Peer Community In
Organization Studies

Realizing potentials: The promise of an Aristotelian approach to causal complexity

Genevieve Shanahan 🅞 *based on peer reviews by 3 anonymous reviewers*

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Many of the most pressing challenges we face in society seem intractable at least in part due to their complexity. The climate crisis, for instance, is the product of environmental and social systems – already complex in themselves (Dryzek, 2013) – interpenetrating across such a diversity of spatial and temporal scales as to effectively evade human comprehension and agential engagement (Morton, 2013). Yet complexity also carries with it emancipatory promise. Against understandings of the status quo as a unified, stable and self-reinforcing system, complexity-embracing perspectives draw attention to the vulnerability of existing systems of domination (Wright, 2010) as well as the emancipatory possibilities of alternative practices, both actual and potential (Elder-Vass, 2022; Gibson-Graham, 2006). Intentionally steering towards emancipatory possibilities, however, requires that we apprehend, at least to some degree, the forms of complexity that give rise to such potentialities.

The causal complexity perspective seeks to address the shortcomings of the dominant approach to explanation – the Newtonian linear model – which can be unhelpfully simplistic in a variety of domains, including those of the social sciences (Abbott, 2001; Meyer, Gaba and Colwell, 2005; Zara and Delacour, 2023). By ignoring the ways in which specific effects can depend on the conjunction of various causal conditions, including interactions across levels of analysis, and how particular causes can give rise to feedback loops, discontinuities and non-proportional effects (Delacour and Zara, 2025; Misangyi et al., 2017; Ragin, 2008), this dominant paradigm offers parsimonious causal accounts optimized for certain purposes and, for that reason, ineffective for others (Durand and Vaara, 2009; Furnari et al., 2021).

Despite the promise of the causal complexity perspective, however, the authors of "Embracing causal complexity" argue that this approach remains underutilized in organization studies due to outstanding operationalization difficulties and poor understanding of the central concepts of causes and causality (Delacour and

Zara, 2025). Configurational theory scholarship has done much to incorporate causal complexity into empirical analyses, most notably through the method of Qualitative Comparative Analysis (QCA - Fiss, 2007; Furnari et al., 2021; Misangyi et al., 2017; Ragin, 2008; Schneider and Wagemann, 2012). Nevertheless, the authors argue that the value of such approaches is limited because they lack a clear ontology of causes and causation (Delacour and Zara, 2025).

The authors thus turn to Aristotle's multivocal conceptualization of causes and causalities as the basis for their proposed three-step analytical framework. Step 1 involves identifying the four per se causes – material, formal, efficient and final – of the phenomenon under investigation. The presented illustrative analysis of a typical firm broadly corresponds to prior efforts to apply the Aristotelian framework in management scholarship (e.g., Strong, 2000). Step 2 goes further, however, using Aristotle's categories of instruments, secondary causes and accidents to characterize the context of the phenomenon under analysis. Finally Step 3 makes use of Aristotle's thinking regarding the different forms of causation at play in the relationships between the foregoing types of causes. According to the authors, this ontological grounding usefully advances the causal complexity perspective by accounting for why the dynamics within causal configurations are non-aggregative and tend towards non-linearity and non-proportionality.

I recommend this paper primarily because I share the authors' belief in the need for organizational scholarship to pursue greater understanding of not just the fact of causal complexity but most importantly its underlying mechanisms. While any such apprehension will surely be partial and approximate at best, even dim improvements enhance our agential capacity to imagine and intentionally deploy the causes of new effects (Gümüsay and Reinecke, 2022; Mahoney and Goertz, 2006; Schoppek, 2021). Furthermore, the grounding in Aristotelian metaphysics in particular is auspicious for those of us interested in the reality of unrealized potentialities (Bhaskar, 2008, 2016; Elder-Vass, 2022; Shanahan, Jaumier, Daudigeos and Ouahab, 2024).

Given the ontological importance of human agency and intentionality in Aristotle's framework (Jacobs and O'Connor, 2013), I do find curious the paper's reluctance to use such features to more clearly demarcate, for instance, instruments from secondary causes and accidents. I also struggle to see, from the specific illustrations presented in the paper, a clear demonstration that the conceptual complexity added by the proposed framework gets us something of corresponding value in terms of explanatory power. However, I'm inclined to read the paper's circumspect explanatory ambition as merely an artefact of the authors' choice to prioritize simplicity and clarity to effectively illustrate the Aristotelian framework in its own right (p. 14). Most notably, the illustrations are generally constrained to a single level of analysis, taking "the firm" as its single, generic object.

I would be interested to see organization studies research building on this groundwork by exploring what the proposed Aristotelian approach might offer when applied to multiple objects of study in interaction. The example of the consultant who inadvertently reinforces the CEO's existing inclination by deploying ineffective persuasive techniques (p. 21), for instance, hints at the potential for deeper theorization. Even limiting ourselves to a single level of analysis, might more novel insights be revealed by overlaying the existing framing, where the CEO is understood as the efficient cause, with a secondary framing that takes the consultant as the efficient cause of a separate but intersecting project? And what theorization might be made possible by overlaying such framings at multiple levels of analysis?

While references to Aristotelian thought are not particularly unusual in organization studies, Aristotle's metaphysics has been relatively neglected within our discipline. If we accept that the pursuit of emancipatory responses to complex societal challenges requires a correspondingly complex and therefore interdisciplinary understanding of causes and causation (Ferraro, Etzion and Gehman, 2015; Geels, 2022), adopting the proposed framework could be valuable not just as a particular way of conceptualizing causal complexity, but also as a means of tapping into a productive vein of contemporary philosophical work in the Aristotelian tradition (Jacobs and O'Connor, 2013; Jansen and Sandstad, 2021; Novotný and Novák, 2014; Simpson, Koons and Teh, 2017; Tahko, 2011). The present paper is thus recommended by Peer Community in Organization Studies as an invitation to organization scholars to explore what such metaphysical approaches might re-

veal not just in analysis of what is, but more pressingly in exploration of what we might intentionally cause to be.

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Reviews

Evaluation round #2

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Version of the preprint: 2

Authors' reply, 28 October 2024

Download author's reply

Decision by Genevieve Shanahan ⓘ**, posted 03 September 2024, validated 04 September 2024**

Dear author(s),

Thank you very much for this resubmission of "Embracing causal complexity." I sent the paper back out to the same three reviewers who have all now completed their appraisal of your revised paper (see their reviews in full below).

We are all in agreement that your writing is much more clear and streamlined in this version of the paper, and that the paper has improved significantly in terms of how its claimed contributions are presented.

However there are still some issues that remain to be solved before we can recommend this paper. R2 draws attention to some significant issues with the implicit ontology of the paper at present, noting that your "generic framework for evaluating any organization" appears to treat organizations in a positivist manner, as things simply out there in the world rather than (also) products of our theoretical framing. Using the example of your treatment of the relationship between technology and the organization, R2 highlights the specificity of the perspective adopted by your analysis framework, and the necessity - when claiming a complexity-sensitive account - to acknowledge multiple possible perspectives. R3 echoes this point, noting that "the choice of categories seems arbitrary to me, i.e. why should a given cause, such as a consultant or a certain technology, be categorised as one type of cause or another?" For my own thoughts on these issues, please see my comments 1 and 2 below.

In the front-end of the paper, particularly, we still miss a clear articulation of the value-add of the proposed approach in contrast to the alternative approaches mentioned. R3 suggests that you haven't yet sufficiently explained why we need the approach that you advocate, and makes some suggestions regarding how you can position your approach in relation to the mentioned alternatives so as to clarify this value-add. On the same point, R1 highlights some specific examples of vague and abstract language that makes it difficult for the reader to understand what your paper is offering, and reiterates their recommendation that you use an illustrative example to demonstrate the power of your analytical framework over and above existing approaches. For more on this please see my comment 3 below.

Throughout the paper there are still problems in terms of the clarity of your conceptual framework and lacking or insufficient definitions. R1 notes that you need to adopt the perspective of the reader here to recognize that, for instance, a clear definition of the "Newtonian paradigm" is necessary to apprehend your overall theoretical project. Similarly R3 draws attention to some definitions that are too dense or even tautological, lists concepts that still need to be defined on first mention, and recommends other concepts that "could be avoided in favour of a plain explanation (e.g. non-additive, eidos, non-univocal, non-proportional)."

I would therefore like to invite you to revise your paper again in light of these comments (major revision). We all very much appreciated your letter addressing the last round of reviews point-by-point, and so would ask that you do the same for this revision.

In what follows, I offer my own perspective on the issues to be addressed, as a complement to the reviewer comments copied below.

I hope this feedback is helpful to you, and - given the great potential your paper holds - that you will agree to undertake this further revision.

Very best regards,

Genevieve Shanahan

1. Ambiguity regarding the object of analysis to which the Aristotelian framework is designed to apply

I like the restructuring, where you now keep the cashing-out of the Aristotelian framework in specifically organizational terms for section 3. This restructuring now reveals an ambiguity in your account of the final cause in the organizational example. I think this ambiguity is actually rooted in quite a fundamental ambiguity in your characterization of the object of analysis throughout the paper: to what are we applying the Aristotelian analytical framework? A specific object (e.g. an organization), a specific action, or a specific process?

Here's what I see in your account of the final cause in the organizational example:

- On page 13 you first talk about the organization's environment (stable or changing) as something like the context of the organization at the outset of the analysis - this could cohere with the object/action/process-focused perspective, but strikes me as really corresponding more to an accident in your account ("every organization is further shaped by its specific context")

- Then on page 14 you slide into talking about the particular environment to which the organization tends - that is, what the agents of the organization hope the organization's context will be (at the end of a particular period, corresponding to the action/process-focused perspective? Or in the future more generally conceived, correspinding to the object-focused perspective?). This is very different to the above characterization, and also highlights the core ambiguity I'm worried about.

- Further confusing matters, in the sub-section on Step 2, you characterize final causes as the goal of the organization. I certainly understand that this will often involve modifying the organization's environment, but is this necessarily always the case? Is there something in the Aristotelian account that excludes the possibility of self-directed goals?

I think clarification on this point could help resolve some further issues regarding clarity in the paper:

- Clarification on this point could assuage my concern regarding the Aristotelian framework's subjective perspective, where causes seem to be defined in terms of a particular agent's intentions. I understand that you see this as a can of worms better left unopened, but I think this question is actually crucial to understand the ontology of causes and causality proposed. I am still quite sure that, as mentioned in my previous response, it is crucial from the perspective of causal complexity that this paper explicitly recognize that the proposed analysis of causes and causality can (and often should) be applied to the various objects/actions/processes that are involved, overlapping and interacting, in any given empirical case. You can of course specify that the project of this paper focuses on unpacking the causal complexity within any given object/action/process, but this project must be understood as a complement to other work on causal complexity that emphasizes the multitude of overlapping objects/actions/processes - and corresponding intentions - at play in any given empirical case. Indeed this would cohere with your overall thesis that the Aristotelian ontological framework can be used to bring together multiple valuable approaches to causal complexity.

- Similarly, the definitional difference between per se and secondary causes seems to indicate that these are relational ontological categories - that is, these classifications are all relative to a given final cause: "the per se causes are essential because they are primary, or to avoid tautology, because they are the principles of the secondary causes" (p. 17)

- I believe more explanation is also needed regarding 'reciprocal and total' causality, as it's hard to see immediately how misaligned per se causes can cause anything at all. Again, I think this difficulty is connected to the ideas of 'alignment' and 'misalignment' being defined in terms of subjective intention, whereas the 'reciprocal and total' nature of the causality is intention-agnostic.

- I also find it hard to understand the difference between secondary causes and instruments in the sub-section on Step 2 - might the mapping of the Aristotelian ontology onto the organizational example be more clear if the paper were to specify exactly what it defines as the object of study in this case? e.g. by specifying what the level of analysis is, and what final cause is under examination, the reader can understand why we are not interpreting technology as an instrument or employees as efficient causes of their own projects.

2. Some problems inherent to the Aristotelian ontology?

Some ontological distinctions appear straightforwardly misguided - if these are indeed accurate representations of Aristotle's ontology, it is nevertheless hard to see the value in applying fundamentally deficient elements of this framework. For instance, the conclusion that divergent secondary causes will cancel each other out does not seem sufficiently justified - surely a very strong secondary cause can outweigh the effects of a very weak secondary cause? ("On the other hand, if the secondary causes are divergent from each other, they will not affect or modify the per se cause. Clearly, if top and middle management do not agree, their influence on the CEO will be less tangible." (p. 17). Similarly, the claim that accidents' "interrelation with the per se causes they may affect is less strong than interrelations between secondary and per se causes" on the grounds that "accidents may or may not occur" seems to conflate two distinct senses of causal strength - a moderator may not be guaranteed to obtain, but its effects may be highly significant when it does. It appears as though the implicit definition of "causal strength" here is something like that in the statistical approach, a form of simplification I would have thought to be diametrically opposed to the causal complexity you are advocating.

3. Distinction between the Aristotelian and other approaches to causal complexity still unclear

While section 2 - "Embracing Causal Complexity" - is now much more streamlined and clear, there are still some aspects of your account of the state of play regarding scholarship on causes and causality that are somewhat unclear:

• In configurational theory, is the distinction between core and peripheral elements quantitative or qualitative? That is, is it just a matter of relatively stronger or weaker relationship with the end result? Or has it something to do with the distinction between necessary and sufficient conditions? (p. 5)

• Not clear yet to the reader what the salience of the difference between configurations and factors is, so this statement is a little unclear: "While this approach provides many insights, it focuses on configurations to depict causal complexity, rather than on factors." (p. 5) - it's important to make sure the reader clearly understands this difference as the Aristotelian conceptualization of causality you present does itself seem to rely precisely on configurations of causes. So the distinction to highlight is perhaps not configurations vs. factors but configurations of variables versus configurations of causes, or something like this.

• What do the concepts of total vs partial get us that is different and better than the more familiar necessary vs sufficient? Statements like the following seem to suggest that "total causes" can be understood straightforwardly as necessary causes: "both per se causes in each pair are total causes of the effect. This means that there is no effect in the absence of one or the other." (p. 20)

• The discussion of causal complexity and its divergence from the Newtonian paradigm is still a bit too abstract overall. For instance, it's not clear to me what I should understand feedback loops, discontinuities and non-proportionality to mean in this context - e.g. I would have thought Newtonian physics can account for feedback loops, for instance, so maybe it's a case of needing to better-specify what you mean by the Newtonian paradigm? ("Concerning causality, it is argued that it should not be viewed in Newtonian terms; but that feedback loops, discontinuities and non-proportionality should be favored instead (Bunge, 2009)." (p. 6))

• The summary on page 8 at the end of section 2.2 - "Aristotle's conceptualization of causes" - defines your position in relation to schools of though represented by Hocutt (1974) and Scott (2011), but we haven't yet encountered these references (in fact, they're not listed in the bibliography, so maybe they were a late addition not yet fully integrated into the text?). Indeed the characterization of the two perspectives in terms of their divergent readings of the word "because" risks appearing to introduce a new idea rather than merely summarizing and rephrasing what has been explained thus far. In particular, I struggle to understand what is meant by the following statements:

- "we believe that the four per se causes are not just 'because'." - I think without some context of what 'because' means to Hocutt (1974) specifically this part is not really legible.

- "causes are not univocal, i.e., they do not have only one meaning (Scott, 2011). Causes do not always mean the same thing; they are asserted with different meanings" - Here there is a potential ambiguity regarding whether you mean that the total set of causes contains subsets of different cause types OR that any given cause (or maybe quotidian "because" statement?) is itself plurivocal.

But overall, I think you need to either better integrate these references and their framing in terms of "because" into the text or remove them - whichever option you find maximizes the parsimony of the paper's argument.

4. Outstanding structural issues

While I do appreciate your restructuring of the article overall, it is less clear that section 3.3 gives us anything that was not or could not have been already said in section 2.3. That is, we get some minor clarifications of Aristotle's account of causality, but these appear sporadically amidst a reiteration of what was said before, and there is not a clear extension through your own proposed operationalization for the organizational context. Perhaps too much space given over the the Discussion explaining the 3 contributions (which appear to overlap to some degree), whereas I believe this space could be better used to actually do some of the described theoretical expansion. Some ideas mentioned in this section I'd like to see expanded in this paper:

- "This is interesting for organization studies in revealing how a cause can also sow the seeds of its own perdition." (p. 19) - While you claim on page 28 that, to your knowledge, this has only been addressed once in the literature to date, the lack of explanation of what you mean makes it very difficult to evaluate this claim.

- "the influence of accidents and secondary causes will depend on the causality of the per se cause, they affect. The more causality the per se causes have, the more difficult it is to influence them. This brings us to the interrelations between the per se causes." (p. 20) - sounds interesting, but not sure what you mean.

- "Over time, therefore, an increasing amount of change therefore accumulates without necessarily being enacted. However, as it accumulates, it may reach a tipping point where a small additional accident leads to significant effects (e.g., the threshold effect developed by Granovetter, 1978)." (p. 23) - what does it mean, in an Aristotelian framework, for change to accumulate without being enacted?

Minor comments:

- Your restructuring of the article does make your unique contribution much more clear. As a minor point, you might want to retitle section 3 ("**Aristotle's** analytical framework") to something like "Proposed Aristotelian analytical framework" to clarify that this is **your** analytical framework inspired by Aristotle's approach and conceptual tools, as indicated on page 7 ("we briefly describe Aristotle's conceptualization of causes and causalities, before developing our analytical framework")

- Your reference to ANT perspectives in the course of 3.3.3 is not well-integrated and appears misplaced, structurally. I would expect this to be addressed in the discussion/conclusion where the value of the Aristotelian approach over and above existing approaches is addressed

Unclear phrasing

- "While many scholars recognize the benefits of causal complexity, they struggle to apply it effectively" (p. 1) - should rather be something like "the benefits of theoretical models that take account of causal complexity"

- "our analytical framework enables to examine any organization and social phenomena, extending our understanding of causal complexity." (p. 1) - should rather be something like "enables us to better understand/predict/explain…"

- "This means that they can converge/diverge towards the same effect and thus partially affect their end result, or they can affect the different per se causes by diverging or converging in their effect." - I just find this paragraph difficult to follow

- "Here, we introduce an additional factor that perpetuates this aspect. This expands our explanations of this phenomenon." (p. 28) - unclear what each "this" refers to

Reviewed by anonymous reviewer 1, 05 August 2024

Dear authors,

Thank you for engaging with and incorporating feedback. Furthermore, I would like to express my gratitude for your willingness to provide comprehensive responses. The revised manuscript reads better and provides a more accurate and detailed account of the capture and operationalization of causal complexity. I'm appreciative of the effort you have invested in revising the manuscript. I also appreciate your work on the tables (Fig1 is particularly insightful).

I will limit my comments here to those issues that I feel still require attention.

1. Clarity. I still think the manuscript will benefit from a clear focus. For example, the start of your abstract "While many scholars recognize the benefits of causal complexity, they struggle to apply it effectively." Or the launch of your introduction "Numerous scholars have highlighted that considering causality as complex rather than relying on the Newtonian, linear or correlational paradigm, brings in various advantages such as dealing with contradictions, understanding the richness of phenomena, exploring dynamics and developing theory, for example […]" are (very) vague. I recommend that you remove all of these wordings from your text. Given that your text is primarily a theoretical essay, despite the admirable efforts you have made to illustrate it, such standard formulations make it challenging for the reader to engage with your text.

2. Definitions. There is still room for improvement in terms of concept definitions. For example, it is important to define the Newtonian paradigm in the introduction for an unfamiliar readership. This effort at definition, which may be tedious for you who are experts in the subject, will help readers to fully grasp the project. This brings me directly to my third point.

3. The "real deal" of your article. Thanks to your in-depth answers, I fully understand your project. It seems to me that that there is an opportunity to enhance the clarity and efficiency of the wording employed in the responses, in order to more effectively convey the core objective of the article. In this regard, the introduction still lacks a bit of 'punch' to enable your readers i) to be drawn into the text and ii) to grasp the essence of your innovative approach. In light of my previous comments regarding the introduction, I would like to extend them to encompass the discussion that begins first paragraph, page 24 of the PDF. In this context, it would be beneficial to provide a detailed delineation of what your analytical framework can do (and what it cannot). For example, I found your response to my discussion on gender bias thought-provoking, and it seems to me that this exchange could find a place in your conclusion. Such an addition could offer the scientific community a valuable point of reflection.

4. A "Hook". I apologize for returning to this comment, already made in the previous revision. It seems that including a hook from an example at the outset of the introduction could prove beneficial. As previously stated, the article remains theoretical. However, the incorporation of illustrative examples has facilitated a more comprehensive understanding of the proposals, as a result of the thorough revisions undertaken. Could I suggest that you consider further clarification of the introduction to your manuscript? It is not yet evident what your guiding principle is. One solution could be to provide an example of a situation where your analytical framework sheds new light on the subject. For example, the situations involving CEOs could be an avenue to explore.

I wish you success in revising your paper.
Very best regards,

Reviewed by anonymous reviewer 3, 23 July 2024

Thank you for the opportunity to review the paper. I understand the concerns about the expansion of "causes" as conceptual and operational tools for the researcher in the field of organization studies. I think this is a legitimate problem that deserves the contribution of your paper around the Aristotelian metaphysics of causality. My advice goes into what I think you do not see while immersed in the problems of a paper development. The idea of complex causality is still under development, for example under the label of Qualitative Comparative Analysis (QCA), which seems to invigorate the configurational perspective (`https://doi.org/10.1177/0149206316679252`). So bringing Aristotle into the picture seems attractive, because it could further elevate the analysis of complex causality.

My first point is about the way you think in the 'first step' of your model, linking "material cause" and "organizational structure"; "formal cause" and norms, values and beliefs, and so on... And the final statement about the per se causes: " As such, any organization could be understood through its structure (material cause), norms (formal cause), agents (efficient cause), and environment (final cause). This gives us a generic framework for evaluating any organization." My attention is immediately drawn to the conception of organization that you imply in the arguments, once you imagine an organization within a positivist framework, as a thing that is already there. So my concern is with another possibility once we are dealing with Aristotelian causes. Because for me it would be more accurate to think of the organization as the final cause. You probably try to simulate the rationality of practitioners, but then you run the risk of being more managerial than Aristotelian. In closing this session, you offer the example of bureaucracy "... characterized not only by a specific material cause (functional, hierarchical, etc.), but also by its formal cause, a set of norms, values, and beliefs, with a particular type of decisions made by its agents (efficient cause), and the particular environment (final cause) to which it tends." But bureaucracy is not an object, it is an ideal type that informs real objects. I wonder if you could try another way to show how the first step of the model might be useful for operationalizing the four causes, for example, the historical emergence of a particular corporation, cooperative etc.

My second point is a misunderstanding of the intertwining of technology and structure when you say "Technology could be seen as a secondary material cause that contributes to the material cause - the structure." I wonder if you are focusing too much on the perspective of the organization, and if you are looking for causes, you have to do it differently, you have to ask yourself if the materiality of technology is not the material or formal cause for the development of a variety of organizations. And the better decision will not be possible to anticipate, because you are not dealing with identical objects. And perhaps this is a difficult problem in translating Aristotelian metaphysics into organizational studies, because you probably imply organizations as beings that share attributes with each other. But the complexity is lost if you go that way, because you will not be able to distinguish the singularities that define the essence of an organization. In a word, you are likely to find organizations that have been shaped by technology, and others that have been less influenced by it.

Finally, I would like to make a comment about what you synthesize in Figure 4. The analysis is too deterministic, and I don't think Aristotle himself would agree with such an approach, because an organization is a human construct rather than a natural entity. In this sense, I understand that the Aristotelian approach to politics and the state would be more fruitful for the development of your paper and the discussion of complex causality.

Once again, thank you for the opportunity to read your paper.
Download the review

Reviewed by anonymous reviewer 2, 21 July 2024

Thank you for the revised version of your manuscript. I can see that you have streamlined a lot of the text and made it much clearer to the reader. Well done for the hard work you have put into it!

To be honest, I am still not fully convinced of the value of your arguments as presented in the current text, but I accept that there is a legitimate scholarship for them, and that the current state of the manuscript could see the light of day. So I'll reiterate my previous points here, but I'll focus on what I personally consider to be minor issues (because they don't require rewriting), so that you can decide how to address them.

First, regarding my previous comment 1 (narrow contextualisation and problematisation of the paper), I think you haven't explained well the theoretical starting point of your work yet: how to deal with complexity and why other theories that address it would still rely on the Newtonian paradigm. However, you can try to work around this by acknowledging theories like sensemaking (which operates at the individual level) and systems thinking, which is actually also a perspective of causal complexity, and you need to spell out the difference (see, for example, `https://www.tandfonline.com/doi/abs/10.1057/jors.2008.176`).

Regarding my second point (concepts not clearly and accurately explained), although the text has improved considerably, it is still too dense. The explanations are still very tautological, e.g. see page 25, second paragraph) As a workaround, I suggest that you simply look for terms that are not yet defined at the time of the first mention (e.g. per se causes on p6) and consider whether you need to keep all the terms you use, or whether the mention of some of them could be avoided in favour of a plain explanation (e.g. non-additive, eidos, non-univocal, non-proportional).

Finally, the third point (The promised contribution is not delivered) has also improved considerably. However, I think this still remains the biggest shortcoming of the text. I can see the value of your illustration of the application of causal complexity to organisations, but the choice of categories seems arbitrary to me, i.e. why should a given cause, such as a consultant or a certain technology, be categorised as one type of cause or another? So one might still have doubts about the contribution of the text: even if the framework is neatly applied, how does it help us understand what is going on better than any other theory, and how does it differ from the other work on causal complexity you cite? A contribution in terms of novelty is not something required to be recommended in PCI. Therefore, again, trying to focus on minor changes that could be made, I suggest you simply revise how you frame your current contributions (ontologically ground causes and causality and concretely operationalize causal complexity) by rephrasing them in a more careful and less abstract way (e.g. what exactly do you mean by ontological grounding and how can an operationalization be concrete?)

I will also suggest you to revise the following excerpts:

• "the Newtonian paradigm remains central in organization studies (e.g., Tsoukas, 2017)." (p3) - It should be "According to Tsoukas (2017), the..." and not Touskas as an illustration of that (e.g.)

• "scholars instead recognize the diversity of causes" (p4)

• "highlighted Aristotle's radical departure from the Newtonian paradigm" (p6) - How can one departure from something that appeared 2000 years later?

• "This perspective highlights organizations in act, i.e., in exercise." (p.13)

• "There is therefore an interrelation between the two pairs of per se causes, which is different from the interrelation between secondary causes or accidents and per se causes." (p.20)

• "We contribute to extend and diversify our existing methods" (p.24)

• Figure 5 has grammar corrector marks

• Make sure you inform the sources of your figures (if yours or adapted from elsewhere)

I wish you all the best with your work!

Evaluation round #1

Authors' reply, 22 May 2024

Major revision invitation for 'Embracing causal complexity: A theorizing process based on Aristotle's conceptualization of causes and causalities'

Dear author(s),

Thank you for submitting your paper "Embracing causal complexity: A theorizing process based on Aristotle's conceptualization of causes and causalities" to PCI Org Studies. I have sent your paper out for review to three recognized experts in the field whose detailed and thorough reports are now available (see below). These reviews offer a variety of suggestions that I believe will be helpful in revising your paper. Given the efforts invested in providing extensive and constructive advice, it is already clear that the reviewers see potential in your work. Reviewer 1, in particular, explicitly writes that they believe "this manuscript is timely and addresses the important issue of managing complexity", that it "presents thought-provoking ideas" and "offers new and pertinent perspectives." However, the reviewers also emphasize that there is still a lot of work ahead before your paper can be recommended. For example, Reviewer 2 confesses that they are not yet "convinced [...] that your thesis is sustainable". Reviewer 3, similarly, commends your efforts but notes that there are as yet "major issues that prevent [you] from reaching [your] intentions." Having read all the reviews carefully, I have to agree with the reviewers: There is a lot of work ahead! But it might be worthwhile to invest the time needed for it. In my opinion, the problems identified by the reviewers are basically solvable. I am therefore pleased to invite you to revise and resubmit your paper (major revision). I request that you address the feedback of the reviewers point by point in a separate letter in case of a resubmission of your revised paper, explaining whether and how you have dealt with their critical comments. In the following, I will highlight individual points from the reviews that seem to me to be of particular importance with regard to your revision of the paper. Thus, I will not address every argument of the reviewers, which does not mean that the critical comments of the reviewers not mentioned or highlighted by me are insignificant.

Response. Thank you for your support for our paper. We are extremely grateful to have the opportunity to revise and resubmit the paper. Your original comments are reproduced in italics and our responses follow each comment.

Unclear problematization; lack of clarity regarding the authors' unique contribution

All three reviewers highlight a lack of clarity in the present paper regarding your problematization of the existing literature and your proposed remedy. R1 notes that "The problematization doesn't make it possible to grasp the need to move away from the Newtonian paradigm" and "The relevance of Aristotelian causality to Organizational Studies remains unclear." R2 similarly asks you to explain more clearly "why it is worth the effort for you to go hand in hand with Aristotle," highlighting that this effort would need to be motivated by a genuine shortcoming in existing approaches. In the same vein, R3 suggests that there are a number of relevant existing approaches that are not considered in your problematization: "it is not accurate that 'there is only one tool to operationalize causal complexity' [...] There are indeed other ways of capturing causality in complex settings (e.g., systems thinking, process theory, case studies), which depart from different assumptions about their purposes. A proper contextualization of your arguments is thus needed."

Response. Thank you for raising this important issue, which is central to the key message we want to highlight in this paper. In order to better motivate our paper and our research question, we have followed the suggestion of Reviewer 1 and the need to better understand causes and causalities and thus to ground them ontologically. This approach allowed us to explain why it makes sense to rely on Aristotle and to highlight why Aristotle is relevant for this. In this revised version, we have also completely rewritten and shortened our introduction and the way we motivate our research question.

Both I and R1 found the following statement striking as a potential clear statement of the value of your paper: "This is interesting for organization studies in revealing how a cause can also sow the seeds of its own perdition" (p. 18). Yet here, as elsewhere in the paper, I am not quite sure whether you are simply applying Aristotle's conceptualizations to the organizational context or if you are making claims of your own. I understand it may not be appropriate to quote the relevant Aristotelian texts directly when your claims are attributable to him, since so much depends on subsequent scholarship and interpretation. So perhaps I would suggest a structural solution, with your own extensions, if proposed, presented in a clearly delineated section following the straightforward application of the Aristotelian framework.

Response. We thank you for your suggestion, which led us to restructure the manuscript and to introduce a new section that presents and describes the Aristotle's conceptualization of causes and causalities. We then develop our analytical framework based on his conceptualization and apply it to organization studies. This separates and delineates, as you righltly suggested, what is directly attributable to him and our use of his ontological position and structure of thought.

Regardless, to address the paper's currently unclear problematization, it seems necessary to get clear on what the/your Aristotelian approach offers beyond what is offered by established frameworks, and why what is offered is important. R1 suggests, for instance, that you might "start from elements of your conclusion on our ontological assumptions." You might also consider using a core empirical example to illustrate what the Aristotelian perspective reveals regarding organizational problems that is not revealed by competitor approaches (e.g., Newtonian, variance, configurational theory, etc.)

Response. Thank you for your comment. In this revised version, we have followed your suggestion and started with the importance of ontology, as suggested by Reviewer 1, to motivate our research question but also to provide some contributions.

Regarding the use of a core empirical example, in previous versions, we have tried to apply our analytical framework to a specific case. However, this option had numerous limitations such as the choice of the case which can be subject to some criticism, and the need to provide details to contextualize it and capture details. We have realized that it was too difficult to present too many philosophical concepts in one paper. It was far too complicated (see also our response to Reviewer 3). So, we preferred to rather develop different illustrations and examples rather than to rely on one specific case study. The idea was also to help readers relate to some well-known and seminal examples. In addition, this illustrates how our analytical framework can be applied to any organization or organizational phenomenon, thus underlining its generalizability.

Furthermore, reviewers 1 and 3 both note that there is a need to better engage with relevant literature in organization studies to ground your problematization. R3 notes, for instance, that while "you contextualize your contribution in relation to the 'dominant Newtownian paradigm'" they do not believe this to be dominant in the field of organization studies. R1, similarly, sees overlap between your argument and prominent approaches in org studies, such as Actor Network Theory, and suggests that engaging with such literatures "would enable scholars to fully appreciate the originality of your approach."

Response. We thank you for this suggestion. What we would like to do in this paper is to propose a reading grid, a different pair of glasses, that allows scholars to examine organizations from a different perspective, different from the Newtonian one. In doing so, we have attempted to contribute to the causal complexity literature in general and in the configurational literature in particular, as developed in our discussion section. Regarding the use of the adjective dominant, and as developed below in our response to Reviewer 3, what we wanted to express is the fact that the way causes and causalities are conceptualized mainly refers, directly or indirectly, to the Newtonian paradigm Only a few perspectives such as the causal complexity directly challenge this paradigm and offer an alternative to consider causes and causalities in a different way. Nevertheless, in this revised version, we have removed the adjective 'dominant' to avoid confusion.

While we do understand the fundamental importance to directly and precisely engage with the existing literature, we believe it poses a major difficulty when relying on and building on philosophy, and more specifically on "ancient" philosophy. This difficulty lies in avoiding the trap of being ahistorical (cf. Tsoukas or Cummings). It is

tricky to take modern concepts and try to apply them to the work of non-modern philosophers or to compare them with "non-modern" concepts. We tried to avoid this trap, by focusing on Aristotle's structure of thought, on his ontological framework, rather than on specific and punctual aspects of his work. We have also tried not to bring back in or to try to fit modern concepts, but rather to emphasize how some aspects supported by an Aristotelian structure of thought can resonate with existing concepts or theories. Thus, with respect to the overlap with other theoretical perspectives such as ANT, we have in this revised version briefly stated a possible link and connection. However, we could not elaborate further as this would lead to lengthy developments. Perhaps, as suggested by Reviewer 2, this would be more appropriate for a book.

Insufficient and insufficiently careful illustration

Lacking empirical illustration is another core problem for the paper at present. R1 notes that the incorporation of "concrete and specific examples throughout your explanation [...] is common practice in philosophy" and would be welcome here to aid the reader in grasping the complex concepts at play. They further highlight that your "illustrations of the subprime crisis and the pandemic make it easy to follow your argument and therefore to engage with your project" and recommends that you deploy such illustration more systematically throughout the paper. R3 further emphasizes that, where your proposed contribution is a "methodological framework, tool, or protocol," a "practical application of this framework" would be useful to strengthen your argument.

Response. As suggested, we have provided more examples to better illustrate our different arguments and the different steps of our analytical framework. In addition, in this revised version, we use the term of analytical framework rather than that of methodological tool. Indeed, what we propose is not an operational methodological tool per se, but an instrument or means, to use Aristotelian terms, for studying organizations. It serves as a reading grid for examining and analyzing organizations and organizational phenomena.

This connects to a structural issue in the present version of the paper where, for instance, your definitions and explanations of Aristotelian concepts tend to jump immediately to illustrations in the organizational context, making it difficult to understand what is part of the Aristotelian framework and what is your application of it. In particular, I believe more needs to be said to justify the organizational attribution of the four per se causes as suggested in Step 1 - "structure (material cause), norms (formal cause), agents (efficient cause), and environment (final cause)". Do you mean for these organizational translations to be exhaustive? Or are there potentially other types of e.g., formal causes in the organizational context not mentioned in your paper?

Response. We have answered this question in two steps.

First, we have structured our paper with a specific section devoted to Aristotle, which explains his conceptualization of causes and causalities in more detail and provides more explicit examples. This also allows us to clearly separate what is directly attributable to his work from our own analytical framework.

Second, we have restructured our discussion to better explain that the analytical framework is to be seen as a tool, a reading grid, for examining organizations and organizational phenomena at different levels of analysis. Aristotle provides a certain structure of thought, a way of thinking, analyzing, and grasping a given phenomenon by allowing it to be examined through different causes and causalities, which are ontological and epistemological categories. As such, we do not pretend to be exhaustive (and we cannot be exhaustive) in mentioning what the different causes could correspond to. For example, we say that norms can be considered as formal causal, because we are taking a particular level of analysis, examining an organization at a macro level of analysis. But if we take another level of analysis, there are other and different formal/material/efficient/final, secondary, accidental, etc. causes.

Insufficient conceptual clarity

All three reviewers also commented on problems with the conceptual clarity of your paper. In some instances, this may simply be an issue of presentation where, for instance, concepts are not defined adequately or early enough in the paper. I myself found the definitions of quiddity and entelechy were introduced too late in the manuscript, and R3 notes missing definitions for other specific terms necessary to understand your argument ("e.g. per se / secondary causes, convergent/divergent, etc."). R3 also notes some definitions offered are less

precise than they should be.

Response. In this revised version, we have taken care to provide clear definitions of the different concepts used. Per se is a synonym of principal or fundamental, as we mention. The term 'secondary cause' refers to the vocabulary used by Aristotle. We have also provided examples and a table to illustrate these key concepts. Regarding divergent and convergent, it refers to the way causes related to each other when they exert a partial causality. If you take Zara and Delacour (2023), the metaphor of the two horses pulling a cart, illustrates how they can diverge or converge.

With regard to quiddity and entelechy, we have defined them since their first use in the manuscript.

In other instances, the paper's lacking conceptual clarity may signal something more fundamentally amiss with the framework and argument proposed. R2, for instance, draws attention to your paper's currently insufficient engagement with the "attributive ambiguity of the term 'cause'". Similarly, I have the impression that the conception of causality you detail defines causes in relation to a certain perspective regarding intention (particularly regarding ideas of 'alignment' and 'misalignment') but this is not currently made explicit in your account. This issue is made apparent, I believe, in the example given on page 17 where the "divergent accident can also have the opposite effect" - to my mind, "opposite effect" here only makes sense if we consider the accidental cause as involving a particular intended direction of effect, which backfires. This suggests, for instance, that the "accident" is in fact an (attempted) efficient cause of another project. Evaluating the framework proposed here would require being explicit about this perspectival commitment, and its pursuant advantages and disadvantages in relation to other frameworks.

Response. We thank Reviewer 2 for mentioning Stein and the issue of attributive ambiguity of the term cause. This is a complicated issue in philosophy, and we stuck to only mentioning the non-ambiguity of causes so as not to overburden our paper.

You also highlight another difficult philosophical issue, that of intention. This would also require longer and more substantial and controversial developments in the present paper. After a long discussion among ourselves, we have decided not to delve into this direction in the present paper, despite the clear interest in doing so. Indeed, many interpreters of Aristotle, and especially modern ones, have tried to address this issue, as has Barnes. However, Aristotle is not so clear on this point, and our personal reading is that there is no intention per se, except for efficient causes.

I wish you success in revising your paper and, if you choose to resubmit, I very much look forward to reading the revised version!

Very best regards,

Genevieve Shanahan

by Genevieve Shanahan, 26 Feb 2024

Response. We would like to sincerely thank you for your numerous and constructive comments, which help us considerably to strengthen our manuscript. We also hope that you will find the new version of the paper much improved and of interest for publication in PCI Organization Studies.

The authors

Response to the comments of Reviewer 1

Dear Authors,

Thank you for the opportunity to review this intriguing manuscript. As I do not specialize in philosophy, my feedback will focus on general observations and comments.

I believe this manuscript is timely and addresses the important issue of managing complexity. In today's context of climate crisis, reconsideration of the modernist perception of phenomena, your manuscript presents thought-provoking ideas. Your work offers new and pertinent perspectives.

Response. We sincerely thank you for your interest in our manuscript and for all of your constructive comments. We address them point by point below and hope this will meet your expectations.

However, when you begin your discussion section with the sentence: "The purpose of this paper was to introduce a methodological approach that allows for the operationalization of causal causality through concrete application," it appears that the intricacy of your proposal may hinder obtaining an operational methodological tool.

My central argument for this review will focus on the need to explain your approach better and, above all, to make it more accessible/more operational, as proposed in your discussion.

Response. We thank you for this main comment, which has led us to position our paper and its purpose more clearly. What we want to achieve in this paper is to propose and develop an analytical framework that can help organizational scholars capture and operationalize causal complexity. As such, what we propose is not an operational methodological tool per se, but an instrument or means, to use Aristotelian terms, for studying organizations. It serves as a grid for reading and analyzing organizations and organizational phenomena.

By grounding causes and causalities ontologically and allowing their operationalization at any level of analysis, it allows us to study any organization or social phenomenon. As such, it is useful for operationalizing causal complexity and expanding our understanding of causal complexity. We have made these points clearer since the beginning of the paper.

To facilitate the revision of the manuscript for improved clarity, I will narrow down the concerns to two main elements:

1. Problematization and scope:

Your problematization is unclear. The relevance of Aristotelian causality to Organizational Studies remains unclear. While you assert the transposition of this framework into org studies, it is essential to elucidate its contribution to organizational analyses and expound your perspective on the matter. It is imperative to articulate what Aristotelian causality unveils that would otherwise remain unseen. One way would be to start from elements of your conclusion on our ontological assumptions. Also, and I will return to this below, the text is abstruse at times, an entry hook to allow the readership to be challenged and hooked seems judicious to me with such a theoretical essay.

Response. We are deeply grateful for this suggestion, which has led us to completely rewrite and shorten our introduction and the way we motivate our research question. We now better explain why we refer to Aristotle, since his conceptualization of causes and causalities provides an ontological understanding of these two central concepts and allows us to circumvent the current limitations and difficulties in clearly defining them.

We have also taken care to be as clear as possible and to provide a revised version that is easier to read for someone who is not familiar with Aristotle and his conceptualization of causes and causalities.

Additionally, to reposition and clarify the underlying issue at hand, concerted efforts towards establishing clear definitions are crucial. As highlighted on pages 4 and 7, you discuss a problem related to definitions. However, there is no explanation provided for readers to grasp the idea. In other words, we can turn your own denunciation against your study.

Response. As suggested, we have provided clear definitions of the key concepts used in this paper. For instance, we have now more clearly defined what the different causes and causalities are and provided more examples to clearly illustrate them. We have also explained better why without a clear definition of causes and causalities it is difficult to use the causal complexity perspective.

Finally, it presents an engaging idea, but I am concerned about its apparent oversight of certain types of dominations. It seems that the model focuses primarily on external factors and may not fully consider the effects of domination. How would your proposal account for these aspects? For instance, in the scenarios involving CEOs and consultants, I'm curious to know how gender bias from either party could influence the underlying causes and their consequences?

Response. This is a very difficult and interesting question to ask, since Aristotle did not address the issue of

domination or gender bias. Since we have tried to stay as close to Aristotle as possible, even in developing our analytical framework and applying it to organizations, we have not raised this issue in this paper. To address this specific issue would have required us lengthy developments and explanations, that would have made the paper more complex.

What we can say here, is that the analytical framework does not focus only on external factors. Material and formal causes are seen as internal factors, as we mention in the paper. Formal causes are norms and values, but could also reveal biases, since formal causes are used for thinking and are present in all processes of understanding for Aristotle. Thus, we could infer that certain specific/secondary or accidental formal causes may influence judgments, intellectual acts and even the will of actors.

2) Clarity:

You tackle complex concepts, making it difficult to follow at times. This weakens the strength of your argument. One suggestion is to incorporate concrete and specific examples throughout your explanation, which is common practice in philosophy. While you do make some attempts (such as referencing bureaucracy and CEOs), they are limited in number and sporadic. Perhaps integrating a central example that allows for exploration of all elements would improve the overall coherence of your argument. One way of perhaps embodying what one would like to find more accessible is to take as model your remarkable paragraph on page 17. Your illustrations of the subprime crisis and the pandemic make it easy to follow your argument and therefore to engage with your project.

Response. We thank you for this suggestion, which led us to introduce more examples and concrete applications, as well as seminal work in organization studies, to better illustrate our analytical framework. We hope that this will help the reader to better understand how to use and apply our analytical framework as to operationalize causal complexity.

In summary, the paper presents thought-provoking perspectives. However, there is a need to revise the problematization, consider alternative theoretical approaches (like addressing multiple intertwined dominations or ANT and its actants), and incorporate more concrete examples to strengthen your argument.

Sincerely,

Celine Berrier-Lucas

Response. We thank you for your constructive feedback and have revised our manuscript as suggested, to better position it, to provide an ontological perspective, and to better illustrate our argument by providing more examples. We hope that this revised version meets your expectations.

MINOR COMMENTS ON WRITING:

ABSTRACT

This whole part is a bit long-winded and hard to read, especially the start.

Response. As suggested, we have completely rewritten our abstract to be clearer and more concise.

INTRODUCTION

I find that the introduction lacks clarity and drive. It's not clear where you're going. The problematization doesn't make it possible to grasp the need to move away from the Newtonian paradigm.

Response. As explained above, we have also rewritten and shorten our introduction to better problematize and motivate our research question.

ARISTOTLE'S THEORIZING PROCESS

p.13-14 "This concretely means that they are not sufficient to produce an effect, but they can nonetheless affect the per se causes and are thus necessary to explain a specific end result.": unclear to me

Response. We have removed this sentence in this revised version.

p.14 "In addition, to account for two types of causality, Aristotle considers that the interrelations between causes are not static, as each cause can be influenced by another and can be modified or transformed, thus providing a dynamic view of these interrelations. These two aspects are highly valuable to operationalize causal complexity.": for me this is a perfect example of where and why we need illustrations to help get rid of unclearness

Response. In this revised version, we have provided an example to illustrate this point.

p.15 I really appreciate the use of illustrations. However, I don't find Figure 1 very clear, and your example with the CEO, although indispensable, doesn't really shed any light on your argument nor your schema.

Response. As suggested, we have provided a new version of the figure 1 which presents, from a theoretical point of view, a synthesis of the different causes and causalities as defined by Aristotle.

We have also added more examples in the Aristotle's section with the example of Phidias. We explained how Phidias, the sculptor, can be seen as an efficient cause and his assistants as secondary efficient causes. A parallel can be drawn with the CEO (efficient cause) and the top and middle management (secondary efficient causes).

p.16 Figure 2 gives a similar impression. Perhaps one way of exploring this issue would be to note - as you did in a generic way - a concrete illustration. In italics, tell the part of the story that captures the interaction.

Response. Thank you for your suggestion. In parallel to the Figure 1, we have tried to develop a new version of the Figure 2 to make it more readable. We have tried to modify the figures, but adding text and/or different illustrations made them more complex. So, we have chosen to develop figures developed that are still theoretical, with the illustrations detailed in the text. Indeed, we would like to provide a more conceptual analytical grid that can be applied to any organization or organizational phenomena, not fixed to a specific illustration.

p.18 "This is interesting for organization studies in revealing how a cause can also sow the seeds of its own perdition." For me, this is where the very heart of your research lies. It's by pulling on this thread that you can engage a wide readership who will be willing to follow your argument.

Response. We thank you for this suggestion which led us to develop this argument further, especially in the discussion section.

P20 "In other words, if they are misaligned, they function less well, and if they are aligned, they function better" I'm not sure I fully understand. It seems obvious. What did you mean by that?

Response. Thank you for your suggestion. We hope that the reference to a specific organization reference will make this part clearer.

P20 "The same [...]" unclear, I would really appreciate a didactic illustration.

Response. In this revised version, we have provided a didactic illustration to make our argument clearer.

P21 "Here, we also need to pay attention to instruments [...]" You stress the importance of instruments. It would be interesting if you were to engage with other literatures defending the same point of view as you, for example Actor Network Theory. That would enable scholars to fully appreciate the originality of your approach. In what way would it give a more in-depth understanding?

Response. This would indeed be a very interesting topic to develop. However, after much discussion between us, we have decided not to do so in the present paper, as it would have required lengthy developments on the role of non-humans compared to that of accidents, secondary causes, etc. with new literature to introduce, and would have lengthened our paper too much according to the traditional word count.

DISCUSSION

This section is a bit to tool long, and some sentences are out of the scope. I would work further on this part of the MS by being more succinct and straight to the point.

Response. We thank you for this suggestion. In this revised version, we have rewritten and shortened this section to articulate it around two main contributions: First, the way in which the analytical framework we develop allows for an ontologica grounding of causes and causality, and second, the way in which it allows for a concrete operationalization of causal complexity.

CONCLUSION

I regret not having a conclusion section, as it often offers valuable insights. I suggest considering adding this to your manuscript.

Response. As suggested, we have now included a conclusion in this revised version.

We thank you again for your positive and constructive feedback on our manuscript.

The authors

Response to the comments of Reviewer 2

I spent a lot of time thinking about what I could say to help you in the development of this paper. To be honest, I was inclined to reject it at first glance, but in an effort to live up to Aristotle, I did some reading, trying to put 'phronesis' in practice, so I decided to write down some observations that I think might help the authors move forward in their research.

Response. We thank you for your honesty and for giving us the opportunity to resubmit our paper to further develop our ideas and to allow us to better demonstrate the interest of Aristotle and his conceptualization of causes and causalities for organization studies in general and causal complexity in particular.

The way I see it, this research is not just an idea for an article, but something more far-reaching that involves systematic readings of Aristotle's work in order to arrive at a critical and in-depth understanding of his philosophy, even if the most immediate goal is to apply or propose a model of complex causality that is useful in the field of business strategy. Thus, the operational purpose of the paper is problematic because it takes a lot of breath to get to the point of applying the ideas of an ancient Greek philosopher in the corporate world. I see a book here.

Response. We thank you for this comment and understand your point of view. Indeed, Aristotle's metaphysics, epistemology, ethics and political philosophy are very interesting and, in our opinion, could be applied and of interest to organization studies. As you rightly mention, this would require a book. However, we believe that by focusing on his conceptualization of causes and causalities, we can make a contribution to the causal complexity perspective, since these two concepts are central, and many scholars emphasize the need to better understand them and apply them to causal complexity.

Obviously, this approach is limited and does not express Aristotle's thoughts holistically, but at least, we believe we can raise interest, bring in a different perspective, and point to the richness of his ideas and their potential applications. We see it as a first step, an invitation and a suggestion for scholars to dig further to and to show how the ideas developed by an ancient Greek philosopher can still be interesting and useful for understanding the contemporary world.

1. I suggest you develop a more detailed discussion of what you need when you say "system of causality" and "causal complexity", and why it is worth the effort for you to go hand in hand with Aristotle. I miss the point here, because it seems to me that you are not dismissing the configurational debate when you argue that it would be good to have another option. But if you don't have a robust critique, if you can't point out any error or failure, why should I choose to join hands with you?

Response. Based on your suggestion, we have rewritten this revised version by better explaining why we should go hand in hand with Aristotle, by emphasizing the importance of ontology and the fact that it provides us with such an understanding of causes and causalities. This ontological grounding allows us to define these two concepts, which is still missing in the causal complexity perspective.

In parallel, we have rewritten our discussion to further discuss the advantages of our analytical framework based on Aristotle's conceptualization of causes and causalities to enrich causal complexity. In particular, we explain how his conceptualization allows us to complete and to refine the configurational perspective in order to better define what is a cause, to address its diversity and to go deeper into the different types of configurations based on the two types of causalities.

(2) Having decided to plunge into Aristotelian philosophy... your argument must confront an attributive ambiguity of the term "cause": that is, the four causes bear their common name by virtue of one or more definitions? (see https://sites.unimi.it/zucchi/NuoviFile/Stein11.pdf). You have skipped the discussion of the different predicates of a single noun. But the question of "what is" should be answered in the first place by the procedure of searching for its essence, i.e., by taking away each predicate and seeing what remains. What kind of substance is a "cause"? Is the idea of a compound substance conceivable? In other words, the main question would be why this particular substance is the (only) one that cannot be conceived without the four components. In summary, one point that would be an improvement for your paper is the discussion of "interrelation versus unity" in the system of "causality".

Response. Thank you for suggesting this paper. You ask a very tricky philosophical question that would require us to dig very deep into Aristotle's system and structure of thought. While these questions are philosophically important and underscore a certain strand of philosophy, we cannot address them in this paper. Perhaps in a book. What we can answer here, in our responses, is that the unity of the substance of Aristotle is given by this specific reciprocal and total causality. This is not the case with Descartes for example, where the unity of the substance requires a third term.

(3) I think you need to make a point about the necessary "translation" of Aristotle's ideas to the contemporary world. The utilitarian way in which you propose the immediate application of the philosophical categories of Greek philosophy is not consequential. How we can translate and maintain the conceptual strength of Aristotelian ideas is not clear, and the reference you mention in your paper - Zara & Delacour, 2023 - is not very helpful in making this point clear, since they propose an immediate and operational use of the four causes and other Aristotelian categories, even though the former don't fit the present world like that!

Response. We thank you for your comment. The idea of using and applying the four per se causes developed by Aristotle to explain and illuminate phenomena in organization studies is not new as the different references included in the articles show it. However, only one paper goes further and introduces not only the four per se causes but also the secondary causes, accidents and instruments. In this article, we follow this line of reasoning and not limit the use of the four per se causes, but refer to all the causes identified by Aristotle.

If we understand your comment correctly, the question is how to translate Aristotle's ideas into the present word without denaturalizing his ideas. The main problem here, as we see it, is not to become ahistorical and interpret our world or try to fit new concepts into Aristotle's thoughts. Many scholars have already drawn on Aristotle, as we point out in our paper, building on different aspects of his structure of thought and conceptualization without being ahistorical (see, for example, Tsoukas). What we do is first explain what Aristotle says (and for this, we have added a new section in this revised version). We build on Aristotle, but we rely on his framework, his structure of thought, we apply his concepts mutatis mutandis trying to avoid the ahistorical trap. Philosophically, we believe that Aristotle, as well as other philosophers such as Hegel for example, have proposed a coherent and integrated philosophical system, a scaffolding, a structure of thought, which in fact guides the way we think and can also be used as a way to present word issues.

(4) In Step 3, you don't do what you're supposed to do. You are not supposed to rely on your own "findings" to justify the interrelations. You are only discussing the categories you have created yourself, so the interrelationship argument becomes spurious, because the interrelationships between entities such as "structure" and "technology", "norms, values, etc." and "process" do not necessarily coincide with the interrelationship of Aristotelian causes, your are offering your own suppositions as evidence when you argue, for example, "Indeed, the existing structure (material cause) influences the technology (secondary material cause) used in an organization, just as the existing norms, values, and beliefs (formal cause) influence the process (secondary formal cause), and the CEO (efficient cause) influences top/middle management (secondary efficient cause)..." (p. 15). In short, Aristotle is needless to justify and understand what you are saying.

Response. In our paper, we try to develop an analytical framework based on the Aristotle's conceptualization of causes and causalities. To do so, we adopt the same structure of thought. First, we provide theoretical explanations to define and explain the different types of causes and causalities, and then we try to illustrate this argument by providing a concrete application of this framework. We do this by using traditional and generic examples that are easy for the reader to understand. What is important is not to consider example by example, but the whole framework and its different analytical steps as it can provide some nuances to understand organizational phenomena while having a great generalizability.

As far as I can go, I think it would be much more productive (instead of staying in the book of Physics) to go to the analysis of the city-state in the book of Politics, where Aristotle discusses the formation of the community in relation to the four causes. I quote the passage where I found this clue, which I think will be very useful for your project (https://plato.stanford.edu/entries/aristotle-politics/):

"One can also explain the existence of the city-state in terms of the four causes. It is a kind of community

(koinônia), that is, a collection of parts having some functions and interests in common (Pol. II.1.1261a18, III.1.1275b20). Hence, it is made up of parts, which Aristotle describes in various ways in different contexts: as households, or economic classes (e.g., the rich and the poor), or demes (i.e., local political units). But ultimately, the city-state is composed of individual citizens (see III.1.1274a38–41), who, along with natural resources, are the "material" or "equipment" out of which the city-state is fashioned (see VII.14.1325b38–41) (the passage goes further)."

Response. You are right, we could have used Aristotle's Politics. But that would have required a longer development and would have made our paper more complicated and more philosophical. For Aristotle, the city is indeed a good example to show causes, but also to introduce the idea of the whole and the parts, their relations, and so on (Pol, I, 2, 1253 a20). But this would entail a discussion of agents vs. structure and how Aristotle understands this issue. This would have introduced other concepts and theories that would have made our paper too long.

Finally, and to talk frankly, I am not convinced (as should be clear from the previous points I have made) that your thesis is sustainable, and I wish you the best of luck in your efforts.

Thank you for the opportunity to read your paper and share some thoughts.

Response. We thank you again for your insightful comments and your ideas. In this revised version, we have really tried which has been largely rewritten to better present and develop our arguments and to show the interest of Aristotle's conceptualization of causes and causalities for understanding causal complexity and contemporary organizational phenomena. We sincerely hope that this revised version will better meet our expectations.

The authors

Response to the comments of Reviewer 3

Thank you for submitting your manuscript for open review. The paper introduces a theorizing process based on Aristotle's theories of causes and causality and claims to propose a methodological tool that elucidates the interrelationships between different causes, which is applicable to organizational analysis. The author(s) have identified an emerging and under-theorized domain and mobilized a difficult and theoretically dense topic, for which I commend their efforts. However, I will describe next three major issues that prevent them from reaching their intentions. I tried to illustrate the points with quotations from the text to make my feedback as concrete as possible.

Response. We thank you for your support of our paper and what we are trying to accomplish. We also appreciate your constructive feedback. We respond point by point below.

1) Narrow contextualization and problematization of the contribution.

The manuscript begins with a strong assumption to motivate its problematization: causality as complex has many advantages, but we lack the methodological tools to do it. Even if this were true, it would be interesting to highlight what you proposing or contributing with respect to the "only methodological tool currently available" (i.e., Furnari et al., 2021). In any case, I think your problematization assumes a functional view of complex thinking. In fact, it is not accurate that "there is only one tool to operationalize causal complexity" (p.23). There are indeed other ways of capturing causality in complex settings (e.g., systems thinking, process theory, case studies), which depart from different assumptions about their purposes. A proper contextualization of your arguments is thus needed.

Response. We thank you for your comment, which prompted us to rewrite our introduction and better motivate our research question. In this revised version, we have taken care to use the term analytical framework rather than methodological tool in order to be more precise about the proposition developed.

In fact, you contextualize your contribution in relation to the "Newtownian paradigm," as if this were the mainstream to be opposed. However, if you're claiming a contribution to organizational studies, I don't think this could be called mainstream in the field.

Response. Thank you for your comment. What we want to advance in this paper, and what has been recognized in the current literature, is the fact that the way causes and causalities are understood is mainly related to

the Newtonian paradigm, regardless of the theoretical strands used. This is why we have used the adjective dominant in the previous version, in comparison of the causal complexity paradigm which is less developed. In this revised version, however, we avoid this term and refer only to the Newtonian paradigm.

In addition, building your own argument requires a deeper engagement with the literature you cite. It is especially important that you appropriate the readings and don't misinterpret the author's intention, e.g., "Aristotle's conceptualization of causality has only been recently introduced in organization studies" (p.8) is the opposite of what Zara & Delacour (2023) claim, and the statement "While these causes have not been introduced in organization studies yet" (p.11) is puzzling because they are actually discussed in this same article you cited several times.

Response. We thank you for this comment. In this revised version, we have taken care to read it carefully to avoid this kind of misunderstanding and have changed the following sentences accordingly. According to our own reading of their article, we understood them to be the first to introduce the Aristotle's conceptualization of causality into the organization literature, as described in our paper.

2) Concepts not clearly and accurately explained

Since many readers may not be familiar with the mobilized concepts, it is important to provide their definitions in the first mention and explain them well later. You do that with concepts with which OS scholars should already be fairly familiar with - e.g. ontology or theorization - but you miss it in specific terms of your theory - e.g. per se / secondary causes, convergent/divergent, etc. This makes some parts of the text very confusing for anyone not familiar with the theory - e.g., see the last paragraph of page 13. Moreover, when presenting definitions, it is also important to be precise, e.g., the organizational structure (p.10) is not only how "units are organized horizontally or vertically", but also involves roles, responsibilities, relationships, and decision-making processes more generally.

Response. Based on your suggestion, we have completely restructured our paper. In this revised version, we have first introduced and defined what causal complexity is as well as Aristotle's conceptualization of causes and causality. In doing so, we provide a better view, understanding, and definition of these concepts. Per se is a synonym of principal or fundamental, as we mention. The term 'secondary cause' refers to the vocabulary used by Aristotle. We have also provided examples and a table to illustrate these key concepts. Regarding divergent and convergent, it refers to the way causes related to each other when they exert a partial causality. If you take Zara and Delacour (2023), the metaphor of the two horses pulling a cart, illustrates how they can diverge or converge. Based on these definitions, we have then developed our analytical framework in a second section.

Regarding the organizational structure, we limit its understanding to its formal structure, not to its organization.

3) The promised contribution is not delivered.

The introduction states the objective as "enrich our existing toolkit to concretely apply causal complexity. We do so by developing a methodological tool based on Aristotle's conceptualization of causes and causalities" (p.3), but I'm afraid you have only explained the Aristotle's main concepts with examples relating them to organizational definitions. As mentioned above, a methodological framework, tool, or protocol could have been a valuable contribution, and this is what we expect when reading the paper.

Response. We thank you for this suggestion which has led us to not to move away from the notion of a methodological tool to that of an analytical framework. What we are trying to do is to propose a reading grid, a different pair of glasses, that allows scholars to examine organizations from a different perspective. We believe that this analytical framework allows for the concrete application of causal complexity and, as such, expands our understanding.

To strengthen your argument, a practical application of this framework would have been helpful. Sometimes, there is an expectation that this will be done, but it is not developed. For instance, the statement "The first concrete application of Aristotle's total and reciprocal causality" (p13) is actually followed by an abstract example. Therefore, I don't agree that you presented it "concretely operationalizing causal complexity" (p.25), and many of your claims - e.g., "[it] provides a framework that allows for an in-depth analysis of any object under

consideration" - simply have not been demonstrated.

Response. We understand and agree with your comment. It would have been very interesting to take a very precise example, or a specific empirical case study and apply an Aristotelian analytical framework. However, after trying this option in our first attempt to write this paper, we have realized that it was much too complicated, too difficult to follow because of all the philosophical concepts. We lacked a foundation on which to build. That is what we are trying to do here. To explain, suggest, and propose an analytical framework that could be then be applied not so broadly to an organization, but to a specific aspect or to a specific organizational phenomenon.

Finally, if I may make a stylistic suggestion, I found that your statements often refer to general arguments and overcite other references, e.g., "other scholars have focused more on how causal complexity differs conceptually from the dominant paradigm (Cohen, 1994; Furnari et al., 2020; Goldstein, 2000; Goldstein, 1999; Misangyi et al., 2017; Morçöl, 2001)." or "the existing literature has advanced causal complexity in different ways and from different perspectives". Such statements lack relevance and specificity. Perhaps it would help to select what is relevant and be more specific about who says what and how it contributes to the argument.

Response. Thank you for your comment, we do understand and agree with your point. However, in this paper, we try to emphasize the interest of the causal complexity perspective and its many advantages, as the main references used underline. It is not our intention to focus on one particular aspect of this very interesting perspective. Therefore, we refer to main references and general aspects. Beyond showing that this perspective is very rich and promising, we limit our study to a specific question about the definition and operationalization of causes and causalities in order to better ground causal complexity. In this revised version, we have tried nevertheless to be more as precise as possible.

We thank you again for your constructive feedback, which has led us to rewrite substantial parts of our paper. We sincerely hope that this revised version meets your expectations.

The authors

Decision by Genevieve Shanahan 🟢, posted 26 February 2024, validated 28 February 2024

Major revision invitation for 'Embracing causal complexity: A theorizing process based on Aristotle's conceptualization of causes and causalities'

Dear author(s),

Thank you for submitting your paper "Embracing causal complexity: A theorizing process based on Aristotle's conceptualization of causes and causalities" to PCI Org Studies. I have sent your paper out for review to three recognized experts in the field whose detailed and thorough reports are now available (see below). These reviews offer a variety of suggestions that I believe will be helpful in revising your paper. Given the efforts invested in providing extensive and constructive advice, it is already clear that the reviewers see potential in your work. Reviewer 1, in particular, explicitly writes that they believe "this manuscript is timely and addresses the important issue of managing complexity", that it "presents thought-provoking ideas" and "offers new and pertinent perspectives." However, the reviewers also emphasize that there is still a lot of work ahead before your paper can be recommended. For example, Reviewer 2 confesses that they are not yet "convinced [...] that your thesis is sustainable". Reviewer 3, similarly, commends your efforts but notes that there are as yet "major issues that prevent [you] from reaching [your] intentions." Having read all the reviews carefully, I have to agree with the reviewers: There is a lot of work ahead! But it might be worthwhile to invest the time needed for it.

In my opinion, the problems identified by the reviewers are basically solvable. I am therefore pleased to invite you to revise and resubmit your paper (major revision). I request that you address the feedback of the reviewers point by point in a separate letter in case of a resubmission of your revised paper, explaining whether and how you have dealt with their critical comments. In the following, I will highlight individual points

from the reviews that seem to me to be of particular importance with regard to your revision of the paper. Thus, I will not address every argument of the reviewers, which does not mean that the critical comments of the reviewers not mentioned or highlighted by me are insignificant. Unclear problematization; lack of clarity regarding the authors' unique contribution

All three reviewers highlight a lack of clarity in the present paper regarding your problematization of the existing literature and your proposed remedy. R1 notes that "The problematization doesn't make it possible to grasp the need to move away from the Newtonian paradigm" and "The relevance of Aristotelian causality to Organizational Studies remains unclear." R2 similarly asks you to explain more clearly "why it is worth the effort for you to go hand in hand with Aristotle," highlighting that this effort would need to be motivated by a genuine shortcoming in existing approaches. In the same vein, R3 suggests that there are a number of relevant existing approaches that are not considered in your problematization: "it is not accurate that 'there is only one tool to operationalize causal complexity' [...] There are indeed other ways of capturing causality in complex settings (e.g., systems thinking, process theory, case studies), which depart from different assumptions about their purposes. A proper contextualization of your arguments is thus needed."

Both I and R1 found the following statement striking as a potential clear statement of the value of your paper: "This is interesting for organization studies in revealing how a cause can also sow the seeds of its own perdition" (p. 18). Yet here, as elsewhere in the paper, I am not quite sure whether you are simply applying Aristotle's conceptualizations to the organizational context or if you are making claims of your own. I understand it may not be appropriate to quote the relevant Aristotelian texts directly when your claims are attributable to him, since so much depends on subsequent scholarship and interpretation. So perhaps I would suggest a structural solution, with your own extensions, if proposed, presented in a clearly delineated section following the straightforward application of the Aristotelian framework.

Regardless, to address the paper's currently unclear problematization, it seems necessary to get clear on what the/your Aristotelian approach offers beyond what is offered by established frameworks, and why what is offered is important. R1 suggests, for instance, that you might "start from elements of your conclusion on our ontological assumptions." You might also consider using a core empirical example to illustrate what the Aristotelian perspective reveals regarding organizational problems that is not revealed by competitor approaches (e.g., Newtonian, variance, configurational theory, etc.)

Furthermore, reviewers 1 and 3 both note that there is a need to better engage with relevant literature in organization studies to ground your problematization. R3 notes, for intance, that while "you contextualize your contribution in relation to the 'dominant Newtownian paradigm'" they do not believe this to be dominant in the field of organization studies. R1, similarly, sees overlap between your argument and prominent approaches in org studies, such as Actor Network Theory, and suggests that engaging with such literatures "would enable scholars to fully appreciate the originality of your approach." Insufficient and insufficiently careful illustration

Lacking empirical illustration is another core problem for the paper at present. R1 notes that the incorporation of "concrete and specific examples throughout your explanation [...] is common practice in philosophy" and would be welcome here to aid the reader in grasping the complex concepts at play. They further highlight that your "illustrations of the subprime crisis and the pandemic make it easy to follow your argument and therefore to engage with your project" and recommends that you deploy such illustration more systematically throughout the paper. R3 further emphasizes that, where your proposed contribution is a "methodological framework, tool, or protocol," a "practical application of this framework" would be useful to strengthen your argument.

This connects to a structural issue in the present version of the paper where, for instance, your definitions and explanations of Aristotelian concepts tend to jump immediately to illustrations in the organizational context, making it difficult to understand what is part of the Aristotelian framework and what is your application of it. In particular, I believe more needs to be said to justify the organizaitonal attribution of the four *per se* causes as suggested in Step 1 - "structure (material cause), norms (formal cause), agents (efficient cause), and environment (final cause)". Do you mean for these organizational translations to be exhaustive? Or ar

there potentially other types of e.g. formal causes in the organizational context not mentioned in your paper? Insufficient conceptual clarity

All three reviewers also commented on problems with the conceptual clarity of your paper. In some instances, this may simply be an issue of presentation where, for instance, concepts are not defined adequately or early enough in the paper. I myself found the definitions of quiddity and entelechy were introduced too late in the manuscript, and R3 notes missing definitions for other specific terms necessary to understand your argument ("e.g. per se / secondary causes, convergent/divergent, etc."). R3 also notes some definitions offered are less precise than they should be.

In other instances, the paper's lacking conceptual clairty may signal something more fundamentally amiss with the framework and argument proposed. R2, for instance, draws attention to your paper's currently insufficient engagement with the "attributive ambiguity of the term 'cause'". Similarly, I have the impression that the conception of causality you detail defines causes in relation to a certain perspective regarding intention (particularly regarding ideas of 'alignment' and 'misalignment') but this is not currently made explicit in your account. This issue is made apparent, I believe, in the example given on page 17 where the "divergent accident can also have the opposite effect" - to my mind, "opposite effect" here only makes sense if we consider the accidental cause as involving a particular intended direction of effect, which backfires. This suggests, for instance, that the "accident" is in fact an (attempted) efficient cause of another project. Evaluating the framework proposed here would require being explicit about this perspectival commitment, and its pursuant advantages and disadvantages in relation to other frameworks.

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I wish you success in revising your paper and, if you choose to resubmit, I very much look forward to reading the revised version!

Very best regards,

Genevieve Shanahan

Reviewed by anonymous reviewer 1, 06 February 2024

Dear Authors,

Thank you for the opportunity to review this intriguing manuscript. As I do not specialize in philosophy, my feedback will focus on general observations and comments.

I believe this manuscript is timely and addresses the important issue of managing complexity. In today's context of climate crisis, reconsideration of the modernist perception of phenomena, your manuscript presents thought-provoking ideas. Your work offers new and pertinent perspectives.

However, when you begin your discussion section with the sentence: "The purpose of this paper was to introduce a methodological approach that allows for the operationalization of causal causality through concrete application," it appears that the intricacy of your proposal may hinder obtaining an operational methodological tool.

My central argument for this review will focus on the need to explain your approach better and, above all, to make it more accessible/more operational, as proposed in your discussion.

To facilitate the revision of the manuscript for improved clarity, I will narrow down the concerns to two main elements:
1) problematization and scope,
2) clarity with illustrations/examples (embodied and practical) of your theoretical framework.
——

1) Problematization and scope:

Your problematization is unclear. The relevance of Aristotelian causality to Organizational Studies remains unclear. While you assert the transposition of this framework into org studies, it is essential to elucidate its contribution to organizational analyses and expound your perspective on the matter. It is imperative to articulate what Aristotelian causality unveils that would otherwise remain unseen. One way would be to start from elements of your conclusion on our ontological assumptions. Also, and I will return to this below, the text is abstruse at times, an entry hook to allow the readership to be challenged and hooked seems judicious to me with such a theoretical essay.

Additionally, to reposition and clarify the underlying issue at hand, concerted efforts towards establishing clear definitions are crucial. As highlighted on pages 4 and 7, you discuss a problem related to definitions. However, there is no explanation provided for readers to grasp the idea. In other words, we can turn your own denunciation against your study.

Finally, it presents an engaging idea, but I am concerned about its apparent oversight of certain types of dominations. It seems that the model focuses primarily on external factors and may not fully consider the effects of domination. How would your proposal account for these aspects? For instance, in the scenarios involving CEOs and consultants, I'm curious to know how gender bias from either party could influence the underlying causes and their consequences?

2) Clarity:

You tackle complex concepts, making it difficult to follow at times. This weakens the strength of your argument. One suggestion is to incorporate concrete and specific examples throughout your explanation, which is common practice in philosophy. While you do make some attempts (such as referencing bureaucracy and CEOs), they are limited in number and sporadic. Perhaps integrating a central example that allows for exploration of all elements would improve the overall coherence of your argument. One way of perhaps embodying what one would like to find more accessible is to take as model your remarkable paragraph on page 17. Your illustrations of the subprime crisis and the pandemic make it easy to follow your argument and therefore to engage with your project.

—————-

In summary, the paper presents thought-provoking perspectives. However, there is a need to revise the problematization, consider alternative theoretical approaches (like addressing multiple intertwined dominations or ANT and its actants), and incorporate more concrete examples to strengthen your argument.

Sincerely,
Celine Berrier-Lucas

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MINOR COMMENTS ON WRITING:

ABSTRACT
This whole part is a bit long-winded and hard to read, especially the start.

INTRODUCTION
I find that the introduction lacks clarity and drive. It's not clear where you're going. The problematization doesn't make it possible to grasp the need to move away from the Newtonian paradigm.

ARISTOTLE'S THEORIZING PROCESS

p.13-14 "This concretely means that they are not sufficient to produce an effect, but they can nonetheless affect the per se causes and are thus necessary to explain a specific end result.": unclear to me

p.14 "In addition, to account for two types of causality, Aristotle considers that the interrelations between causes are not static, as each cause can be influenced by another and can be modified or transformed, thus providing a dynamic view of these interrelations. These two aspects are highly valuable to operationalize causal complexity." : for me this is a perfect example of where and why we need illustrations to help get rid of unclearness

p.15 I really appreciate the use of illustrations. However, I don't find Figure 1 very clear, and your example with the CEO, although indispensable, doesn't really shed any light on your argument nor your schema.

p.16 Figure 2 gives a similar impression. Perhaps one way of exploring this issue would be to note - as you did in a generic way - a concrete illustration. In italics, tell the part of the story that captures the interaction.

p.18 "This is interesting for organization studies in revealing how a cause can also sow the seeds of its own perdition." For me, this is where the very heart of your research lies. It's by pulling on this thread that you can engage a wide readership who will be willing to follow your argument.

P20 "In other words, if they are misaligned, they function less well, and if they are aligned, they function better" I'm not sure I fully understand. It seems obvious. What did you mean by that?

P20 "The same[…]"unclear, I would really appreciate a didactic illustration.

P21 "Here, we also need to pay attention to instruments.[…]" You stress the importance of instruments. It would be interesting if you were to engage with other literatures defending the same point of view as you, for example Actor Network Theory. That would enable scholars to fully appreciate the originality of your approach. In what way would it give a more in-depth understanding?

DISCUSSION
This section is a bit to tool long, and some sentences are out of the scope. I would work further on this part of the MS by being more succinct and straight to the point.

CONCLUSION
I regret not having a conclusion section, as it often offers valuable insights. I suggest considering adding this to your manuscript.

Reviewed by anonymous reviewer 3, 16 February 2024

I spent a lot of time thinking about what I could say to help you in the development of this paper. To be honest, I was inclined to reject it at first glance, but in an effort to live up to Aristotle, I did some reading, trying to put 'phronesis' in practice, so I decided to write down some observations that I think might help the authors move forward in their research.

The way I see it, this research is not just an idea for an article, but something more far-reaching that involves systematic readings of Aristotle's work in order to arrive at a critical and in-depth understanding of his philosophy, even if the most immediate goal is to apply or propose a model of complex causality that is useful in the field of business strategy. Thus, the operational purpose of the paper is problematic because it takes a lot of breath to get to the point of applying the ideas of an ancient Greek philosopher in the corporate world. I see a book here…

(1) I suggest you develop a more detailed discussion of what you need when you say "system of causality" and "causal complexity", and why it is worth the effort for you to go hand in hand with Aristotle. I miss the point here, because it seems to me that you are not dismissing the configurational debate when you argue that it would be good to have another option. But if you don't have a robust critique, if you can't point out any error or failure, why should I choose to join hands with you?

(2) Having decided to plunge into Aristotelian philosophy... your argument must confront an attributive ambiguity of the term "cause": that is, the four causes bear their common name by virtue of one or more definitions? (see https://sites.unimi.it/zucchi/NuoviFile/Stein11.pdf). You have skipped the discussion of the different predicates of a single noun. But the question of "what is" should be answered in the first place by the procedure of searching for its essence, i.e. by taking away each predicate and seeing what remains. What kind of substance is a "cause"? Is the idea of a compound substance conceivable? In other words, the main question would be why this particular substance is the (only) one that cannot be conceived without the four components. In summary, one point that would be an improvement for your paper is the discussion of "interrelation versus unity" in the system of "causality".

(3) I think you need to make a point about the necessary "translation" of Aristotle's ideas to the contemporary world. The utilitarian way in which you propose the immediate application of the philosophical categories of Greek philosophy is not consequential. How we can translate and maintain the conceptual strength of Aristotelian ideas is not clear, and the reference you mention in your paper - Zara & Delacour, 2023 - is not very helpful in making this point clear, since they propose an immediate and operational use of the four causes and other Aristotelian categories, even though the former don't fit the present world like that!

(4) In Step 3, you don't do what you're supposed to do. You are not supposed to rely on your own "findings" to justify the interrelations. You are only discussing the categories you have created yourself, so the interrelationship argument becomes spurious, because the interrelationships between entities such as "structure" and "technology", "norms, values, etc." and "process" do not necessarily coincide with the interrelationship of Aristotelian causes, your are offering your own suppositions as evidence when you argue, for example, "Indeed, the existing structure (material cause) influences the technology (secondary material cause) used in an organization, just as the existing norms, values, and beliefs (formal cause) influence the process (secondary formal cause), and the CEO (efficient cause) influences top/middle management (secondary efficient cause)..." (p. 15). In short, Aristotle is needless to justify and understand what you are saying.

As far as I can go, I think it would be much more productive (instead of staying in the book of Physics) to go to the analysis of the city-state in the book of Politics, where Aristotle discusses the formation of the community in relation to the four causes. I quote the passage where I found this clue, which I think will be very useful for your project (https://plato.stanford.edu/entries/aristotle-politics/):

"One can also explain the existence of the city-state in terms of the four causes. It is a kind of community (koinônia), that is, a collection of parts having some functions and interests in common (Pol. II.1.1261a18, III.1.1275b20). Hence, it is made up of parts, which Aristotle describes in various ways in different contexts: as households, or economic classes (e.g., the rich and the poor), or demes (i.e., local political units). But, ultimately, the city-state is composed of individual citizens (see III.1.1274a38–41), who, along with natural resources, are the "material" or "equipment" out of which the city-state is fashioned (see VII.14.1325b38–41)... (the passage goes further)."

Finally and to talk frankly, I am not convinced (as should be clear from the previous points I have made) that your thesis is sustainable, and I wish you the best of luck in your efforts.

Thank you for the opportunity to read your paper and share some thoughts.

Reviewed by anonymous reviewer 2, 15 February 2024

Thank you for submitting your manuscript for open review. The paper introduces a theorizing process based on Aristotle's theories of causes and causality and claims to propose a methodological tool that elucidates the interrelationships between different causes, which is applicable to organizational analysis. The author(s) have

identified an emerging and under-theorized domain and mobilized a difficult and theoretically dense topic, for which I commend their efforts. However, I will describe next three major issues that prevent them from reaching their intentions. I tried to illustrate the points with quotations from the text to make my feedback as concrete as possible.

1) Narrow contextualization and problematization of the contribution.

The manuscript begins with a strong assumption to motivate its problematization: causality as complex has many advantages, but we lack the methodological tools to do it. Even if this were true, it would be interesting to highlight what you proposing or contributing with respect to the "only methodological tool currently available" (i.e., Furnari et al., 2021). In any case, I think your problematization assumes a functional view of complex thinking. In fact, it is not accurate that "there is only one tool to operationalize causal complexity" (p.23). There are indeed other ways of capturing causality in complex settings (e.g., systems thinking, process theory, case studies), which depart from different assumptions about their purposes. A proper contextualization of your arguments is thus needed.

In fact, you contextualize your contribution in relation to the "dominant Newtownian paradigm," as if this were the mainstream to be opposed. However, if you're claiming a contribution to organizational studies, I don't think this could be called mainstream in the field. In addition, building your own argument requires a deeper engagement with the literature you cite. It is especially important that you appropriate the readings and don't misinterpret the author's intention, e.g. "Aristotle's conceptualization of causality has only been recently introduced in organization studies" (p.8) is the opposite of what Zara & Delacour (2023) claim, and the statement "While these causes have not been introduced in organization studies yet" (p.11) is puzzling because they are actually discussed in this same article you cited several times.

2) Concepts not clearly and accurately explained

Since many readers may not be familiar with the mobilized concepts, it is important to provide their definitions in the first mention and explain them well later. You do that with concepts with which OS scholars should already be fairly familiar with - e.g. ontology or theorization - but you miss it in specific terms of your theory - e.g. per se / secondary causes, convergent/divergent, etc. This makes some parts of the text very confusing for anyone not familiar with the theory - e.g. see the last paragraph of page 13. Moreover, when presenting definitions, it is also important to be precise, e.g. the organizational structure (p.10) is not only how "units are organized horizontally or vertically", but also involves roles, responsibilities, relationships, and decision-making processes more generally.

3) The promised contribution is not delivered.

The introduction states the objective as "enrich our existing toolkit to concretely apply causal complexity. We do so by developing a methodological tool based on Aristotle's conceptualization of causes and causalities" (p.3), but I'm afraid you have only explained the Aristotle's main concepts with examples relating them to organizational definitions. As mentioned above, a methodological framework, tool, or protocol could have been a valuable contribution, and this is what we expect when reading the paper.

To strengthen your argument, a practical application of this framework would have been helpful. Sometimes, there is an expectation that this will be done, but it is not developed. For instance, the statement "The first concrete application of Aristotle's total and reciprocal causality" (p13) is actually followed by an abstract example. Therefore, I don't agree that you presented it "concretely operationalizing causal complexity" (p.25), and many of your claims - e.g. "[it] provides a framework that allows for an in-depth analysis of any object under consideration" - simply have not been demonstrated.

Finally, if I may make a stylistic suggestion, I found that your statements often refer to general arguments and overcite other references, e.g. "other scholars have focused more on how causal complexity differs

conceptually from the dominant paradigm (Cohen, 1994; Furnari et al., 2020; Goldstein, 2000; Goldstein, 1999; Misangyi et al., 2017; Morçöl, 2001)." or "the existing literature has advanced causal complexity in different ways and from different perspectives". Such statements lack relevance and specificity. Perhaps it would help to select what is relevant and be more specific about who says what and how it contributes to the argument.