The Importance of *Phronēsis* in the Age of Modern Science: Gadamer's *Phronētic* Critique of Scientific Reason

Abstract: As Gadamer has acknowledged, we live in a time in which scientific rationality and methodology have been increasingly taken up into other disciplines, including the social and moral sciences which concern themselves with human understanding and practice. Our understanding of who we are and the world in which we are situated is evermore understood in terms of scientific explanation. Yet, as Gadamer argues, the domains of modern science and the human practical world share a problematic relation. This is because modern scientific description, with its emphasis upon method, repeatability, and verifiability already presupposes a split between the theoretical and practical domains. Accordingly, human practice is either reduced to theoretical methodologies or marginalised by scientific rationality. Here, I will argue, that Gadamer's hermeneutic-phenomenological appropriation of Aristotelean phronēsis, as practical reason, can offer a way to rethink the idea of reason in the modern age, one that can account for the factical situatedness of human practice.

> So the present-day sense of the Kantian slogan of the enlightenment, "*Sapere aude* – have the courage to make use of your own understanding," can be stated in a new way as the appeal to our social reason to awake from its technological dream.
> —Hans-Georg Gadamer, "Science as Instrument of Enlightenment," 83.

Introduction

Across the last few decades a number of thinkers have addressed Martin Heidegger's appropriation of the Aristotelian concept of *phronēsis* as a fundamental aspect of his thought, and to a lesser extent some thinkers have also acknowledged the same theme running through the philosophy of Hans-Georg Gadamer. Academics such as Robert Bernasconi, Jacques Taminiaux, Theodore Kisiel, Walter Brogan, and Rod Coltman, have approached the aspect of *phronēsis* in Heidegger's and Gadamer's work, albeit in different ways.[1] For the purposes of this paper though, I will address Gadamer's phenomenological appropriation of Aristotelian *phronēsis* placing particular stress on Gadamer's broader critique of scientific reason, especially regarding the realm of human *praxis* and moral responsibility.

[1] Cf: Robert Bernasconi, "Heidegger's Destruction of *Phronēsis*," *The Southern Journal of Philosophy* (28, 1989), 127 – 147. Jacques Taminiaux, *Heidegger and the Project of Fundamental Ontology*, trans and ed. Michael Gendre, Albany: SUNY Press, 1991. Theodore Kisiel, *The Genesis of Heidegger's Being and Time*, Berkeley: University of California Press, 1993. Walter Brogan, *Heidegger and Aristotle*, Albany: SUNY Press, 2005. Rod Coltman, *The Language of Hermeneutics: Gadamer and Heidegger in Dialogue*, Albany: SUNY Press, 1998.

As Gadamer has acknowledged, we live in a time in which scientific rationality and methodology have been increasingly taken up into other disciplines, including the social and moral sciences which concern themselves with human understanding and practice. Our understanding of who we are and the world in which we are situated is evermore understood in terms of scientific explanation. Yet, as Gadamer argues, the domains of modern science and the human practical world share a problematic relation. This is because modern scientific description, with its emphasis upon method, repeatability, and verifiability already presupposes a split between the theoretical and practical domains. Accordingly, human practice is either reduced to theoretical methodologies or marginalised by scientific rationality. In light of this problematic relationship between theory and practice, I will explore Gadamer's phenomenological appropriation of the Aristotelean distinction between *epistēmē*, *phronēsis* and *technē*, highlighting the way in which these forms of knowledge can possibly guide human practice. While modern science, on the one hand, strives to account for universal principles, and on the other is concerned with technological know-how, it is unable to inform the mutable and changing sphere of human action. Here, I will argue, that Gadamer's hermeneutic-phenomenological appropriation of Aristotelean *phronēsis*, as practical reason, can offer a way to rethink the idea of reason in the modern age, one that can account for the factical situatedness of human practice.

Gadamer's Phenomenological Appropriation of the Concept of *Phronēsis*

First, it is important to address what Gadamer's appropriation of *phronēsis* entails. While Aristotle's work, particularly the *Nicomachean Ethics*, is important to recognise if one wants to understand Gadamer's own philosophical thought, it is also necessary to acknowledge the context of Gadamer's thought which constitutes the way he takes up the Aristotelean concept of *phronēsis*.

For Aristotle, *phronēsis* is the intellectual virtue aimed towards the guidance of ethical action. This virtue along with *technē*, the intellectual virtue of technical knowledge and skill aimed towards *poēsis* (making), belong to the *logistikon,* the deliberative or estimative

faculty of the soul.[2] In contrast, Aristotle highlights the *epistēmonikon*, that is, the scientific faculty of the soul that consists of the intellectual virtues of *sophia*, or philosophical wisdom, and *epistēmē*, or scientific knowledge (demonstrative knowledge of the necessary and eternal). *Sophia* and *epistēmē*, as belonging to the *epistēmonikon*, both aim towards knowledge of the eternal and unchanging.[3] To this end Aristotle stresses the contemplation of the heavenly bodies, the metaphysical first principles of nature, mathematics and so forth.[4] In contrast *phronēsis* and *technē* pertain to the mutable and relative, such as *praxis* and *poēsis* or that which is not unchanging but can be otherwise. To this aspect of the soul, Aristotle attributes knowledge aimed towards *praxis*, that is, action, and as already mentioned, *poēsis* or making. Whilst *sophistic* wisdom and *epistemic* knowledge act in regard to the eternal and unchanging, *phronēsis* is aimed towards the proliferation of the *bio ēthikos,* or good life, and *technē* is aimed at the technical mastery of craft. Accordingly, *phronēsis* is, for Aristotle, intimately tied to the moral virtues, that which aim toward the fulfilment of moral action and the good life.

For Heidegger though, the importance of *phronēsis* is not its being bound to the moral virtues, but its possibility to provide some insight into, and even serve as a model for, as Heidegger puts it in his early work, factical human life, later rendered *Dasein*.[5] As Rod Coltman puts it, the *logistikon*, that is, the deliberative faculty of the soul, offers a way to rethink the being of human being as it stresses the mutable and, for Heidegger, the fundamentally temporal and situated aspects of human comportment.[6] Put another way, *phronēsis* serves as a model that characterises the boundedness of our understanding to the world, a factical comportment that is already underway (*unterwegs immer schon*). In contrast, traditional metaphysics had focussed upon the substantiation of axiomatic principles, and the contemplation of eternal forms, whilst the modern metaphysical

[2] Aristotle, "Book VI – Intellectual Virtue," in *Nicomachean Ethics*, trans. David Ross, Oxford: Oxford University Press, 2009, 102 – 117 [1138b17 – 1145a11].
[3] Aristotle, *Ibid*, 104 [1139b23 – 1139b25].
[4] Epistēmē being akin to logical demonstration i.e. mathematics, and *sophia* the union of logical demonstration and intuition of first principles – *nous*. Aristotle, *The Nicomachean Ethics*, 107 – 108 [1140b30 – 1141a21]
[5] As Theodore Kisiel points out in *The Genesis of Heidegger's Being and Time*, 250 – 251. Also see Martin Heidegger, "Phenomenological Interpretations with respect to Aristotle: Indication of the Hermeneutical Situation," *Man and World*, (25), 1992, 382.
[6] Rod Coltman, *The Language of Hermeneutics*, 17.

tradition heralded the promise of science and technology, both which, according to Heidegger, take being as presence, rendering it as an object, and thus limiting its temporality.[7] As Heidegger contends, this rendering of being as presence, and similarly the rendering of human being as object, can only be done through theoretical abstraction that divorces itself from the situatedness of factical human being. But *phronēsis* appropriated as hermeneutic understanding can account for a more originary human being that acknowledges its temporality and concrete situatedness as being in and towards the world.

Gadamer, already working from within the context of Heidegger's phenomenological-hermeneutic appropriation of *phronēsis*, readily accepts this hermeneutic principle in his own work, yet he, more so than Heidegger, wishes to hold onto the relation *phronēsis* has to the ethical domain. In this way, Gadamer seeks to rethink the traditional epistemological problem of the application of knowledge to action.[8] So while Heidegger stresses the phenomenologically appropriated *phronētic* comportment of human being, Gadamer brings this principle back into relation with the moral guidance of human *praxis*. For Gadamer, the principle of *phronēsis* offers a way to rethink the relation of reason and knowledge to action taking into account the factical situatedness of human being. This is particularly important for Gadamer, because, as he sees it, the modern age is fundamentally characterised by the proliferation of scientific methodology and scientific reasoning into all areas of human understanding including the realm of human affairs. Given that modern science is primarily concerned with the possibility of substantiating universal principles, as in accord with mathematical exactitude, this poses a problem when accounting for the guidance of the mutable and temporal nature of the human practical world. As Gadamer has claimed, modern science actually lies much closer to the concepts of *epistēmē* and *technē* than it does *phronēsis*.[9] This, of course, is no problem for modern mathematical science which is not concerned with the realm of human *praxis*, yet, given the infiltration of scientific

[7] As Coltman claims. *Ibid*, 17.
[8] As outlined in part two of *Truth and Method*. Hans-Georg Gadamer, *Truth and Method*, revised 2nd ed. London: Bloomsbury Publishing, 2004 [1960].
[9] Hans-Georg Gadamer, "On the Philosophical Element in the Sciences and the Scientific Character of Philosophy." In *Reason in the Age of Science*, trans. Frederick G. Lawrence, Cambridge: MIT Press, 1981, 5.

method into areas of human conduct including the social, political and ethical sciences, this problem of the application of knowledge to action becomes apparent.

Modern Science as Modelled upon *Epistēmē*

According to Gadamer, modern science represents the ideal of establishing secure, certain, and universally binding knowledge of the natural world through its abstractive mathematical reading. This is inaugurated by Galileo's mathematisation of nature whereby the physics of the terrestrial world are conceptualised quantitatively and, hence, can be calculated universally.[10] As Alexandre Koyré points out, no longer is nature understood in accord with the qualitative characteristics of actual bodies, as defined by Aristotle's metaphysical principles of the *Kosmos* (and variations thereof); rather, the measure of the natural world becomes number.[11] In this way, one can, according to this mathematical reasoning, measure and calculate natural processes leading to certainty about the necessary nature of abstract bodies and their movement, which is now understood to be expressed in number.

Yet, as Gadamer points out, and as many others within the tradition of phenomenology following Husserl have pointed out, this mathematical reading of nature is only possible through idealised theoretical methods. We do not directly observe the movement of bodies in the world according to causal laws whether determinate, as according to Newtonian mechanics, or indeterminate, in accord with quantum theory.[12] Neither the uniform movement of a body in a straight line, nor the momentum of a particles is "observable" without the mental projection of mathematical postulates (and even then the meaning of

[10]Hans-Georg Gadamer, "Philosophy or Theory of Science," in *Reason in the Age of* Science, trans. Frederick G. Lawrence, Cambridge: MIT Press, 1981, 155-156.
[11] Alexandre Koyré, "Galileo and Plato," *Journal of the History of Ideas* (4: 4, 1943), 424.
[12] As Martin Heidegger, Werner Heisenberg, and Erwin Schrödinger have pointed out. Martin Heidegger, "Modern Science, Metaphysics, and Mathematics," in *Basic Writings*, ed. David Farrell Krell, London: Harper Perennial Modern Thought, 2008 [1962], 288 – 291. Werner Heisenberg, "The Representation of Nature in Contemporary Physics," *Daedalus*, (87, 3, 1958), 99 – 100. John D. Trimmer, "The Present Situation in Quantum Mechanics: A Translation of Schrödinger's "Cat Paradox" Paper," *Proceedings of the American Philosophical Society*, (124, 5, 1980), 323 – 324.

observation is not taken in the sense of brute and immediate experience but as idealised experimentation already set up in accord with mathematical formulations).[13] In any case, what is left behind is the qualitative nature of experience which Galileo had already pronounced as unreliable.[14] Hence, as Galileo was the first to theorise, we have the splitting of the primary and secondary qualities. The primary qualities as defined by their mathematical properties, which hold universally, and the secondary qualities – sight, touch, smell, taste and so on – which are supposedly unreliable and thus not fit for substantiating scientific principles. Only then, after this mathematisation, is modern science able to construct determinate principles, which represent the laws of the natural world. That is, only through the abstraction from the indeterminate nature of immediate experience, the life-world, is mathematicised science possible.

Furthermore, following the ideals of the verifiability and predictability of mathematical principles, modern science also stresses the importance of method. As Gadamer states, this is most prominently displayed in the work of Descartes who, with his unitary method of understanding, had hoped to establish the same kind of certitude for modern metaphysics that until then had only been afforded by arithmetic and geometry.[15] This unitary method of understanding also followed Descartes attempt, in a way similar to Galileo, to reduce the entire realm of nature to geometrical qualities, rooted in the analytic geometry that Descartes himself had erected. [16] Yet, as Gadamer notes, Descartes actually went further than, claiming that this unitary method should be applied to all the sciences, integrating them into what he calls the "system" of philosophy.[17]

[13] Werner Heisenberg, "The Representation of Nature in Contemporary Physics," 99 – 100.
[14] Galileo Galilei, "The Assayer," in *The Essential Galileo*, trans and ed, Maurice A. Finocchiaro, Indianapolis: Hackett Publishing Company, 2008 [1623], 185 – 186.
[15] Hans-Georg Gadamer, "Science as an Instrument of Enlightenment," in *Praise of Theory: Speeches and Essays*, trans, Chris Dawson, New Haven: Yale University Press, 1998 [1983], 77. Edwin Burtt also makes a similar claim, E. A. Burtt, *The Metaphysical Foundations of Modern Science*, Mineola: Dover, 2003 [1924], 107.
[16] E. A. Burtt, *The Metaphysical Foundations of Modern Science*, 106.
[17] Gadamer, "Philosophy of Theory of Science," 157.

Yet, as Heidegger has pointed out, through the mathematical projection of modern science, which is secured through rigorous methodology, we actually see a precedence of method taking place over beings, be they of the natural or human world.[18] The world that Galileo and Descartes, each in their own way, had attempted to elucidate through mathematical explication is, according to Heidegger, only an objectified and thus abstracted, static representation of the world, which is actually disclosed temporally, through our factical human being. That is to say, that when methodology is emphasised over our factical existence, the world, and our being there-in is rendered an abstracted, static object. This is a critique Gadamer would take up into his own work and discuss at length, principally in *Truth and Method*, but also in his later writings. When the certitude of knowledge takes precedence in a way that prioritises the universifiable, verifiable, measurable and calculable, then the mutable, changing and uncertain aspects of our experience are either appropriated and reduced to an abstracted "object," or are marginalised altogether. For Gadamer, this is specifically the case when practical reason and judgement are considered in the modern period.

Applied Ethics and Science as Moral Enterprise

As Gadamer claims, modern scientific rationality, which is built on the mathematical ideal of pure reason, does not, and cannot, account for the mutable and indeterminate nature of our experience. Yet, in the modern period, it is this very structure of scientific reasoning that is carried over into the realm of human *praxis*, for instance, as Gadamer points out, with the work of John Stuart Mill and his account of the human, moral sciences (*Geisteswissenshaften*).[19] The other alternative is that the question of the meaning of moral reason is left unconsidered.

Phronēsis and Episteme

[18] Martin Heidegger, "The Age of the World Picture," in *Off the Beaten* Track, trans and ed, Julian Young and Kenneth Haynes, Cambridge: Cambridge University Press, 2002 [1938], 65 – 66.
[19] Hans-Georg Gadamer, "The Ideal of Practical Philosophy," in *Praise of Theory: Speeches and Essays*, trans. Chris Dawson, New Haven: Yale University Press, 1998 [1983], 51.

In the first instance, when the structure of modern scientific method is carried over into moral reasoning it takes with it the emphasis placed upon establishing universal rules or measures. Such is the case in modern ethical frameworks, where certain rules aimed towards governing the ethical conduct of a person are set up in advance (which aim to embody the consistency of universal reason), and deployed across a range of different contexts in the hope of ensuring the guidance of moral action. To this end, one need only refer to particular normative prescriptions, which offer the right measure to achieve the morally "right" outcome in any given situation.[20]

On the other hand, in the era of modern mathematical science, the question of moral reasoning is often concealed. This, I argue, is a consequence of modern scientific reasoning, as modelled on the ideal of mathematics, being emphasised ahead of other forms of reason. This is most evident in the Science Wars that have been going on for the last few decades, such as in the work of Harry Collins and Robert Evans' *Why Democracies Need Science*. In this work, Collins and Evans argue that democracies need to promote modern scientific reasoning because the alternative would be a populist state in which dogmatic and irrational claims go unchecked.[21] Given the current state of affairs in the world this is certainly an important point to make. However, in doing so, Collins and Evans also reduce all reasoning to scientific reason, that is, modern mathematical reason mixed with methodical scepticism, in the way I outlined earlier with Galileo and Descartes.[22] Through this process then, moral reason is completely marginalised as scientific reasoning is emphasised above other forms of reasoning. To be sure, Collins and Evans are not immediately concerned with the ethical domain. However, in putting forward their argument that democracies need to safe guard scientific reasoning they forego any form of reasoning that falls outside of scientific explanation. In the end they stress above all else the moral importance of scientific

[20] Such is the case with J. S. Mill's Utilitarianism, cf: Wendy Donner, "Mill's Utilitarianism," in *The Cambridge Companion to Mill*, ed, John Skorupski, Cambridge: Cambridge University Press, 1998, 278 – 282. The same can also be said of applied ethics more generally, cf: Jason Robinson, "Practical Reasonableness, Theory, and the Science of Self-Understanding," *The European Legacy*, (13, 6, 2008), 694.

[21] Harry Collins and Robert Evans, *Why Democracies Need Science*, Cambridge: Polity Press, 2017, 19.

[22] Although, they certainly do not describe it this way as they argue that science is only a social construct and not rationally grounded, nor mathematical, *Ibid*, 20 – 21 & 66. For more on this point see, Ragnar Fjelland, "What Ought we to know about Science and Technology? Or: Philosophy of Science and Science Studies as Science Literacy," *Dilemmata*, (2, 2007), 1 – 17.

expertise, observation, replicability, falsification, universalisation and so forth.[23] Again, stressing the importance of expertise, profession, and scientific reason is sorely needed, given the current state of international politics. However, it is difficult to see how the method of modern science, beyond offering insight into natural processes, and challenging dogmatic statements (which often purport to be scientific claims), can account for moral guidance in the realm of human *praxis*.

Either way, it is important to revisit Gadamer's insight, that both instances of scientific reasoning have been carried over into the sphere of human *praxis*, and, that this is problematic as both fail to account for the mutability and contingency of human experience. This is not to say that there is no role for prescriptive and normative ethical frameworks, as Gadamer himself claims, such ethical frameworks certainly help to clarify moral issues.[24] However, they ultimately cannot account for the vast complexities of human experience, and its indeterminate nature. As Gadamer states, the theoretical postulates of modern ethical frameworks, like modern scientific principles, are divorced from the ultimate contingency of the lived situation.[25] Hence it is in the concrete and particular situation, when one is faced with the urgency to act, that *epistēmic* reasoning is not as important as is a form of reasoning that takes into account the consideration of the concrete situation, and what is demanded of one in that particular situation. It is with these considerations that Gadamer looks toward Aristotle's conception of *phronētic* reason.

For Gadamer, Aristotle's conception of *phronēsis*, being a measure that informs the contingency of human *praxis*, and thus being a measure that is not determined like a universal and unchanging rule, can account for the indeterminate and temporal nature of human experience. In this way *phronēsis*, practical wisdom, is a form of reason that can attend to the concrete particularities of any given situation which constitute the type of action needed to be undertaken when called upon. As Gadamer contends, this is of

[23] Collins and Evans, *Why Democracies Need Science*, 54 – 55.
[24] Gadamer, *Truth and Method*, 327 – 328.
[25] *Ibid*, 324.

fundamental importance because, one's understanding and one's knowledge cannot be separated from the situation in which one is called to act. The knowledge of how one understands and how one acts in a moment cannot come prior to the situation itself.[26] This is the structure of human being, that is, our being bound by our factical situatedness, and our finitude. Hence any scientific or ethical framework that separates knowledge and action, or *theoria* and *praxis*, is problematic. As already noted, for Gadamer, the two – *theoria* and *praxis* – can only be separated in reflection taken after the fact, and even then, an understanding of the relation of knowledge and action must have recourse to the primacy of the factical situation, in which, the two play out in co-constitution of one another. For Gadamer, then, *phronēsis* appropriated phenomenologically offers a form of rationality that accounts for and refers to the facticity of human being, the co-constitution of *theoria* and *praxis* and thus their informing of and answering to one another which no systematic way of knowing, like that of *epistēmē*, can account for.

Phronēsis and Technē: Practical wisdom as distinct from know-how

One last point remains to be addressed and that is the extent to which moral reasoning can be considered in line with the technique or procedure emphasised by modern technical-scientific reasoning (stemming from the tradition of *technē*). In his work, Gadamer draws out the comparison of *phronēsis* to *technē* because *phronēsis* is to a certain extent like *technē* in that both require the application of knowledge, which one already has, to a particular form of action. However, as Gadamer points out, while *technē* is knowledge regarding the technique or procedure of *poēsis*, that is making or constructing (which Gadamer sees as indicative of modern techno-science), *phronēsis* is knowledge regarding ethical practice, which aims towards the fulfilment of the *bio ēthikos*, the good life.[27] Hence, the form of knowledge needed, and the way it is established, is for *phronēsis* and *technē* different.

[26] Gadamer, *Truth and Method*, 324.
[27] Hans-Georg Gadamer, "Hermeneutics as Practical Philosophy," in *Rason in the Age of Science*, trans. Frederick G. Lawrence, Cambridge: MIT Press, 1981, 92 – 93.

Firstly, *phronēsis* cannot be taught like *technē* can. *Phronēsis* can be developed through education but, it must also come about through habituation, that is, through experience. As Aristotle states,

> What has been said is confirmed by the fact that while young men become geometricians and mathematicians and wise in matters like these, it is thought that a young man of practical wisdom cannot be found. The cause is that such wisdom is concerned not only with universals but with particulars, which become familiar from experience, but a young man has no experience, for it is length of time that gives experience[28]

Aristotle is addressing here, more specifically, the universals which relate to *epistēmē*, however, Gadamer extends this same point to distinguish *phronēsis* from *technē*. For in the same way one can be taught the principles of mathematics one can be taught the techniques and procedures of craft and construction.[29] When considering *phronēsis* though, Gadamer points out that one cannot simply be taught the correct principle that is to be deployed in any given situation. This is because, unlike *technē*, *phronēsis* does not regard principles that can be picked up and put down as one chooses, or forgotten and remembered as one wishes.[30] *Phronēsis* is knowledge directed towards ethical practice and as such is always already situated in and through factical human being. Hence, as already pointed out earlier, to develop universal ethical principles, which can be deployed across different scenarios is problematic, as they cannot account for what is demanded by the particularities of the concrete situation. Similarly, moral considerations cannot simply be taught and learnt as techniques and procedures can, for practical wisdom must be cultivated through education and habituation, which requires lived experience, and which is always situated.

Second, *phronēsis* differs from technique and procedure in that *technē* has a clear distinction of the end to be achieved and the means by which that end is to be achieved, whereas *phronēsis* does not. The artisan has a clear goal in mind, the product to be crafted, and only need apply the right plan, or *eidos*, to their material in order to realise that goal.

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[28] Aristotle, *Nicomachean Ethics*, 110 [1142a12 – 1142a21].
[29] Gadamer, *Truth and Method*, 324 – 325.
[30] *Ibid*, 327.

Phronēsis, however, as the intellectual capacity of practical wisdom, and as a mode of being, does not bare such a clear distinction of its means and end. This is because, as stated before, *phronēsis* is directed towards ethical action, which is ultimately aimed at the fulfilment of the good life, and neither of these can be clearly distinguished nor objectified from one another. As Gadamer puts it, the *praxis* of the good life, that is, living well or living in accord with reason, is both the means and the end of itself as played out in and through the facticity of human being.[31] That is to say, that, *phronēsis* concerns ethical practice, which is the means and the end of living well, and this *praxis* is always already underway, always playing out in and through the facticity of human being. So, in the same sense that ethical action cannot be adequately guided by universal frameworks (modelled up *epistēmē*), neither can ethical action be accounted for by predetermined techniques or procedures.

Ultimately, it is Gadamer's contention that, *phronēsis* must be cultivated through education and habitutation, both of which take place in and through our shared factical existence, through living together in society and in state.[32] This *phronētic* wisdom then, once cultivated, can help account for the particularities of the given situation, by being exercised through critical assessment, judgement, and action, which no kind of technical knowledge, application of procedure, or universal framework can replace. Thus, the importance of *phronēsis* in the era of modern science is, just this, to stress the importance of cultivating critique, judgement, and moral knowledge in a time where the ideals of scientific and technical reasoning is predominant.

Conclusion

For Gadamer, the principle of *phronēsis* offers a way to rethink the relation of reason and knowledge to action whilst taking into account the factical situatedness of human being. As stated, this is particularly important because, the modern age, as Gadamer claims, is

[31] *Ibid*, 331.
[32] Gadamer, "The Ideal of Practical Philosophy," 58-59.

characterised by the proliferation of scientific reasoning into all areas of human understanding, including the realm of human affairs. Given that modern science is primarily concerned with the possibility of substantiating universal principles, as in accord with mathematical exactitude, or otherwise, with technological know-how, this then poses a problem when accounting for the guidance of the mutable and temporal nature of the human practical world. Hence, Gadamer turns to Aristotle's concept of practical wisdom which, as a form of practical rationality arising from and concerned with human *praxis* accounts for the general and provisional nature of ethical considerations without marginalising the particularities of the lived situation. To the broader question of the good life, the *bio ēthikos*, that to which *phronēsis* is directed, that, must remain an open question, to be dialogically engaged with through the shared institutions, for Gadamer, principally the humanities (*Geisteswissenshaften*), which actively promote the questioning and cultivation of the good life.

Bibliography

Aristotle. *Nicomachean Ethics*. Trans. David Ross. Oxford: Oxford University Press. 2009.

Bernasconi, Robert. "Heidegger's Destruction of Phronēsis," *The Southern Journal of Philosophy*. (28, 1989), 127 – 147.

Brogan, Walter. *Heidegger and Aristotle*. Albany: SUNY Press. 2005.

Burtt, E. A. *The Metaphysical Foundations of Modern Science*. Mineola: Dover. 2003 [1924].

Collins, Harry and Robert Evans. *Why Democracies Need Science*. Cambridge: Polity Press. 2017.

Coltman, Rod. *The Language of Hermeneutics: Gadamer and Heidegger in Dialogue*. Albany: SUNY Press, 1998.

Donner, Wendy "Mill's Utilitarianism." In *The Cambridge Companion to Mill*. Ed. John Skorupski. Cambridge: Cambridge University Press. 1998. 255 – 292.

Fjelland, Ragnar. "What Ought we to know about Science and Technology? Or: Philosophy of Science and Science Studies as Science Literacy." *Dilemmata*. (2, 2007), 1 – 17.

Gadamer, Hans-Georg. "The Ideal of Practical Philosophy." In *Praise of Theory: Speeches and Essays*. Trans. Chris Dawson. New Haven: Yale University Press. 1998 [1983]. 50 – 61.

_____. "Science as an Instrument of Enlightenment." In *Praise of Theory: Speeches and Essays*. Trans. Chris Dawson. New Haven: Yale University Press. 1998 [1983]. 71 – 83.

_____. "Hermeneutics as Practical Philosophy," In *Reason in the Age of Science*. Trans. Frederick G. Lawrence. Cambridge: MIT Press. 1981. 88 – 112.

_____. "On the Philosophical Element in the Sciences and the Scientific Character of Philosophy." In *Reason in the Age of Science*. Trans. Frederick G. Lawrence. Cambridge: MIT Press. 1981. 1 – 20.

_____. "Philosophy or Theory of Science," In *Reason in the Age of Science*. Trans. Frederick G. Lawrence. Cambridge: MIT Press. 1981. 151 – 169.

_____. *Truth and Method*. Revised 2nd ed. London: Bloomsbury Publishing. 2004 [1960].

Galileo Galilei. *The Essential Galileo*. Trans and ed. Maurice A. Finocchiaro. Indianapolis: Hackett Publishing Company. 2008.

Heidegger, "Modern Science, Metaphysics, and Mathematics." In *Basic Writings*. Ed. David Farrell Krell. London: Harper Perennial Modern Thought. 2008 [1962]. 267 – 305.

_____. "The Age of the World Picture." In *Off the Beaten Track*. Trans and ed. Julian Young and Kenneth Haynes. Cambridge: Cambridge University Press, 2002 [1938].

_____. “Phenomenological Interpretations with respect to Aristotle: Indication of the Hermeneutical Situation.” Trans. Michael Baur. *Man and World*. (25, 1992). 355 – 393.

Heisenberg, Werner. “The Representation of Nature in Contemporary Physics.” *Daedalus*. (87, 3, 1958). 95 – 108.

Kisiel, Theodore. *The Genesis of Heidegger’s Being and Time*. Berkeley: University of California Press, 1993.

Koyré, Alexandre. “Galileo and Plato,” *Journal of the History of Ideas* (4: 4, 1943). 400 – 428.

Robinson, Jason. “Practical Reasonableness, Theory, and the Science of Self-Understanding.” *The European Legacy*. (13, 6, 2008). 687 – 701.

Taminiaux, Jacques. *Heidegger and the Project of Fundamental Ontology*. Trans and ed. Michael Gendre. Albany: SUNY Press. 1991.

Trimmer, John D. “The Present Situation in Quantum Mechanics: A Translation of Schrödinger’s “Cat Paradox” Paper.” *Proceedings of the American Philosophical Society*. (124, 5, 1980). 323 – 338.