«Meam de motu & usu cordis, & circuitu sanguinis sententiam»: Teleology in William Harvey's *De motu cordis**

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Summary

I describe the place of teleology in William Harvey's understanding of anatomy, drawing especially on his lecture and working notes from (roughly) the decade leading up to the publication of *De motu cordis*. Harvey understands the goal of anatomy to be universal, final causal knowledge of the parts of animals and their variations, articulated in terms of their *actiones* and *usus*. I then carefully trace the role of teleology in the *De motu cordis*, distinguishing (with Harvey) between his opinion "*de motu & usu cordis*" and "*de circuitu sanguinis*". I argue that in the *De motu cordis* Harvey provides teleological explanations of features of the heart and arteries and their variations in terms of the circulation of the blood, understood as the *actio* of the heart. In this way the *De motu cordis* clearly embodies Harvey's understanding of the teleological character of anatomical knowledge.

Keywords: William Harvey, *De motu cordis*, teleology, early modern anatomy

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Two Harveys? The *De motu cordis* and the Scientific Revolution

Historians of science and medicine have long portrayed William Harvey as an important figure in the Scientific Revolution and his *De motu cordis* (*DMC*)¹ as a prominent example of the new science of the 17th Century.² Two features of this work, its effective use of observation and vivisection and its willingness to set aside the question of the final cause of the circulation, are often identified as innovative and characteristically modern. Referencing also his later comparison of the heart to a pump, historians have portrayed Harvey as an early champion of a new, experimental, mechanical science. However, beginning especially with the work of Walter Pagel,³ historians have come to see that, in many ways, Harvey was unabashedly Aristotelian, eager to identify final causes in nature, and critical of the “neoteriques” – including proponents of corpuscularian or atomist natural philosophies.⁴ The resulting tensions in our understanding of Harvey have not yet been entirely resolved.⁵ We are tempted to see in Harvey a man divided, with allegiances to modernity and tradition, to observation and theory, to experiment and *a priori* speculation.⁶

This article is a part of a larger project to articulate the *unified character* of Harvey’s understanding and practice of anatomy throughout his corpus.⁷ Here I focus on the place of teleology in Harvey’s *DMC*. It is sometimes suggested that Harvey eschews appeals to final causes in *DMC*, in favour of pursuing empirically established non-teleological knowledge of the structure and motion of the heart and blood.⁸ This picture, though, is over-simple to the point of being misleading. Harvey, it is true, suggests that he does not know the final cause of the circulation (though he is willing to speculate).

1 Harvey 1628.

2 In this, historians follow the example of many of Harvey’s near contemporaries. Hobbes, for instance, in his *De Corpore* (1655), identifies Harvey as the first to discover and demonstrate the science of the human body, setting him alongside Copernicus and Galileo as a founder of true science. Descartes and Boyle, too, were clearly impressed by Harvey’s work. For Harvey’s influence on experimental philosophy in the medical context see French 1994; Frank 1980.

3 See e.g. Pagel 1967.

4 It should be noted that scholars have disagreed on the precise content and significance of Harvey’s Aristotelianism. In addition to Pagel’s work, see French 1994; Lennox 2006a; Lennox 2006b. For a deflationary discussion of Harvey’s famous comments, reported by Aubrey, concerning Francis Bacon and the “neoteriques”, see McCaskey 2006, 314–333 (McCaskey, though, still considers Harvey to be a self-conscious Aristotelian). Goldberg 2012 helpfully places Harvey within what Charles Schmitt called “eclectic Aristotelianism” (Schmitt 1983).

5 This is not to deny the significant progress made.

6 For a striking example, see Pagel 1967, 229; see also Whitteridge 1959, 4–5; Wear 1983.

7 I also advance this project, focusing especially on Harvey’s working notes on muscle anatomy, in Distelzweig 2013; see also Distelzweig forthcoming.

8 Wear 1983; French 1994, 104, 301, 316.

However, careful attention to his treatment of the heart and arteries reveals that he identifies final causes and provides teleological explanations of these parts and their variations across species. In this, the *DMC* reflects Harvey's understanding of anatomy, an understanding articulated in his lecture notes from (roughly) the decade leading up to the publication of *DMC* and clearly seen in his notes on muscle anatomy started in 1627, as he was moving the *DMC* to publication.

Teleology in Harvey's Anatomical Project

Harvey calls the *DMC* a work of *anatomy*.⁹ We do well, then, to examine Harvey's understanding of that discipline and of teleology's place in it.¹⁰ Besides Harvey's *DMC*, two other early sources are important for this task: first, his *Prelectiones Anatomiae Universalis*, notes Harvey developed for the Lumleian Lectures, and second, a set of working notes for a never published treatise on the muscles.

Harvey's *Prelectiones* were written, revised, and added to from 1616 when he first gave the Lumleian Lectures to at least 1627, the year before the publication of the *DMC*.¹¹ In the opening folios Harvey discusses the definition, divisions, and kinds of anatomy, as well as concepts and methods central to anatomy. This *accessus* provides significant insight into the role of teleology in Harvey's anatomical project.¹² Written across the top of the first folio (*verso*) we find a definition of anatomy: "Anatomy is the faculty that by ocular inspection and dissection [grasps] the *uses* and *actions* of the parts."¹³ Action (*actio*) and use (*usus*) are Galenic terms¹⁴ important in the anatomical tradition of the 16th and early 17th centuries. They are particularly prominent in the work of Hieronymus Fabricius ab Aquapendente,

9 Its title begins "*Exercitatio anatomica [...]*".

10 This discussion is necessarily abbreviated. For a more detailed discussion see Distelzweig 2013; French 1994; Goldberg 2012.

11 See Whitteridge 1964 and Keynes 1966, 84–113 for an introduction to Harvey's notes and to the Lumleian Lectures, established by Lord Lumley in 1682 for the teaching of surgery through public dissections.

12 Whitteridge 1964 shows convincingly that in the anatomy proper, after this methodological introduction, Harvey depends heavily on Caspar Bauhin's *Theatrum anatomicum* (1605). However, Goldberg argues that Harvey's use of Bauhin is more creative than Whitteridge seems to imply (Goldberg 2012). Regardless, Harvey is more straightforwardly responsible for the content and structure of the methodological introduction.

13 "Anatomia est facultas quae oculari inspectione et sectione partium usus et actiones" (Whitteridge 1964; emphasis is added. Quotations from the *Prelectiones* are from this edition. I have also consulted Harvey 1886).

14 *Actio* translates Galen's *energeia* (and sometimes *ergon*) and *usus* translates *chreia*.

professor of anatomy at Padua when Harvey studied there.¹⁵ Fabricius' publications, which exerted a sustained influence on Harvey, typically had a three-part structure. First, Fabricius provides a systematic description of the part being studied, including interspecific variation (*historia*); second, he identifies and examines the action of the part (*de actione*); third, he discusses the *uses* of the (varying) features and components of the part (*de utilitatibus*).¹⁶

The *action* of a part is the active motion (*motus activus*) of a part that contributes to the life of the animal. Prominent examples in the tradition include the hand's action, grasping, and the eye's action, vision. That the action of a part must be an *active* motion precludes (e.g.) the motions of the bones, because they are caused by something else (the muscles), and so are passive. The concept of *use* is closely related to action but broader in scope. For Harvey, the use of a part is, roughly, the way it contributes to the activity of the animal as a whole. The notion is broader than action, because parts with no action (like the bones) can be assigned an *usus*. Typically, the *usus* of a feature or sub-component of a part is the way it contributes to the performance, improvement or protection of that part's action, or (if that part has no action) the action of some related part.¹⁷ For Harvey anatomy is the ability to determine these actions and uses of the parts by ocular inspection and dissection.¹⁸

Harvey opens a later section of his lecture notes, *In actionibus partium*, by explaining the place of action and use in anatomy:

Since the end of Anatomy is to know or grasp the parts and to know [them] through their causes and these [i.e., causes], in all animals, [are the] 'that for the sake of which' and 'that on account of which'; therefore: that on account of which: (1) Action; (2) Use.¹⁹

15 For a general introduction to Fabricius, see Adelman 1942. For a more detailed discussion of Fabricius' understanding of anatomy see Cunningham 1985; but see also Siraisi 2004 for a critique of Cunningham's view. Distelzweig 2013 and 2014 attempt to provide a more nuanced discussion of the interplay between Galenic and Aristotelian resources in Fabricius' work, building on insights from both Cunningham and Siraisi. For a brief, highly suggestive discussion of Fabricius' influence on Harvey, see Cunningham 2006. See also French 1994. But, for a (brief) more deflationary view of Harvey's relationship to Fabricius, see Klestinec 2011, 146, 164–70.

16 Fabricius typically, but not always, prefers *utilitas* to *usus* for the Galenic concept. I have not found any systematic reason for his occasional use of *usus*.

17 For canonical discussions in Galen, see *De usu partium*, the openings of Book 1 and Book 17 (May 1968, 67–81 and 723); *De naturalibus facultatibus* I.2 (Brock 1916, 11–13). For differing views on these notions in Galen, see May 1968; Schiefsky 2007.

18 This discussion of Harvey's understanding of *usus* is simplified due to space restrictions. For a more nuanced discussion see Distelzweig 2013.

19 "Quoniam finis Anatomae est scire vel cognoscere partes et scire per causas et hae in omnibus animalibus cuius gratia et propter quid, ergo propter quid: 1. actio, 2. usus." (Harvey 1886, 22).

Anatomy is the faculty that grasps the actions and uses of the parts *because* the end of anatomy is to have causal knowledge of the parts and the actions and uses *are* the causes. In particular, they are causes *cuius gratia* and *propter quid*; i.e., they are the *final* causes of the parts.²⁰ In addition, Harvey makes it clear here that we are to understand the final causes of a part and its variations not just in humans but *in animalibus*.²¹ Anatomy, then, aims at universal, final causal knowledge (i.e., Aristotelian *scientia*) of the parts of animals.

This understanding of anatomy is reflected in a brief passage in the *DMC*, in which Harvey describes a proposed work on the lungs.

But to determine these things and give a complete answer [to why there is a pulmonary transit in some animals] is nothing but to enquire concerning the cause for which (*propter quid*) the lungs were made. And concerning the lungs and their use [*usu*] and motion, and concerning all manner of cooling and the necessity and use of air and other things of this kind; and concerning the various organs and the differences made in animals for the sake of this – although much has been discovered by me from countless observations, yet I leave them to be more conveniently set forth in a treatise by themselves [...].²²

Although this description is not systematic, we can discern the kind of project Harvey has in mind. Harvey seeks from observations across species to establish the final cause (*propter quid, usus*) of the lungs and analogous organs and of their interspecific variation.

Harvey's working notes on muscle anatomy provide a more developed example.²³ The notes are comprised of 21 chapters. The first seven identify the role and importance of locomotion in animal life and sketch the basic scientific principles involved in such motion.²⁴ The eighth chapter provides a map of the topics to treat in a systematic study of muscle. The remaining chapters are comprised of notes for such a study, referring occasionally to the

20 For a discussion that further relates this final causal knowledge to definitional knowledge of the parts, see Goldberg 2012.

21 This preoccupation with all animals is reflected in Harvey's choice of title for the *De motu cordis [...] in animalibus*. Cf. Harvey's criticism, at the beginning of Chapter 6, of anatomists who look only at human anatomy. This approach is characteristically Aristotelian (see Lennox 1987; Lennox 1991). On its role in Harvey's *De generatione animalium*, see Lennox 2006a; Goldberg 2012.

22 Harvey 1628, 36 (all references are to this edition. My translations are based on Whitteridge 1976 – with sometimes significant modification). Harvey's interest in the lungs in the decade leading up to the publication of the *DMC* is reflected in the *Prelectiones*. After the section on the heart, the section on the lungs is the longest and most detailed.

23 For an orientation to these notes see Whitteridge 1959. Here, for accessibility I follow the chapter numbering in Whitteridge's edition. For a more detailed discussion of the notes than I can provide here, see Distelzweig 2013.

24 An understanding of the nature of local motion and its principles is needed in order to understand how animal progression, as the final cause of the locomotive organs, requires and explains features of those organs. Cf. the mention of "the nature of air" and "all kinds of cooling" in the *DMC* passage on the lungs quoted above.

earlier chapters and generally following the chapter 8 map. After chapter 9, in which terminology is discussed, chapters 10 through 15, and 17 discuss the structure and parts of muscle (*historia*); chapter 18 discusses the action of muscle, contraction (and perhaps tension and controlled relaxation), while chapters 20 and 21 treat the uses of muscle.²⁵ There Harvey traces the contributions made to the action of the muscle by the various components and features of muscles and why these features vary in different muscles. For example, in chapter 20 Harvey notes that though all muscles have the same basic action, there are in this action differences in degree from muscle to muscle.

Therefore, in muscle there are two things to be considered, namely the composition of the muscle *for the sake of* the action [*gratia actionis*] which it is to perform and its mechanical construction *for the sake of* the strength and power which it requires [*gratia roburis et virium*].²⁶

Harvey is distinguishing the features of muscle anatomy that are common to all muscles and have as their final cause the simple action of muscles (contraction, etc.), from the features (like shape and size) that vary and have as their final cause the requirements on that action specific to each muscle (which he calls the *perfectio actionis*). The rest of the chapter sketches why features of muscle vary, providing teleological explanations of these variations in terms of their contribution to the perfection of the action of different muscles.

Teleology in the *De motu cordis*

In order to appreciate how this same understanding of anatomy shapes the *DMC* it is important to distinguish between the heart and the blood. Harvey himself makes this distinction in the opening lines of the dedicatory epistle, where he characterizes his opinion “concerning the motion and use of the heart and concerning the circulation of the blood [*de motu & usu cordis, &*

25 Chapter 16, “Of the Use of Nerve in Muscle”, is something of an aside on the role of nerve in the motion of animals, a topic which is treated again in chapter 21. Chapter 19, “On the Affections of Muscles”, is also a (well-located) aside. After treating the action of muscles in chapter 18, Harvey can discuss the pathology of muscles, categorized as they affect or distort the now articulated proper action of muscles. This examination of the affections of muscles is not detached from the teleological project of anatomy. In the *Prelectiones*, Harvey suggest that the pursuit of the knowledge of the final causes of a part can be aided by examining variation in the part (Harvey 1886, 25) and suggests variation should be considered in animals differing in species, sex, age, habits, and *health and disease* (21).

26 Whitteridge 1959, 127. Emphasis added.

circuitu sanguinis”.²⁷ His opinion concerns the motion *and use* of the *heart*, while regarding the *blood* it concerns only its *motion*. Regarding the heart, Harvey believes he has final causal knowledge. Indeed language throughout the *DMC* suggests Harvey is there reporting an anatomical investigation of the heart (and arteries) successfully aimed at grasping their actions and use.²⁸ For example, the title of the *Prooemium* reflects its preoccupation with undermining the received view of the motion and *use* of the heart and arteries. In its opening line Harvey says such a preoccupation is important in the context of considering the “motion, pulse, *action, use and utility* of the heart and arteries.”²⁹ Similarly, in chapter 1 Harvey identifies his project as searching for the “*use and utility* of the motion of the heart” in animals through *autopsia* and reports that he has succeeded. In chapter 6, he identifies his topic as the “movement and use of the heart”.³⁰

This language – which we should take seriously – suggests that the *De motu cordis et sanguinis* is perhaps best understood as a work primarily about the motion of the heart and secondarily about that of the blood. More precisely, the motion of the blood is presented as the *action* of the heart, and as such, features in a work devoted to providing final causal explanations of the heart and its interspecific variations. The prominence of the motion of the blood in the title, and in the work itself, reflects the especially radical character of Harvey’s claim that the action of the heart is to “drive the blood into a circuit by a kind of circular motion in animals”.³¹

To see this, it is helpful to recognize that the *DMC* reflects the *historia, actio, usus* structure so prominent in Fabricius’ publications. In chapters 2 through 4, Harvey presents a *historia* of the heart (and arteries), focused particularly on their motion.³² In chapter 5, after summarizing the motions of the heart (and arteries), Harvey identifies its *action*.

The motion of the heart then is entirely in this manner and one action of the heart is this very transmission [from the veins to the arteries] of the blood and its propulsion to the extremities by the intermediacy of the arteries [...].³³

In chapters 6 and 7, after identifying the presence of lungs in humans as a source of confusion for past anatomists, Harvey defends the universality of the identified action; that is, he argues that in *all* animals (including humans

27 Harvey 1628, 5.

28 Cunningham 2006, 144–47 suggests this point. Bylebyl 1973 also notes this language.

29 Harvey 1628, 10 (emphasis added).

30 Harvey 1628, 20 (project) and 21 (success).

31 Harvey 1628, 36.

32 Harvey 1628, 58.

33 In the *Prelectiones*, Harvey lists motion as one of the features to be studied in the *historia* of a part (Harvey 1886, 21).

and other lunged animals), an action of the heart is the transference of the blood from the veins to the arteries. In chapter 6 he argues that the identified action is clear in simpler animals and in all animals during fetal development. In chapter 7 he argues that in lunged animals, too, the heart transfers the blood from the veins to the arteries – doing so via the pulmonary transit. Similarly, chapters 8 through 14, presenting Harvey's central argument for the systemic circulation, are at service of his discussion of the action of the heart. This is clear from chapter 14, in which Harvey concludes his demonstration of the systemic circulation. Claiming that he has shown by observation and argument the direction and amount of the motion of the blood through the heart, arteries, and veins, he states:

It is necessary to conclude that the blood is driven into a circuit by a kind of circular motion in animals, and is in perpetual motion, and that this is an *action or function of the heart* [...].³⁴

For Harvey, these chapters present an argument for a (momentous) refinement of the chapter 5 description of the *action of the heart*.³⁵

It is worthwhile to stress that the action of the heart is a teleological notion. Some, like Andrew Wear,³⁶ agree that Harvey identifies the action of the heart, but argue that this action is not, for Harvey, a teleological notion.

True, Harvey was concerned with action, more so in *De motu cordis*, but everything that he wrote points to *his inspecting action first as an anatomist rather than as a philosopher searching for causes*. For Harvey, theory (modern physiology) was concerned with purpose or the final cause. Of course, today, teleology has been officially consigned to the scrap-heap, and action or function is now part of theory, but for Harvey *teleology, rather than action*, comprised theory and was vitally important. [...] Harvey saw *the action as opposed to the purpose* of the heart and circulation as an anatomist saw the structure of the body, that is, by *autopsia*, with one's own eyes.³⁷

34 Harvey 1628, 30.

35 Harvey 1628, 58 (emphasis added). The subtle distinction between *actio* and *functio* is not important for our purposes.

36 My suggestion here is best understood as a refinement of Bylebyl's analysis of the structure of the *DMC* (Bylebyl 1973 and especially Bylebyl 1977). Bylebyl sees two structures, one (chapters 8 through 16) inserted into and distorting and obscuring the other (*Prooem*, chapters 1 through 5, chapter 17). Bylebyl, however, seems not to notice that Harvey presents the circulation as the *action* of the heart. This identification determines where in the text the argument for the circulation must appear and provides the overarching unity of the *DMC*, a unity centered on articulating *scientia* of the heart. Recognizing this weakens (at least in part) Bylebyl's argument that the *DMC* was written in two stages. Once we see that the circulation is presented as the *action of the heart* it becomes less clear that Harvey's heart-centric descriptions (in the *Prooemium* and Chapter 1) "hardly do justice to the full treatise" (Bylebyl 1973, 446). Of course, more would need to be said to evaluate fully the evidence and arguments Bylebyl employs in his insightful work on this issue. Regardless, even if the *DMC* was composed in two stages, Harvey still chose its final structure and was pleased enough with it to publish.

37 Wear 1983.

Wear, I suggest, makes three related mistakes. First, he invokes a false dichotomy between the “anatomist” and the “philosopher seeking causes”. For Harvey anatomy is concerned with acquiring causal knowledge of parts. Second, Wear suggests a false dichotomy between observation and causal knowledge (“theory”). As we have seen, Harvey thinks that anatomy arrives at its causal knowledge *precisely by means of dissection and visual inspection*.³⁸ Finally, Wear contrasts purpose and action, claiming that the action is not a teleological notion.

But for Harvey action *is* a teleological notion. In this he follows Aristotle, Galen, and his teacher Fabricius. Aristotle, for example, says that a part is for the sake of its action, as a saw is for the sake of sawing.³⁹ Galen, in turn, understands the study of the use of a part to be the study of how all its components and features are designed to contribute especially to the execution, improvement or protection of the part’s action. In this way, the action serves as final cause of those components and features. Finally, Fabricius also understands action to be a teleological notion. For example, in his work on the larynx Fabricius introduces his section *de utilitatibus*: “The third part [of the treatise] being the part that pursues the *utilitates* [...] which always look toward and contemplate the action of the larynx (that is, voice) and are directed to that action as towards an end.”⁴⁰ Harvey’s understanding is the same, and his notes on muscle anatomy provide a clear example. Recall that there Harvey says that both the composition and the “mechanical construction” of the muscles are *for the sake of the action*, the former for the sake of the basic action, the latter for the sake of the perfection of that action.

In Fabricius, this final causal relation between the action and the components and features of a part is articulated in terms of the *utilitates* of these components and features and is treated in the final section of his works. Harvey also turns to this topic in the final chapter of the *DMC*. Chapters 15 through 17 are framed by Harvey as providing additional arguments in support of the identified action of the heart, the circulation of the blood. Chapter 15 provides general reasons for thinking the circulation of the blood is appropriate and even necessary. Chapter 16 provides a series of arguments *ex consequentiis* in favour of the circulation of the blood. That is, Harvey argues for the proposed action of the heart by showing how it can be invoked as cause in the explanations of a range of (mainly medical) phenomena. Near the end of this discussion, Harvey describes chapter 17.

38 Wear 1983, 229–230 (emphasis added). French 1994, 316 follows Wear in contrasting action and teleology.

39 Goldberg 2012 makes this point.

40 See, e.g., *Parts of Animals* I.5 645b15–20.

Therefore in this place, that is to say in the following chapter [Chapter 17], I shall endeavour to refer to their proper uses and true causes, only those things relating to the fabric of the heart and arteries which are visible in the course of an anatomy [...].⁴¹

Chapter 17 is here framed as an extension of the project of chapter 16. In it Harvey shows how the circulation (as an action of the heart) can be invoked in final causal explanations of the heart and arteries and their variation.

Harvey begins the chapter by providing a final causal explanation for why some animals have hearts and some do not. Certain smaller creatures have no heart “as being creatures that have no need of a driving force to dispatch the nutriment to the extremities.”⁴² In contrast, some animals do have this need (“on account of the variety of the organic parts or the density of their substance”⁴³) and for this reason have a heart. Harvey then provides final causal explanations of intra- and interspecies variety in the heart, moving from simpler to more complex hearts. He explains why some animals have both an auricle and a ventricle:

In animals which are bigger and warmer, because they are sanguineous there is need of something to impel the food, something that is perhaps endowed with greater force. Therefore, in fish, snakes, lizards, tortoises, frogs and the like, the heart has both one auricle and ventricle [...].⁴⁴

He explains why some have two ventricles, echoing his view in chapter 7, that the right ventricle is present for the sake of the pulmonary transit.⁴⁵ He explains that some hearts have fibrous material crossing the chambers and connecting the interior of the walls of the heart “to supplement, as it were, its contraction and so to give a stronger impulsion to the blood and to assist the heart in driving out the blood to a greater distance [...].”⁴⁶ Harvey also provides final causal explanations of (e.g.) the left ventricle being stronger than the right ventricle, the presence of valves in the heart and their variation across species, the variation in auricles across species, and certain details of the fibrous composition of the heart. Similarly, for the arteries Harvey provides final causal explanations of the thickness of the coats of the arter-

41 “Tertiam partem eam esse, quae utilitates persequitur, tum totius, tum partium organi, jam & vulgo notum, & a me propositum est, quae sane utilitates perpetuo laryngis actionem, hoc est, vocem respiciunt, & contemplantur, in eamque tanquam in finem diriguntur.” (Fabricius 1687, 290) Translation and emphasis are my own. See also the opening of Part 2 of *De formato foetu* for a sustained discussion of the centrality of action to the final causal understanding of the parts (Fabricius 1687, 79).

42 Harvey 1628, 63.

43 Harvey 1628, 64.

44 Harvey 1628, 64.

45 Harvey 1628, 65.

46 Harvey 1628, 65; in chapter 7, he says: “And in this sense only it is to be said that the right ventricle was made for the sake of the lungs and on account of the transference of the blood [...].” (40)

ies and the variation in that thickness. All these explanations invoke the circulation as the final cause. Harvey finds this final causal knowledge compelling enough to frame it also as an argument *ex consequentiis* for the circulation.⁴⁷

However, this confidence in the circulation as final cause of the heart is not extended to the further question of the final cause of the circulation itself. Though he is willing to speculate on the topic when he introduces the circulation in chapter 8, Harvey ultimately sets the topic aside. “But of these things it will be more appropriate to speak when we come to enquire of the final cause of this kind of movement [i.e., circulatory motion].”⁴⁸ Similarly, in chapter 6, Harvey suggests possible final causes for the pulmonary circulation, but says anatomists should pursue the question further.⁴⁹ In both cases, then, Harvey leaves the question of the final cause of the circulation open, identifying it as an important topic for anatomical research. But since in the *DMC* he seeks to provide final causal knowledge of the heart, and not of the circulation itself, establishing the fact of the circulation is sufficient.

One Harvey: Teleology and the *De motu cordis*

The *De motu cordis*, then, is the report of an anatomical investigation successfully aimed at achieving universal, final causal knowledge of the heart, articulated in terms of the Galenic concepts of *actio* and *usus*. Thus, Harvey’s corpus, including the *De motu cordis*, is unified by a consistent view of the goal of anatomy. It does not require “two Harveys”, one teleological and one descriptive. Nor is there need for two Harveys, one experimental and one teleological. For, so I would suggest, Harvey’s comparative, vivisectional method is itself motivated and shaped by the goal of his anatomical research: Aristotelian *scientia* of the parts. But that is an argument for another occasion.⁵⁰

47 Harvey 1628, 66.

48 In this, I am in basic agreement with Bylebyl’s characterization of this chapter as a “*de utilitatibus*” section redeployed as an argument *ex consequentiis* (Bylebyl 1977). What is important here is that this argument is from consequents to their *final cause*.

49 Harvey 1628, 42. Harvey returns to this topic briefly in chapter 15 and invokes such a possible final cause in chapter 17.

50 Harvey 1628, 36.

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