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A marriage of convenience - defending explanatory integration of phenomenology with mechanism. In response to Williams

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Heath Williams' thoughtful commentary to my book *Mechanisms and Consciousness: Integrating Phenomenology with Cognitive Science* (Pokropski, 2021) touches upon key issues in the project of integrating phenomenology with the mechanistic framework used in cognitive neuroscience. I am grateful to Williams for the thought-provoking critical remarks as well as for this special issue, which brings phenomenological explanations under consideration. This issue shows that the debate about the naturalization and integration of phenomenology with cognitive science is still alive and generating new ideas. Scientific explanations and their forms are certainly issues that revive this debate.

1. Williams' first critical remark concerns the notion of "complete explanation," which I use in my book and, according to Williams, is perplexing and might suggest the endorsement of some kind of ideal of explanation analogous to "ideal explanatory text," the conditions of completeness for which are unknown. Indeed, I defend the view that complete mechanistic explanations of mental phenomena are possible and that phenomenology may contribute to them, but my concept of explanatory completeness is different from that of Williams. Furthermore, in the book, I express my skepticism about the explanatory power of phenomenology and consider the causal-mechanistic framework the explanatory standard for cognitive neuroscience. But, according to Williams, this preference is unjustified and it is a dogma of contemporary scientism (Williams 2022).

The first part of this criticism is crucial and concerns the issue of explanatory completeness. But let me begin from the latter, i.e., from clarifying why I chose the causal-mechanical framework as the standard for explanation in cognitive science and as a point of reference for naturalized phenomenology. First, the reason is not that I share the dogmatic position and reject non-causal explanations from sci-

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ence. Certainly, there are explananda and related research fields where non-causal explanations, e.g., mathematics, are prime. For example, we can explain why there is no single route crossing all of the Königsberg bridges exactly and only once by referring to the topological properties of the bridge system (Euler 1956). A general feature of non-causal explanations, such as a topological one, is that they rely on mathematical dependencies between the explanandum and explanans, whereas causal explanations consist in causal or empirical dependencies between the two, i.e., the explanandum is causally dependent on the explanans. Taking into account explananda in cognitive science as well as the recent shift from cognitive science into cognitive neuroscience (e.g., Boone and Piccinini 2016), it needs to be acknowledged that the causal-mechanical model of explanation (e.g., Craver 2007) is in the ascendant. Neuroscientists explain cognitive processes in terms of underlying mechanisms and causal relations. However, we do not have to rule out non-causal frameworks. Adopting the integrative approach allows one to think about causal and non-causal frameworks as complementary, rather than exclusive. For instance, we can consider causal-topological explanations (Ross 2021). Also, as I argue in my book (Chaps. 3 and 5), various mathematical theories, such as Dynamical Systems Theory (DST) (e.g., Beer 2003), network analysis, and graph theory (e.g., Bassett and Sporns 2017), are applied in the process of construing models in cognitive neuroscience. However, such models only have explanatory force when they capture the causal relations or structure of the mechanisms responsible for the target phenomenon (e.g., Craver 2016, Zednik 2019).

Importantly, and I stress this in the book (see, e.g., pp. 114–116), the causal-mechanistic framework which I defend does not necessarily involve reductionism. It consists in the integration of results from multiple research fields that provide constraints on the space of mechanisms. The final result of this explanatory process, i.e., the complete explanation, is therefore multilevel, which means that it spans levels of organization of the mechanism under study. In other words, cognitive mechanisms are composed of other mechanisms and are situated in and interact with an environment. This environment, depending on the level we choose, might be understood as a biochemical environment internal to an organism. But it could also be the environment in which an organism is situated. Thus, it is not surprising that the mechanistic framework is compatible with 4E approaches to cognition (Miłkowski et al., 2018). The point is that explanation so understood does not consist solely of a description of the internal structure of a mechanism but also its behavior in an environment.

Second, in recent years we can observe that other approaches to cognition, such as computational (e.g., Miłkowski 2013, Piccinini, 2020), ecological (Golonka and Wilson 2019), dynamic (e.g., Bechtel and Abrahamsen 2010, Beer 2003), and wide cognition (Miłkowski et al., 2018), do seem to gravitate towards the mechanistic framework. The case of dynamical explanations is particularly interesting, as they were thought to be opposed to mechanistic explanations (e.g., Thompson 2007) – but as I argue in my book (pp. 167–171), they are complementary. Although pure dynamical models of cognitive phenomena are incomplete explanations, they can be supplemented with mechanistic details. Taking this trend into consideration, I claim that if phenomenology wants to engage in dialogue with cognitive neuroscience, or

move towards naturalization, then the mechanistic framework should be considered a key partner.

Thirdly and most importantly, endorsing the mechanistic framework does not make me blind to its limitations, one of which is its lack of first-person perspective on mental phenomena. That is why I argue for adding phenomenology to research fields which provide constraints on mechanistic models. In my book, I adopt a pluralistic and integrative point of view because I believe that none of the frameworks which are currently available in the philosophy of mind and cognitive science, including phenomenological and solely mechanistic frameworks, can single-handedly provide a complete explanation of multifaceted mental phenomena. This is especially visible in the fields of psychiatry and psychopathology, in that explaining a mental malady, such as depression or schizophrenia, requires both first-person insights about the experience and third-person methods of brain science. Phenomenology can certainly provide rigorous analyses of the former. And I believe that integration of phenomenological research on consciousness with third-person approaches is the key to making progress towards the future science of consciousness. Contemporary mechanism offers a promising non-reductive integrative framework which brings together research from multiple fields in order to build multilevel explanatory models. This is the mechanistic revolution taking place in cognitive science today, and one of the objectives of my book was to show that phenomenology can take part in this process and can contribute to mechanistic models.

Now, what is a complete explanation then? First, let me emphasize that I do not endorse the ideal of completeness understood as the "ideal explanatory text" mentioned by Williams. I defend mechanistic explanations which take the form of models and schemes of mechanisms, rather than a collection of propositions. Roughly speaking, a complete mechanistic explanation consists of a complete model of the mechanism responsible for the explanandum phenomenon. What is a complete mechanistic model? Mechanists agree (see, e.g., Craver and Kaplan 2020) that a complete mechanistic explanation should not be understood as a model which covers *all* of the mechanism's parts, activities, and their organization (see, also pp. 100–101,107–108 of my book). To put it differently, "the more details are better" maxim is not the proper recipe for good mechanistic explanations. Such a scheme would be explanatorily useless, since it would contain information irrelevant to the target phenomenon. The proper understanding of explanatory completeness is that a complete mechanistic explanation consists of *all and only those* component parts, activities, and organization, which are *relevant* to the target phenomenon.

The problem with this idea of completeness is evident; how should we know whether the proposed explanation includes all of the relevant entities of the mechanism? One way is to see whether the proposed explanation allows us to answer specific questions. According to Craver and Kaplan (2020), there are three types of such questions which test the completeness of mechanistic models and related explanatory knowledge. First, there are "what-if-things-had-been-different" questions, i.e., counterfactual questions about how the phenomenon would change if we altered some of the conditions, e.g., if we modified the properties of the mechanism's component parts or the value of an external input. Second, there are "how-does-that-work" questions, which concern how higher-level properties are realized by lower-level compo-

nents and activities. Third, there are "what role does this item play" questions, which concern particular parts of the mechanism and their role in a higher-level mechanism. Another way to test the completeness of a mechanistic explanation, proposed by Baetu (2015), relies on computer simulations. In short, if the outcome of a simulation matches empirical measures of the phenomenon, then this might be evidence that the model is complete. On the contrary, if there is some divergence or the simulation fails to produce the target phenomenon, then it is likely that the model is incomplete and needs to be supplemented with more relevant details.

Both in answering questions which test explanatory knowledge and in comparing outcomes of computer simulations with observations of the target phenomenon, much depends on the measuring techniques and, more importantly, on the description and characterization of the explanandum phenomenon. This suggests another role that phenomenology may play in constraining mechanistic models. Phenomenology can refine our description and understanding of a target mental phenomenon, and thus help to establish whether a mechanistic model of the phenomenon is on the road to completeness.

To conclude, mechanists have a clear conception of explanatory completeness as well as ways of testing for it. An advantage of such complete causal-mechanistic explanations over non-causal explanations is that it allows one to control the phenomenon in question, i.e., it allows one to manipulate the phenomenon using our knowledge of the underlying mechanism. But Williams' concern raises important questions about norms of completeness in non-mechanistic explanations as well, including phenomenological ones. It would be interesting to hear how proponents of phenomenological explanations account for their conception of a complete explanation. How can we know that a phenomenological explanation is complete – or incomplete and thus needs revision? Are some phenomenological explanations better than others, and if so, what is the method of evaluation? Finally, do phenomenological explanations allow us to control the phenomenon under study? Answering these questions would contribute to the view that phenomenology could be explanatory.

2. In his second criticism, Williams expresses skepticism about applying the notion of disposition in reading Husserl's theory of the constitution of objects of experience, because Husserl does not pay much attention to this notion and understands it in a different, and rather narrow way, which is related to habits and character traits.

I agree with Williams that Husserl does not discuss the notion of disposition in detail. The reason for that, I suppose, is that Husserl identifies this term as belonging to psychology rather than to phenomenology. For instance, in his working manuscripts on phantasy and memory, he briefly mentions that disposition "is a concept that transcends the genuinely immanent sphere", and then adds that "it is an important methodological concept in psychology, but it does not concern us" (Husserl, 2005, 3). However, at the same time, Husserl does use the notion of disposition (*die Disposition*) as well as capacity (*die Fähigkeit*) occasionally, and in some texts quite frequently (e.g., Husserl 1989), to discuss our habits, intellectual capacities, and character traits (Husserl, 1977, 1989), but also in the context of bodily capacities (Husserl, 1989) and as "substrates for the position-taking subject" (1989, 397). Interestingly, Husserl also mentions the term disposition when discussing unconscious

"dispositions" of the monad (Husserl 2001, 635) understood as sedimented habitualities and affective predispositions, which shape the conscious activities of the ego.

These references show that Husserl does use the term disposition and that despite his remarks to the contrary, he does not always clearly separate psychological and phenomenological concepts.[1] When Husserl discusses latent or unconscious dispositions and sedimented habitualities in *Analyses Concerning Passive and Active Synthesis* (2001), he clearly incorporates such dispositions into genetic phenomenology, which investigated the origin and constitution of experience. In a nutshell, our habits, as well as affective predispositions, etc., shape our conscious activities and thus passively co-constitute objects as we experience them. So, in my view, dispositions as Husserl understands them are involved in the process of constituting experience.

That being said, at the end of the day, I agree with Williams that the notion of disposition that I employ is not the same as the notion employed by Husserl – significantly, however, it is not anti-Husserlian either. The objective of *Mechanisms and Consciousness* was not to provide a canonical reading of Husserl, but rather to propose a liberal, and perhaps to some a heterodox, interpretation which pushes phenomenology in the direction of the mechanistic framework. Part of this objective was to renew the idea of functional phenomenology and to develop it by showing its similarities to functional analysis (Cummins 1975), including thinking about our cognitive capacities in terms of dispositions and functions. I do not claim that the meaning of these terms in functional analysis and in functional phenomenology is the same. Certainly, there are significant differences, but there are also similarities which I indicate in the book. In particular, I focus on the procedure of decomposition, which is applied in functional analysis, and the analogous procedure we can find in functional phenomenology. According to the conception of functional analysis, a cognitive capacity, say, visual perception, can be broken down into a set of sub-dispositions. In the case of phenomenological decomposition, these are constitutive functions involved in the perceptual capacity to see an object. For instance, retention and protention are such functions. Each is involved in the constitution of the perceptual experience of an object. To put it in functional-dispositional terms, a system has a disposition (a capacity) to perceive objects, if it has sub-dispositions to retain information about just past perceptions and to anticipate future possible states of the object's perceptual adumbrations. Once we accept such functional development of phenomenological analyses, we are on the road to integration with the mechanistic framework.

3. The third critical remark concerns the notion of constitutive relevancy vs. causal relevancy. Williams indicates here the fundamental and difficult issue of the relation between the intentional level and the functional and/or material level. That presents the separate issue of naturalizing intentionality, something for which I do not claim to have a solution here. But I do not think that this problem undermines my project either. In my book, I did not address the naturalization of intentionality because I focused on theoretical and methodological grounds for the integration of phenomenological analyses of experience with the mechanistic framework.

[1] Examples of other psychological concepts which Husserl adopts in his phenomenological investigations and introduces phenomenological senses for include association, motivation and function.

Generally speaking, I think that such problems as the naturalization of intentionality, as well as the hard problem of consciousness (Chalmers, 1996), tackle the progress in the debate over integration of phenomenology with cognitive science. I believe that we can study mental phenomena and make scientific progress without solving all of the hard problems first. In the discussion about the condition of the philosophy of mind and cognitive science, some have argued (see, e.g., Chemero and Silberstein 2008) that the "classical" issues in the philosophy of mind, such as mind-body dualism or the hard problem of consciousness, are outworn and that the discussion has moved towards topics related to the philosophy of science. I endorse this view, and I think that it is even more sound today. For instance, one of the key issues in contemporary discussions in the philosophy of cognitive science are models of explanation applied to mental phenomena. My book as well as this special issue show that phenomenologists can contribute to this discussion.

Also, as I argue in the book (Pokropski, 2021, pp. 31–32), considering the naturalization of phenomenology as a remedy to the hard problem of consciousness (Varela 1996) misplaced the role of phenomenology in cognitive science. Phenomenology does not have the resources to solve the hard problem of consciousness because it suspends investigation of causal relationships. Furthermore, in my view, phenomenal qualities of experience, the *hyle* in Husserlian terms, were never a prime object of interest for Husserlian phenomenological analyses, which focus on the structure of consciousness, i.e., on intentional functions and the constitution of objects of experience.

4. In the last section of his commentary, Williams asks whether in my proposal "phenomenology has been assigned any greater role than defining the explanandum, albeit in terms which constrain the type of mechanistic account that might ultimately be offered," (Williams 2022) and rightly notices that describing the explanandum was already a role ascribed to phenomenology in Gallagher's front-loaded phenomenology (e.g., Gallagher and Brøsted Sørensen 2006). I am flattered by the comparison of my proposal with Gallagher's conception. But my idea is different. First, to my knowledge, Gallagher is skeptical about mixing phenomenology with mechanistic explanations (Gallagher, 2018). Second, as I argue in my book (Pokropski, 2021, pp. 52–54), front-loaded phenomenology delivers weak conceptual constraints, and my claim is that phenomenology can deliver stronger functional and dynamical constraints. The target of the constraints is also different; I defend the view that phenomenology can provide constraints on mechanistic models. Third, I do not claim that phenomenology delivers a mere description of an explanandum phenomenon, nor does it provide an explanation. As I argue (pp.118–127), drawing from Lipton's (2009) conception of understanding and Wheeler's (2013) view on naturalization, phenomenology provides a constitutive understanding, which is distinguished both from descriptions and from explanations. To conclude, I show that the dichotomy between the descriptive and the explanatory might be deceptive, and that there are other epistemic categories such as understanding, which indicate why phenomenological analyses are better than mere descriptions. Thus, my proposal gives phenomenology a stronger position than a merely descriptive one, yet it sees its role as not fully autonomous – rather, it sees it as a part of larger integrative model of explanation.

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References

Baetu, T. M. (2015). The completeness of mechanistic explanations. *Philosophy of Science*, *82*(5), 775–786.

Bassett, D. S., & Sporns, O. (2017). Network neuroscience. *Nature neuroscience*, *20*(3), 353–364.

Beer, R. D. (2003). The dynamics of active categorical perception in an evolved model agent. *Adaptive Behavior*, *11*(4), 209–243.

Bechtel, W., & Abrahamsen, A. (2010). Dynamic mechanistic explanation: computational modeling of circadian rhythms as an exemplar for cognitive science. *Studies in History and Philosophy of Science Part A*, *41*(3), 321–333.

Boone, W., & Piccinini, G. (2016). The cognitive neuroscience revolution. *Synthese*, *193*, 1509–1534. https://doi.org/10.1007/s11229-015-0783-4.

Chalmers, D. J. (1996). *The conscious mind: in search of a fundamental theory*. Oxford University Press.

Chemero, A., & Silberstein, M. (2008). After the philosophy of mind: replacing scholasticism with science. *Philosophy of science*, *75*(1), 1–27.

Cummins, R. (1975). Functional analysis. *The Journal of Philosophy*, *72*(20), 741–765. doi:https://doi.org/10.2307/2024640.

Craver, C. F. (2007). *Explaining the brain: mechanisms and the mosaic unity of neuroscience*. Clarendon Press.

Craver, C. F. (2016). The explanatory power of network models. *Philosophy of Science*, *83*(5), 698–709.

Craver, C. F., & Kaplan, D. M. (2020). Are more details better? On the norms of completeness for mechanistic explanations. *The British Journal for the Philosophy of Science*, *71*(1), 287–319.

Euler, L. (1956). The seven bridges of Königsberg. *The world of mathematics*. New York: Simon and Schuster.

Gallagher, S., & Brøsted Sørensen, J. (2006). Experimenting with phenomenology. *Consciousness and Cognition*, *15*(1), 119–134. https://doi.org/10.1016/j.concog.2005.03.002.

Gallagher, S. (2018). New mechanisms and the enactivist concept of constitution. In M. P. Guta (ed.) *The Metaphysics of Consciousness* (pp. 207–220). Routlege.

Golonka, S., & Wilson, A. D. (2019). Ecological mechanisms in cognitive science. *Theory & Psychology*, *29*(5), 676–696. doi:https://doi.org/10.1177/0959354319877686.

Husserl, E. (1977). *Phenomenological psychology* (J. Scanlon, Trans.). Martinus Nijhoff.

Husserl, E. (1989). *Ideas pertaining to a pure phenomenology and to a phenomenologicalphilosophy; Second book: Studies in the phenomenology of constitution* (Rojcewicz, R., & Schuwer, A., Trans.). Springer.

Husserl, E. (2001). *Analyses concerning passive and active synthesis: Lectures on transcendental logic* (A. J. Steinbock, Trans.). Springer.

Husserl, E. (2005). *Phantasy, image consciousness, and memory (1898–1925)* (Vol. 11; J. B. Brough, Trans.). Springer Science & Business Media.

Lipton, P. (2009). Understanding without explanation. In de H. W. Regt, S. Leonelli, & K. Eigner (Eds.), *Scientific understanding: philosophical perspectives* (pp. 43–63). University of Pittsburgh Press.
Miłkowski, M. (2013). *Explaining the computational mind*. MIT Press.
Miłkowski, M., Clowes, R., Rucińska, Z., Przegalińska, A., Zawidzki, T., Krueger, J., Gies, A., McGann, M., Afeltowicz, Ł., Wachowski, W., Stjernberg, F., Loughlin, V., & Hohol, M. (2018). From wide cognition to mechanisms: A silent revolution. *Frontiers in Psychology*, *9*. https://doi.org/10.3389/fpsyg.2018.02393
Piccinini, G. (2020). *Neurocognitive mechanisms: explaining biological cognition*. Oxford University Press.
Pokropski, M. (2021). *Mechanisms and consciousness: integrating phenomenology with cognitive science*. Routledge.
Ross, L. N. (2021). Distinguishing topological and causal explanation. *Synthese*, *198*, 9803–9820. https://doi.org/10.1007/s11229-020-02685-1.
Thompson, E. (2007). *Mind in life: Biology, phenomenology, and the sciences of mind*. Harvard University Press.
Wheeler, M. (2013). Science friction: Phenomenology, naturalism and cognitive science. *Royal Institute of Philosophy Supplement*, *72*, 135–167.
Williams, H. (2022). A response to Marek Pokropski, Mechanisms and Consciousness: Integrating Phenomenology with Cognitive Science, Routledge, 2021. *Phenomenology and the Cognitive Sciences.* Advance online publication. https://doi.org/10.1007/s11097-022-09871-1.
Varela, F. (1996). Neurophenomenology: a methodological remedy for the hard problem. *Journal of Consciousness Studies*, *3*(4), 330–349.
Zednik, C. (2019). Models and mechanisms in network neuroscience. *Philosophical Psychology*, *32*(1), 23–51. DOI: https://doi.org/10.1080/09515089.2018.1512090.