2009, 200.

<sup>243</sup>Rosenstein 1990. This interpretation is discussed in Chapter Two, 39-40.

<sup>244</sup>Polanyi 1997, 57.

acquisition of practical technique, as Polanyi convincingly argues, underlines the important role personal judgment continues to play in modern science. Polanyi also posits that a significant portion of scientific knowledge is unarticulated. Although it may be possible to write down scientific findings or methods, only a portion of the scientist's knowledge is actually recorded there. A portion, perhaps a very significant portion, of the information is excluded. Rather, he contends that scientists depend on a "conception of a complex ineffable subject matter with which we are familiar" and "when presented with a formulation of scientific knowledge automatically supplements it by [their] tacit knowledge of what science really is, and thus makes the formulation ring true."<sup>245</sup> In essence, this means that each scientist brings a substantial amount of personal judgment to their practice. While Polanyi's *Personal Knowledge* was far from universally accepted, particularly at the time of its publication, the importance of "tacit information" and science as a social enterprise are highly convincing and were taken up by Kuhn in his landmark *The Structure of Scientific Revolutions*.<sup>246</sup> Kuhn has successfully argued that an essential component of the system of any given scientific community is an "apparently arbitrary element, compounded of personal and historical accident."<sup>247</sup> Based on Polanyi and Kuhn, it is clear that science is not as free from personal and communal judgment as many assume and that

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<sup>245</sup>Polanyi 1997, 178-9.

<sup>246</sup>It is important to note the Polanyi has been accused at times of "overegging the pudding" and pushing his findings too far particularly in the case of the relation between Einstein's theory of relativity and the Michelson-Morley experiment, see Timmins 2013, 306-317. The extent of Polanyi's emphasis on the lack of objectivity in science has been controversial as have the overt ties to Christianity in the latter sections of *Personal Knowledge*. Nye 2017, 3428-3432. Earle 1959; Toulmin 1959; Macbeath 1960; White 1960; Woodger 1960; Especially unfavorable, Brodbeck 1960.

<sup>247</sup>Kuhn 1970, 4.

objectivity is far from universal in modern science.<sup>248</sup> The role of scientists in science is evocative of the expert role of the (Quin)decemviri in the consultation of the Sibylline books highlighted in Chapter Two.<sup>249</sup>

The functions of divination and modern science overlap. Walsh has shown, in a wide variety of settings, that they both “demonstrate privileged access to knowledge beyond the public ken.”<sup>250</sup> There are societal valuations of what types of sciences are pursued at any point. At a very fundamental level, as outlined by Mormann, in order to receive the support needed to continue, science must promise to meet certain aims, although these aims can be specified to various degrees. For both modern science and consultation of the Sibylline Books the public perception that aims will be defined and met drive societal support for these practices. These promises involve judgment: can these aims be met? Should they be?<sup>251</sup> Polanyi described scientific theories as “prophetic”, since their authors hope they will continue to be proven correct in the future, perhaps in ways undreamed of by the author.<sup>252</sup> In this, an obvious similarity to the way the Sibylline Books were understood to function can be seen. The Books and indeed Sibylline prophecy in general, consisted of applying the correct verse to the situation at hand rather than continual generation of new prophecy. In summary, modern science requires far more judgment than generally acknowledged and shares certain roles and understandings with divination.

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<sup>248</sup>Objectivity has a fascinating history of its own that is captivantly explored in Daston and Galison’s *Objectivity* 2007. This book follows the fluctuating degree to which objectivity was and is held as the primary goal in scientific illustration.

<sup>249</sup>More on the notion of “divinatory jurisprudence” see Scheid 1998, 18; Santangelo 2013, 129.

<sup>250</sup>Walsh 2013, 3.

<sup>251</sup>Mormann 2017, 189-90.

<sup>252</sup>Polanyi 1997, 4.

One further aspect of the consultation of the Sibylline Books to be considered is vector of information and control. An element of Sibylline consultation often emphasised in ancient sources is the control exercised by the senate over access to the Books. Cicero implores in *De Divinatione*:

Therefore, let us keep the Sibyl under lock and key so that in accordance with the ordinances of our forefathers her books may not even be read without permission of the Senate and may be more effective in banishing rather than encouraging superstitious ideas.

*Quam ob rem Sibyllam quidem sepositam et conditam habeamus, ut, id quod proditum est a maioribus, iniussu senatus ne legantur quidem libri valeantque ad deponendas potius quam ad suscipiendas religions.*<sup>253</sup>

Not only was access to the Books limited to the (Quin)decemviri, they were only consulted “by order of the senate”.<sup>254</sup> The vector of information was very strictly controlled, only the senate could approach the (Quin)decemviri to initiate the consultation process. As previously noted in this chapter, an important contravention of this careful control of information occurred in 56 BCE, when Cato rushed the publication of a Latin version of a Sibylline versus seemingly relating to the Ptolemy XII Auletes affair.<sup>255</sup> This public presentation of an oracle from the Sibylline Books without express permission of the senate was illegal.<sup>256</sup> There is no definitive evidence that Cato was himself a Quindecemvir, raising questions of how he learned of the

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<sup>253</sup>Cic. *De Div.* 2.112. Trans. Falconer.

<sup>254</sup>Dion. Hal. 4.62.5. Trans. Cary.

<sup>255</sup>This incident is outlined earlier in this chapter, 57; 59-60.

<sup>256</sup>Although, as Satterfield highlights, he does not seem to have been punished for doing so (Satterfield 2011, 117.)

prophecy at all.<sup>257</sup> Sharing a Latin version of the oracle rather than simply the recommended expiation was certainly in direct violation of the accepted norms. With this action, Cato disrupted the careful vector of information flow, presenting the oracle directly to the people without the mitigation of the senate.

The relation of the senate and the (Quin)decemviri was far from an open dialogue. Moreover, once the (Quin)decemviri returned their verdict on a requisite expiation the senate needed to approve the action. Sources indicate that generally the senate accepted the advice of the (Quin)decemviri; however, this is not universally the case. Written in the late first century CE, Frontinus' treatise on the water supply of Rome, reports that in 143 BCE:

At that time the Decemvirs, on consulting the Sibylline Books for another purpose, are said to have discovered that it was not right for the Marcian water, or rather the Anio (for tradition more regularly mentions this) to be brought to the Capitol. The matter is said to have been debated in the senate, in the consulship of Appius Claudius and Quintus Caecilius, Marcus Lepidus acting as spokesman for the Board of Decemvirs; and then three years later the matter is said to have been brought up again by Lucius Lentulus, in the consulship of Gaius Laelius and Quintus Servilius, but on both occasions the influence of Marcius Rex carried the day; and thus the water was brought to the Capitol.

Eo tempore decemviri, dum aliis ex causis libros Sibyllinos inspiciunt, invenisse dicuntur, non esse fas aquam Marciam seu potius Anionem — de hoc enim constantius traditur in Capitolium perducere, deque ea re in senatu M. Lepido pro collegio verba faciente actum Appio Claudio Q. Caecilio consulibus, eandemque post annum tertium

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<sup>257</sup>Though his relation Marcus Porcius Cato Uticensis (the younger) was a Quindecemvir. (Plut. *Cat Min.* 4.1; Rüpke 2008, no. 2808 page 853-4 and 126.

a Lucio Lentulo retractatam C. Laelio Q. Servilio consulibus, sed utroque tempore vicisse gratiam Marci Regis: atque ita in Capitolium esse aquam perductam.<sup>258</sup>

From this case, it is clear that the senate was under no obligation to heed the advice of the (Quin)decemviri. Orlin has speculated that perhaps the fact the Books were being consulted “for another purpose” (thus breaking the vectored flow of information outlined above) made it easier for the senate to reject the recommendation.<sup>259</sup> Regardless of the reason, or indeed reasons the advice was rejected, the completion of the Aqua Marcia is a strong indication that the senate controlled the Sibylline Books rather than being controlled by them.

In modern society, there is a tendency to perceive scientists as detached from society at large and to consider this separation beneficial in providing impartial information to guide policy decisions. However, as Kitetu presents, in modern society a “symbiotic” relationship exists between government, corporations, and science.<sup>260</sup> One aspect of this close relationship is that rather than being a truly external force, scientific experts are often stakeholders in the issues on which governments seek their advice.<sup>261</sup> In this close relationship, it is possible to detect a certain similarity to the relation between the (Quin)decemviri and the senate. The (Quin)decemviri, as with the other major priesthoods, were selected from the same prestigious families who held magistracies and composed the senate. However, the similarity between the concept of scientists as stakeholders and the connection between the senate and the (Quin)decemviri must not be over

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<sup>258</sup>Front. *De Aqua*. 7. Trans. Bennett & McElwain. The lines “or rather the Anio” have raised questions over exactly which aqueduct the Decemviri objected to, particularly since the portion of Livy that deals with this episode is lost and the Oxyrhynchus Epitome is damaged. For more on this see Rodgers 1982.

<sup>259</sup>Orlin 1997, 84.

<sup>260</sup>Kitetu 2008, 13.

<sup>261</sup>Funtowicz 2006, 138-9.

stated. In modern science, though it is likely that experts will also be stakeholders, they are likely drawn from a far wider range of society than the (Quin)decemviri. Moreover, many of the (Quin)decemviri (perhaps the majority) were concurrently members of the senate, a situation unparalleled in modern science.

The general public's perception of the relation between policy makers and science is multifaceted in contemporary society. Based on research conducted at the Joint Research Center of the European Commission, Funtowicz has proposed that the initial theoretical understanding of the interface between science and policy makers is truth speaks to power.<sup>262</sup> That is that science will be able to find the absolute truth and present this information to policy makers who will in turn use their power to act on this information. However, this model does not readily conform to real world conditions. Therefore, he proposes three alternative models of this relationship: *Framing*, *Policy Demarcation*, and *Extended Participation*.<sup>263</sup> The *Framing* model stresses that before science can be brought to bear on a policy issue, the issue must first be defined through debate. This process must not only establish the scope of the question, but also determine which disciplines of science should be called upon. The *Policy Demarcation* model is defined by the perception that although information presented to policy makers is framed in science terms, it is designed to forward a specific agenda. In this model, there are strong fears of abuse of the potential power of science. The *Extended Participation* model encompasses the idea that science will be only one of several kinds of information brought to policy makers who will then make decisions based on a wide variety of inputs. Of course, these models are not mutually

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<sup>262</sup>Funtowicz 2006, 139.

<sup>263</sup>Funtowicz 2006, 139-41.



exclusive and in practice they often coexist.<sup>264</sup> It appears that these three models can equally be applied to consultation of the Sibylline Books. *Framing* is seen in the choices of which prodigies to accept and which method to use to expiate them (for instance referral to the Sibylline Books, Pontiffs or Haruspices<sup>265</sup>). *Policy Demarcation* can be found in Cicero's disgust at the situation in 56 BCE and his concern regarding the possibility of the Books calling for the installation of a king. Indeed, Santangelo argues that based on Cicero's report, Cotta did not forge an oracle, but simply presented a self-serving interpretation of a genuine one.<sup>266</sup> The *Extended Participation* model is seen in the construction of the Aqua Marcia despite the disapprobation of the (Quin)decemviri. As above, according to Frontinus, the senate debated the matter but based on the influence of Marcius Rex decided to proceed with the aqueduct.<sup>267</sup> It is possible to see examples of all three models of interaction between science and policy makers in the interactions of the senate and the Sibylline Books. However, there is less restriction on flow of information in the modern relationship, as the initial theoretical truth to power model for the Sibylline Books is more nuanced. In the case of the Sibylline Books an order from the senate initiated the dialogue, rather than the independent desire of the (Quin)decemviri to explain the will of the gods. Contrastingly, in many modern societies this relationship is altered to allow scientists to initiate dialog with policy makers.

The final area to explore is access to and control of science. Kitetu has highlighted that scientific language differs from language used in daily life. This barrier restricts science to an

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<sup>264</sup>Funtowicz 2006, 141.

<sup>265</sup>For overview of Sibylline consultation Introduction, 2-3.

<sup>266</sup>Cic. *De Div.*, 2.112. And Santangelo 2013, 147. This incident is also discussed in this chapter 57-8.

<sup>267</sup>Front. *De Aqua.* 7.

elite domain<sup>268</sup> a characteristic the Sibylline Books also demonstrate. Written in Greek hexameter, they did not reflect regular Roman communication, restricting their use to those sufficiently educated to read them.<sup>269</sup> Another aspect of control is the arbitration of what should be considered science. Coot has argued that: “wherever we encounter the deployment of the label “pseudoscience” we are encountering a process of conserving social interests.”<sup>270</sup> Of crucial importance in this statement, is the suggestion that what should be considered science can be determined by social factors.<sup>271</sup> This intentional curation of what ought to be considered science is evocative of two well known events in the history of the Sibylline Books. In 83 BCE the temple of Jupiter on the Capitoline Hill was destroyed by fire and the Sibylline Books housed there were lost. Special envoys were dispatched throughout Italy and as far abroad as Erythrae to retrieve Sibylline oracles. The results of these expeditions were judged for authenticity based on the presence of acrostics and a replacement version of the Sibylline Books was assembled.<sup>272</sup> Later, around 13 BCE Suetonius relates that the Books were moved from the temple of Jupiter by Augustus:

He then caused all prophetic books, both in Latin and Greek, the authors of which were either unknown, or of no great authority, to be brought in; and the whole collection, amounting to upwards of two thousand volumes, he committed to the flames, preserving only the Sibylline oracles; but not even those without a strict examination, to ascertain which were genuine. This being done, he deposited them in two gilt coffers, under the pedestal of the statue of the Palatine Apollo.

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<sup>268</sup>Kitetu 2008, 16.

<sup>269</sup>More on the expertise required of the (Quin)decemviri Chapter Two, 37-43.

<sup>270</sup>Cooter 1980, 237.

<sup>271</sup>This is also highlighted by Bauer 2014, 97.

<sup>272</sup>Dion. Hal. 4.62.3.

quidquid fatidicorum librorum Graeci Latinique generis nullis uel parum idoneis  
auctoribus uulgo ferebatur, supra duo milia contracta undique cremauit ac solos retinuit  
Sibyllinos, hos quoque dilectu habito; condiditque duobus forulis auratis sub Palatini  
Apollinis basi.<sup>273</sup>

These episodes, upon first inspection, seem to deeply differentiate between the Sibylline Books, which can be directly controlled by outside authorities, and science, often considered independent. However, the treatment of the term pseudoscience by society as a tool in actively shaping what will be considered mainstream, suggests that the divide is perhaps not so great.

In conclusion, the consultation of the Sibylline Books was an integrated element of the wider religious and political systems at Rome aimed at assuring the wellbeing of the city. Similarly, desires to improve the lives and safeguard the freedoms of citizens are driving factors behind long-term investment in science. In addition, the Sibylline Books at Rome and science in modern society are both powerful sources of authority and credibility to the extent that opposing sides of an issue may all claim their support. Models illustrating the interface between modern science and policy makers can readily be applied to the senate's use of the Sibylline Books. Ultimately, though there are important differences, Sibylline consultation fulfilled a similar role at Rome to that which science plays in modern society.

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<sup>273</sup>Suet. *Aug.* 31. Trans. Reed & Thomson.

## CONCLUSION

Throughout this thesis I have considered the relationship between consultation of the Sibylline Books at Rome and science in the modern world. To achieve this, the degree to which six characteristics of science (Observation, Record Keeping, Defined Scope, Regimentation, Expertise, and Analysis) can be detected in Roman use of the Books was evaluated. These characteristics were selected to encompass a wide range of scientific undertakings and intentionally drawn from both modern and ancient conceptions of science to facilitate comparison. Considering these six interconnected characteristics of science, it is possible to build a nuanced understanding that elucidates the ways in which consultation of the Sibylline Books parallel modern science and underscore the important differences between the two. The results are summarized below.

*Observation:* As shown in Chapter One, there is a definite connection between consultation of the Sibylline Books and observation of the physical world. However, this connection is not direct, rather it is filtered through reports to the senate then to the (Quin)decemviri. Additional filters were in place based on the reports in Livy, the majority of consultation took place at the beginning of the year regardless of when the prodigy was observed. Moreover, as illustrated by the 193 BCE earthquakes, it was possible for the senate to impose additional filters such as the limitation of one report of an earthquake per day.

*Recordkeeping:* The ample evidence for external record keeping of outcomes of consultation of the Sibylline Books is also explored in Chapter One. The primary surviving example of this external record keeping is found in Livy's sweeping annalistic history *Ab Urbe Condita*. Less can be said for records dealing with the internal activities of the (Quin)decemviri

and the actual steps taken during consultation. Scattered evidence, including textual reference to the commentaries of the (Quin)decemviri and the epitaph of a public servant charged with keeping these commentaries hint at the existence of internal records, but do little to illuminate what such records may have contained. However, the consistency of expiations for specific types of prodigies, in particular “showers of stones”, suggests a regular method, and by extension, standard procedure for consultation which must have been recorded in some way if not necessarily articulated in a written document.

*Defined Scope:* The third portion of Chapter One illustrated that the Sibylline Books were consulted on a wide, but nevertheless delineated range of occasions. As exemplified by the case of eclipses, this scope changed over time. The various ways in which floods of the Tiber were treated highlight the lack of absolute agreement in ancient times on what fell into this scope. Some occurrences appear only to be considered within this scope in conjunction with others. Additionally, it should be noted that political factors and attendant circumstances also contributed to the classification of events as within the scope of the Sibylline Books.

*Regimentation:* The method by which the Sibylline Books were consulted remains unknown. Despite this, clear links between expiations and the prodigies they responded to are demonstrated in Chapter Two, highlighting that expiations were not chosen at random. Some such as lightning and sacrifice to Jupiter appear thematic; other connections are more obscure such as Vestal unchastity and human sacrifice. Still other instances appear systematic as is the case of “showers of stones” and *novemdalia*. These diverse correlations and the systematic arrangement of Roman state religion suggest regimentation in the consultation of the Sibylline Books.

*Expertise:* In Chapter Two the limited nature of expertise or aptitude required to join the (Quin)decemviri was examined. Indeed, restrictions on membership such as those laid out by the *Lex Domitia*, could have disbarred perhaps the most promising candidates. However, as appointments were held for life, there is no reason that expertise could not have been developed while in the position. It is important to note that the (Quin)decemviri were perceived by the Romans as uniquely qualified to consult the Sibylline Books implying some type of expertise.

*Analysis:* There is no indication that any clear causal relationships between prodigies, expiation, and *Pax Deorum* were ever established or even championed at Rome. As shown in the final section of Chapter Two, analysis is evident in the consideration of what occurrences should be considered prodigies and referred to the Sibylline Books. As clearly seen in the inclusion of Vestal unchastity as prodigious, the effectiveness of expiation was evaluated, and practices modified based on this analysis.

To some extent each of the six characteristics of science explored in this thesis are found in consultation of the Sibylline Books. As demonstrated in Chapter Three, the role of Sibylline consultation at Rome displays striking similarity to that of science in modern society. Both the Sibylline Books and science are powerful sources of authority and legitimacy. Moreover, Funtowicz's models of policy makers' relation to science can be readily applied to the senate's use of Sibylline Books.<sup>274</sup> However, there are important differences between the Sibylline Books and science that should not be overlooked. Access to the Sibylline Books was carefully controlled in ways that modern science is not. Ultimately, the relationship between the senate

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<sup>274</sup>Funtowicz 2006.

and the (Quin)decemviri was far more closely intertwined than that of scientists and modern governments.

It is certainly not the contention of this thesis that modern science and the consultation of the Sibylline Books are identical. However, by approaching Sibylline consultation through a scientific lens, it is possible to consider how the Books were used without placing modern concepts of religion or politics in the foreground. This study has found a far greater degree of analysis and regimentation in consultation of the Sibylline Books than has typically been understood and rejects the notion that expiations were chosen at random. Further, it highlights the interconnection between consultation of the Sibylline Books and the rest of Roman State Religion, raising questions of the often tacit assumption in modern scholarship that consultation of the Sibylline Books was a disconnected and primarily political activity.

By exploring science and the Sibylline Books in tandem, it is evident that both are important sources of credibility and means of generating knowledge. With this in mind, it becomes easier to reconcile the fact that although it was well known that the outcomes could be manipulated, in the ancient world, divination was both highly esteemed and trusted. Scientific data can also be manipulated to support a variety of positions. Despite this, claims of scientific proof are still amongst the strongest means of carrying an argument today.

The Sibylline Books were a key component in the Roman system for creating and maintaining the *Pax Deorum* and in turn safeguarding the welfare of Rome and its people. Science is often hailed today as the best hope for improved quality of life. These two seemingly disparate systems of knowledge generation ultimately display many similar characteristics and at their core share kindred purpose.

## BIBLIOGRAPHY

- Aldrete, Gregory S. *Floods of the Tiber in Ancient Rome*. Baltimore: John Hopkins University Press, 2007.
- Annus, Amar. *Divination and Interpretation of Signs in the Ancient World*. Chicago: Oriental Institute of the University of Chicago, 2010.
- Arena, Valentina. "Popular sovereignty in the late Roman Republic: Cicero and the Will of the People." In *Popular Sovereignty in Historical Perspective*, eds. Richard Bourke and Quentin Skinner. Cambridge: Cambridge University Press, 2016, 73-95.
- Bauer, Henry. "Anomalistics, Pseudo-science, Junk Science, Denialism: Corollaries of the Role of Science in Society." *Journal of Scientific Exploration* 28.1 (2014): 95-111.
- Beard, M. "Cicero and Divination: The Formation of a Latin Discourse." *Journal of Roman Studies* 76 (1986): 33-46.
- Beard, M. "Documenting Roman Religion." In *La mémoire perdue. Recherches sur l'administration romaine*, ed. Claude Moatti, Rome: Ecole française de Rome, 1998, 74-101.
- Beard, M. et al. *Religions of Rome*. Cambridge: Cambridge University Press, 1998.
- Bird, Alexander. "The Historical Turn in the Philosophy of Science." In *Routledge Companion to Philosophy of Science*, eds. Stathis Psillos and Martin Curd. Florence: Routledge, 2008, 67-77.
- Bowden, Hugh. *Classical Athens and the Delphic Oracle: Divination and Democracy*. Cambridge: Cambridge University Press, 2005.
- Briscoe, John. *A Commentary on Livy: Books XXXIV-XXXVII*. Oxford: Clarendon Press, 1981.
- Brodbeck, May. "Review of *Personal Knowledge*, by Michael Polanyi." *American Sociological Review* 25 (1960): 582-583.
- Burkert, Walter. "Signs, Commands, and Knowledge: Ancient Divination between Enigma and Epiphany." In *Mantike: Studies in Ancient Divination*, eds. Sarah Iles Johnston & Peter T. Struck, Leiden: Brill, 2005, 29-50.



- Chang, Hasok and Nancy Cartwright. "Measurement." In *Routledge Companion to Philosophy of Science*, eds. Stathis Psillos and Martin Curd. Florence: Routledge, 2008, 367-75.
- Contessa, Gabriele. "Scientific Models and Representation." In *Continuum Companion to the Philosophy of Science*, eds Steven French and Juha Saatsi. New York: Bloomsbury Publishing, 2011, 120-37.
- Cooter, Roger. "Deploying Pseudo Science: Then and Now." In *Science, Pseudo-Science and Society*, eds. Marsha Hanen, Margaret Osler, and Robert Weyant. Waterloo: Wilfrid Laurier University Press, 1980.
- Cornell, Tim. "Some observations on the « crimen incesti »." In *Le Délit religieux dans la cité antique. Actes de la table ronde de Rome (6-7 avril 1978)*, 27-37. Publications de l'École française de Rome, 1981.
- Cornell, Tim. *The Beginnings of Rome: Italy and Rome from the Bronze Age to the Punic Wars (c.1000-264 BC)*. London: Routledge, 1995.
- Cornwell, Hannah. *Pax and the Politics of Peace: Republic to Principate*. Oxford: Oxford University Press, 2017.
- Daempfle, Peter. *Good Science, Bad Science, Pseudoscience, and Just Plain Bunk: How to Tell the Difference*. Lanham: Rowman & Littlefield Publishers, Inc., 2013.
- Daston, Lorraine and Peter Galison. *Objectivity*. Brooklyn: Zone Books, 2007.
- Davies, Jason P. *Rome's Religious History: Livy, Tacitus and Ammianus on their Gods*. Cambridge: Cambridge University Press, 2004.
- Delnero, Paul. "Divination and Religion as a Cultural System." In *Divination as Science: A Workshop Conducted During the 60<sup>th</sup> Rencontre Assyriologique Internationale, Warsaw, 2014*, ed. Jeanette C. Fincke. University Park: Pennsylvania State University Press, 2016, 146-165.
- Dixon, Thomas. *Science and Religion: A Very Short Introduction*. Oxford: Oxford University Press, 2008.
- Doppelt, Gerald. "Values in Science." In *Routledge Companion to Philosophy of Science*, eds. Stathis Psillos and Martin Curd. Florence: Routledge, 2008, 302-14.

- Driediger-Murphy, Lindsay G. *Roman Republican Augury: Freedom and Control*. Oxford: Oxford University Press, 2019.
- Dyck, Andrew R. *A Commentary on Cicero, De Legibus*. Ann Arbor: University of Michigan Press, 2004.
- Earle, William. "Review of *Personal Knowledge*, by Michael Polanyi." *Science* 129 (1959): 831-832.
- Ede, Andrew, and Lesley B. Cormack. *A History of Science in Society: From Philosophy to Utility*. North York: University of Toronto Press, 2017.
- Edwards, Mark. "The Constantinian Circle and the *Oration to the Saints*." In *Apologetics in the Roman Empire*, eds. Mark Edwards et al. Oxford: Oxford University Press, 1999, 251-277.
- Eggleton, Tony. *A Short Introduction to Climate Change*. Cambridge: Cambridge University Press, 2012.
- Engels, David. "Déterminisme historique et perceptions de déchéance sous la république tardive et le principat." *Latomus* 68.4 (2009): 859-894.
- Fincke, Jeanette C. ed. *Divination as Science: A Workshop Conducted During the 60<sup>th</sup> Rencontre Assyriologique Internationale, Warsaw, 2014*. University Park: Pennsylvania State University Press, 2016.
- Frahm, Eckart. "Reading the Tablet, the Exta, and the Body: The Hermeneutics of Cuneiform Signs in Babylonian and Assyrian Text Commentaries and Divinatory Texts." In *Divination and Interpretation of Signs in the Ancient World*, ed. Amar Annus. Chicago: Oriental Institute of the University of Chicago, 2010, 93-142.
- Franklin, Gene F. et al. *Feedback Control of Dynamic Systems*. 6<sup>th</sup> ed. Upper Saddle River: Pearson, 2009.
- Frede, Dorothea. "Stoic Determinism." In *The Cambridge Companion to the Stoics*, ed. Brad Inwood. Cambridge: Cambridge University Press, 2003, 179-205.
- Funtowicz, Silvio. "Why Knowledge Assessment?" *Interfaces between Science and Society* 1.48 (2006): 137-145.

- Hankinson, R. J. "Stoic Epistemology." In *The Cambridge Companion to the Stoics*, ed. Brad Inwood, 59-84. Cambridge: Cambridge University Press, 2003.
- Hankinson, R. J. "Stoicism, Science and Divination." *Apeiron* 21.2 (1988): 123-160.
- Howe, Joshua P. *Behind the Curve: Science and the Politics of Global Warming*. Seattle: University of Washington Press, 2014.
- Iliescu, Ion. "Address to the Visionary Panel Discussion: Science and Governance." In *The Role of Science in the Information Society: Conference Proceedings, 8-9 December 2003*. Geneva: CERN, 2004, 87-89.
- Johnston, Sean F. *History of Science: a beginner's guide*. Oxford: Oneworld Publications, 2012.
- Justi, Rosaria, and John Gilbert. "History and Philosophy of Science through Models: Some Challenges in the Case of 'the Atom'." *International Journal of Science Education* 22.9 (2000): 993-1009.
- Kajanto, Iiro. *God and Fate in Livy*. Turku: Yurun Yliopiston Kustantama, 1957.
- Kitetu, Wawasi. *Gender, Science and Technology: Perspectives from Africa*. Dakar: CODESRIA (Conseil Pour Le Developpement De La Recherche Economique Et Sociale En Afrique), 2008.
- Koch, Ulla Susanne. "Bias in Observations of Natural Phenomena Made for Divinatory Purposes." In *Divination as Science: A Workshop Conducted During the 60<sup>th</sup> Rencontre Assyriologique Internationale, Warsaw, 2014*, ed. Jeanette C. Fincke. University Park: Pennsylvania State University Press, 2016, 11-46.
- Kuhn, Thomas S. *The Structure of Scientific Revolutions*. 2nd Ed., Enl. ed. Chicago: University of Chicago Press, 1970.
- Kwa, Chunglin, and David Mackay. *Styles of knowing: a new history of science from ancient times to the present*. Pittsburg: University of Pittsburgh Press, 2011.
- Lahsen, Myanna. "Experiences of Modernity in the Greenhouse: A Cultural Analysis of a Physicist "trio" Supporting the Backlash against Global Warming." *Global Environmental Change* 18.1 (2008): 204-219.
- Lehoux, D. *What did the Romans Know?* University of Chicago Press: 2012.

- Levene, D.S. *Religion in Livy*. Leiden: Brill, 1993.
- Liberman, Gauthier. "Les Documents Sacerdotaux du Collège *Sacris Faciundis*." In *La mémoire perdue. Recherches sur l'administration romaine*, ed. Claude Moatti, Rome: Ecole française de Rome, 1998, 65-74.
- Liebeschuetz, J. H. W. G. *Continuity and Change in Roman Religion*. Oxford: Clarendon Press, 1979.
- Linderski, J. "Cicero and Roman Divination." In *Roman Questions: Selected Papers 1958-1993*. Stuttgart: Steiner, 1995, 458-484.
- Lloyd, G. E. R. *Methods and Problems in Greek Science*. Cambridge: Cambridge University Press, 1991.
- Loane, Helen A. "The Sortes Vergilianae." *The Classical Weekly* 21, no. 24 (1928): 185-189.
- MacBain, Bruce. *Prodigy and Expiation: A Study in Religion and Politics in Republican Rome*. Brussels: Latomus, 1982.
- Macbeath, A. "Review of *Personal Knowledge*, by Michael Polanyi." *Man* 60 (1960): 62.
- Maslin, Mark. *Global Warming: A Very Short Introduction*. Oxford: Oxford University Press, 2004.
- Mazurek, Tadeusz. "The *decemviri sacris faciundis*: Supplication and Prediction." In *Augusto Augurio. Rerum Humanarum et Divinarum Commentationes in Honorem Jerzy Linderski*, ed. C.F. Konrad. Stuttgart: Franz Steiner Verlag, 2004, 151-168.
- Michaels, David. *Doubt Is Their Product: How Industry's Assault on Science Threatens Your Health*. Oxford: Oxford University Press, 2008.
- Mitchell, S. *Cremna in Pisidia, an Ancient City in Peace and in War*. London: Duckworth, 1995.
- Morgan, Teresa. *Roman Faith and Christian Faith: Pistis and Fides in the Early Roman Empire and Early Churches*. Oxford: Oxford University Press, 2015.
- Mormann, Thomas. "Scientific Worldviews as Promises of Science and Problems of Philosophy of Science." *Centaurus* 59.3 (2017): 189-203.

- Navarro, Jaume. "Promising Redemption. Science at the Service of Secular and Religious Agendas." *Centaurus* 59.3 (2017): 173-188.
- Noegel, Scott B. "'Sign, Sign, Everywhere a Sign': Script, Power and Interpretation in the Ancient Near East." In *Divination and Interpretation of Signs in the Ancient World*, ed. Amar Annus. Chicago: Oriental Institute of the University of Chicago, 2010, 143-62.
- North, John A. "Family Strategy and Priesthood in the late Republic." In *Parenté et stratégies familiales dans l'Antiquité romaine. Actes de la table ronde des 2-4 octobre 1986 (Paris, Maison des sciences de l'homme)*, 527-543. Rome: École Française de Rome, 1990.
- North, John A. "Lex Domitia Revisited." In *Priests and the State in the Roman World*, eds. James H. Richardson and Federico Santangelo, 39-61. Stuttgart: Franz Steiner Verlag, 2011.
- North, John A. "The Limits of the 'Religious' in the Late Roman Republic." *History of Religions* 53, no. 3 (2014): 225-245.
- Nye, Mary Jo. "Michael Polanyi: Science as Personal Knowledge and Social Practice." *Angewandte Chemie International Edition* 56.13 (2017): 3426-3433.
- Oreskes, Naomi & Erik M. Conway. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. London: Macmillan, 2010.
- Oreskes, Naomi, et al. "From Chicken Little to Dr. Pangloss: William Nierenberg, Global Warming, and the Social Deconstruction of Scientific Knowledge." *Historical Studies in the Natural Sciences* 38.1 (2008): 109-152.
- Orlin, Eric M. *Temples Religion and Politics in the Roman Republic*. Leiden: Brill, 1997.
- Parke, H.W. *Sibyls and Sibylline Prophecy in Classical Antiquity*, ed. B.C. McGing, London: Routledge, 1988.
- Pease, A. S. M. *Tulli Ciceronis De Divinatione Libri Duo*. Urbana: University of Illinois, 1923.
- Pickstone, John V. *Ways of Knowing: A New History of Science, Technology, and Medicine*. Chicago: University of Chicago Press, 2001.
- Polanyi, Michael. *Personal Knowledge towards a Post-critical Philosophy*. Corrected ed. London: Routledge, 1997.

- Polkinghorne, John. "Science and Religion in the Twenty-first Century." In *Christian Thought in the Twenty-first Century: Agenda for the Future*, eds. Douglas H. Shantz, and Tinu Ruparell. Eugene: Cascade, 2012, 109-113.
- Popper, Karl R. *The Logic of Scientific Discovery*, New York: Harper & Row, 1968.
- Portides, Demetris. "Models." In *Routledge Companion to Philosophy of Science*, eds. Stathis Psillos and Martin Curd. Florence: Routledge, 2008, 385-95.
- Psillos, Stathis and Martin Curd. "Introduction." In *Routledge Companion to Philosophy of Science*, eds. Stathis Psillos and Martin Curd. Florence: Routledge, 2008, xix-xxvii.
- Rasmussen, S. William. "Divination as Science." *Analecta romana instituti danici* 34 (2003): 199-217.
- Rawson, Elizabeth. "Prodigy Lists and the Use of the Annales Maximi." *The Classical Quarterly* 21.1 (1971): 158-169.
- Richter, B. "The Role of Science in Our Society." *Physics Today* 48.9 (1995): 43-47.
- Rochberg, Francesca. "'If P, then Q': Form and Reasoning in Babylonian Divination." In *Divination and Interpretation of Signs in the Ancient World*, ed. Amar Annus. Chicago: Oriental Institute of the University of Chicago, 2010, 19-28.
- Rochberg, Francesca. *Before Nature: Cuneiform Knowledge and the History of Science*. Chicago: University of Chicago Press, 2017.
- Rodgers, R. H. "What the Sibyl Said: Frontinus AQ. 7. 5." *The Classical Quarterly* 32.1 (1982): 174-177.
- Rosenstein, Nathan. *Imperatores Victi: Military Defeat and Aristocratic Competition in the Middle and Late Republic*. Berkeley: The University of California Press, 1990.
- Rüpke, Jörg. "Different Colleges – Never Mind?" In *Priests and the State in the Roman World*, Eds. James H. Richardson and Federico Santangelo, 25-38. Stuttgart: Franz Steiner Verlag, 2011.
- Rüpke, Jörg. "Divination et décisions politiques dans la République Romaine." *Cahiers du Centre Gustave Glotz* 16 (2005): 217-233.

- Rüpke, Jörg. *Fasti Sacerdotum: A Prosopography of Pagan, Jewish, and Christian Religious Officials in the City of Rome, 300 BC to AD 499*. Rev. English ed. Oxford: Oxford University Press, 2008.
- Santangelo, Federico. "Pax Deorum and Pontiffs." In *Priests and the State in the Roman World*, eds. James H. Richardson and Federico Santangelo. Stuttgart: Franz Steiner Verlag, 2011, 161-186.
- Santangelo, Federico. *Divination, Prediction and the End of the Roman Republic*. Cambridge: Cambridge University Press, 2013.
- Satterfield, Susan. "Livy and the Timing of Expiation in the Roman Year." *Histos* 6 (2012): 67-90.
- Satterfield, Susan. "Notes on Phlegon's Hermaphrodite Oracle and the Publication of Oracles in Rome." *Rheinisches Museum Für Philologie* 154.1 (2011): 117-24.
- Satterfield, Susan. "The *Pax Deum* and the *Ira Deum*." *The Classical Journal* 110.4 (2015): 431-445.
- Satterfield, Susan. "The Viri Sacris Faciundis and the Consulship." *Classical World* 107.2 (2014): 217-235.
- Savage, Adam *MythBusters*. "Bouncing Bullet." 2012.
- Scheid, John. "Les Livres Sibyllins et les archives des quindécemvirs." In *La mémoire perdue. Recherches sur l'administration romaine*, ed. Claude Moatti, Rome: Ecole française de Rome, 1998, 11-26.
- Scheid, John. "The Priest." In *The Romans*, eds. Andrea Giardina and Lydia G. Cochrane, Chicago: University of Chicago Press, 1993, 55-84.
- Scheid, John. *Religion et piété à Rome*. Paris: La Découverte, 1985.
- Schofield, M. "Cicero for and Against Divination." *Journal of Roman Studies* 76 (1986): 47-65.
- Schultz, Celia E. "The Roman and Ritual Murder." *Journal of the American Academy of Religion* 78.2 (2010): 516-541.
- Schultz, Celia E. *A Commentary on Cicero, De divinatione I*. Michigan classical commentaries. Ann Arbor: University of Michigan Press, 2014.

- Scurlock, JoAnn. "Divination between Religion and Science." In *Divination as Science: A Workshop Conducted During the 60<sup>th</sup> Rencontre Assyriologique Internationale*, Warsaw, 2014, Ed. Jeanette C. Fincke. University Park: Pennsylvania State University Press, 2016, 1-10.
- Taub, Liba. *Science Writing in Greco-Roman Antiquity*. Cambridge: Cambridge University Press, 2017.
- Timmins, Adam. "Why Was Kuhn's *Structure* More Successful than Polanyi's *Personal Knowledge*?" *HOPOS: The Journal of the International Society for the History of Philosophy of Science* 3.2 (2013): 306-317.
- Toulmin, Stephen. "Review of *Personal Knowledge*, by Michael Polanyi." *Universities Quarterly* 28 (1959): 212-216.
- Turnhout, Esther et al. "New Roles of Science in Society: Different Repertoires of Knowledge Brokering." *Science and Public Policy* 40.3 (2013): 354-365.
- Usher, Penelope M. "'Pricking in Virgil': Early Modern Prophetic *Phronesis* and the *Sortes Virgilianae*." *Journal of Medieval and Early Modern Studies* 45.3 (2015): 557-571.
- Vamos, Tibor. "Forward." To *Science and Technology* by Dimitris N. Chorafas, Cham: Springer, 2015, i-xv.
- Van Bendegem, Jean Paul. "Afterthoughts: yes but is it science?" In *It Takes Two to Do Science: The Puzzling Interactions Between Science and Society* eds. Henri Eisendrath and Jean Paul Van Bendegem. Brussels: VUBPRESS Brussels University Press, 2009, 195-201.
- Verdenius, W. J. "Science greque et science moderne." *Revue Philosophique de la France et de l'Etranger* 152, (1962): 319-336.
- Vickers, Peter. *Understanding Inconsistent Science*. Oxford: Oxford University Press, 2013.
- Walker Keyes, Clinton. *Cicero: De Re Publica De Legibus*. Cambridge, MA: Loeb Classical Library, Harvard University Press, 2014.
- Walsh, Lynda. *Scientists as Prophets: A Rhetorical Genealogy*. Oxford: Oxford University Press, 2013.
- Wardle, David. *Cicero on Divination De Divinatione, Book 1*. Oxford: Clarendon Press, 2006.



- White, Alan. "Review of *Personal Knowledge*, by Michael Polanyi." *Philosophical Quarterly* 10 (1960): 377-378.
- Woodger, J. H. "Science and Persons." *British Journal for the Philosophy of Science* 11 (1960): 65-71.
- Ziman, J. M. *Real Science What It Is, and What It Means*. Cambridge: Cambridge University Press, 2000.

## Translations of Ancient Texts

- Augustine. *City of God*. Trans. Marcus Dods. In Nicene and Post-Nicene Fathers, First Series, Vol. 2. Edited by Philip Schaff. Buffalo, NY: Christian Literature Publishing Co., 1887.
- Cicero. *On Divination*. Trans. W.A. Falconer. Loeb Classical Library. Cambridge, MA: Harvard University Press, 1923.
- Cicero. *On the Republic*. Trans. Clinton W. Keyes. Loeb Classical Library. Cambridge, MA: Harvard University Press, 1928.
- Dionysius of Halicarnassus. *Roman Antiquities*. Trans. Earnest Cary. Loeb Classical Library. Cambridge, MA: Harvard University Press, 1939.
- Frontinus. *Stratagems. Aqueducts of Rome*. Translated by C. E. Bennett, Mary B. McElwain. Loeb Classical Library. Cambridge, MA: Harvard University Press, 1925.
- Livy. *History of Rome, Volume V: Books 21-22*. Trans. by B. O. Foster. Loeb Classical Library. Cambridge, MA: Harvard University Press, 1929.
- Livy. *History of Rome by Titus Livius, books thirty-seven to the end, with the epitomes and fragments of the lost books*. Trans. William A. McDevitte. London: Henry G. Bohn. John Child and son, printers. 1850.
- Livy. *History of Rome, Volume VII: Books 26-27*. Translated by Frank Gardner Moore. Loeb Classical Library. Cambridge, MA: Harvard University Press, 1943.
- Livy. *History of Rome*. Trans. Rev. Canon Roberts. New York: E. P. Dutton and Co. 1912.
- Livy. *History of Rome, Volume IX: Books 31-34*. Trans. Evan T. Sage. Loeb Classical Library. Cambridge, MA: Harvard University Press, 1912.
- Livy. *History of Rome, Volume XI: Books 38-40*. Trans. Evan T. Sage. Loeb Classical Library. Cambridge, MA: Harvard University Press, 1935.
- Livy. *History of Rome by Titus Livius, books nine to twenty-six*. Trans. D. Spillan. and Cyrus Edmonds. London: Henry G. Bohn. John Child and son, printers, 1849.
- Livy. *History of Rome by Titus Livius, the first eight Books*. Trans. D. Spillan. London: Henry G. Bohn. John Child and son, printers. 1857.

Plutarch. *Plutarch's Lives*. Trans. Bernadotte Perrin. Loeb Classical Library. Cambridge, MA: Harvard University Press, 1918.

Polybius. *Histories*. Trans. W. R. Paton. Loeb Classical Library. Cambridge, MA: Harvard University Press, 1922-1927.

Suetonius. *The Lives of the Twelve Caesars; An English Translation, Augmented with the Biographies of Contemporary Statesmen, Orators, Poets, and Other Associates*. Editor. J. Eugene Reed, Alexander Thomson. Philadelphia: Gebbie & Co., 1889.

Tacitus. *Complete Works of Tacitus*. Trans. Alfred John Church, William Jackson Brodribb, Sara Bryant. New York: Random House, Inc., 1942.