Ergo AN OPEN ACCESS JOURNAL OF PHILOSOPHY

Trope Mental Causation: Still Not Qua Mental

WENJUN ZHANG
Institute for Science, Technology and Society, South China Normal University

A popular solution to the causal exclusion problem in the non-reductive physicalist camp is the trope identity solution. But this solution is haunted by the "quausation problem" which charges that the trope only confers causal powers *qua* physical, not *qua* mental. Although proponents of the trope solution have responded to the problem by denying the existence of properties of tropes, I do not find their reply satisfactory. Rather, I believe they have missed the core presupposition behind the quausation problem. I will argue that the presupposition is the generalist notion of causation. Then, for the trope theorists to solve the quausation problem, they need to abandon the generalist notion and adopt the singularist notion of causation. However, making that move will lead them to a new quausation problem, rendering irreducible mental types causally irrelevant and mental causal explanations reducible. Either adopting a generalist notion or a singularist notion of causation, a quausation problem awaits the trope solution. Given this dilemma, my conclusion is that the trope identity solution cannot solve the exclusion problem in a non-reductive way. Moreover, the dilemma can be generalized, showing that token physicalism is a shaky position.

Keywords: mental causation, the exclusion problem, trope, the qua problem, token physicalism

A popular solution to the causal exclusion problem in the non-reductive physicalist camp is the trope identity solution. But this solution is haunted by the problem of mental quausation (term from Horgan 1989), or, in other words, the "*qua* problem", which charges that the trope only confers causal powers *qua* physical, not *qua* mental. Although proponents of the trope solution have responded to the problem by denying the existence of properties of tropes, I do not find their reply satisfactory. Rather, I believe they have missed the core presupposition behind the quausation problem. I will argue that the presupposition

Contact: Wenjun Zhang <zwjgeorge@outlook.com>

is the generalist notion of causation. Then, for the trope theorists to solve the quausation problem, they need to abandon the generalist notion and adopt the singularist notion of causation. However, making that move will lead them to a new quausation problem, rendering irreducible mental types causally irrelevant and mental causal explanations reducible. Either adopting a generalist notion or a singularist notion of causation, a quausation problem awaits the trope solution. Given this dilemma, my conclusion is that the trope identity solution cannot solve the exclusion problem in a non-reductive way.

The plot: first, I will lay out the discussion landscape, including the exclusion problem, the trope identity solution, and the quausation problem. In Section 2, I will present the first horn of the aforementioned dilemma. I will argue that trope theorists' reply to the quausation problem is not satisfactory and that the core presupposition of the quausation problem is the generalist notion of causation. Then, in Section 3, the second horn of the dilemma is presented. I will argue that under the singularist notion of causation, mental events are only causal *qua* reductively mental, not *qua* non-reductively mental, thus the trope theory will collapse to a reductive position. I will also argue that such a reductive position not only renders mental causal powers reducible, but also leads to a reductive position of mental causal explanations. In the last section, I will consider and reply to two objections to the dilemma. In the response to one of the objections, I generalize the dilemma and make it an argument against all kinds of token physicalism.

1. The Landscape of the Discussion

The exclusion problem is the incompatibility among the following individually plausible principles.[1]

Irreducibility: Mental properties are not identical with physical properties.
Kimian Notion of Events: An event is analyzed as <*x*, *P*, *t*>, which means that the object *x* instantiates property *P* at time *t*. (Kim 1973; 1976)[2]
Mental Causation: Mental events sometimes cause other events.
Physical Causal Closure: Any event which has a cause at a given time has a sufficient physical cause at that time.
Exclusion: Besides cases of genuine over-determination, a given effect has only one sufficient cause at a given time.

1. For the classic presentation of the problem, see Kim (1993; 1998; 2005).

2. In many classic presentations of the exclusion problem, for example, Bennett (2003), this principle is not included. But I think this principle is a necessary bridge connecting the talk of properties with the talk of events.

Non-Over-Determination: There is no systematic over-determination in cases of mental causation.

The reason to support each of the principles is now quite familiar, so I will not go into the details here. Put together, these principles are incompatible. Reductive physicalists (e.g., Kim) see the problem as a *reductio ad absurdum* against non-reductive physicalism: other principles (especially *Mental Causation*) are too valuable to give up, so we had better give up *Irreducibility* to solve the embarrassing incompatibility.

The trope identity solution claims that none of the principles needs to be abandoned since the incompatibility is just an appearance. So, the proponents of the solution believe that we can retain both *Mental Causation* and *Irreducibility* (Ehring 1999; 2003; 2011; Heil & Robb 2003; Robb 1997; 2013; 2017; Tiehen 2019). According to them, if we convert from the universalist picture to the trope picture, the incompatibility will go away. Roughly, they believe that the term "property" in the principles of the exclusion problem is ambiguous between tropes and types (classes of tropes), and the conflation of these two readings leads to the incompatibility. The right reading, they say, should be that in *Irreducibility* the word "property" refers to types while in all the others it refers to tropes. That is, it is tropes, rather than universals, that constitute events.[3] Mental types are not identical with physical types because mental types are "inexactly similar types" in which the tropes are only similar to each other in some (e.g., sharing the same causal role), but not all, aspects; but physical types are "exactly similar types" in which tropes are exactly similar to each other. To guarantee causal powers of mental events and to avoid the problematic over-determination, the trope solution proposes that every mental trope is identical with a physical trope. That is, every trope that falls in a mental type also falls in a physical type. Then a mental event constituted by a mental trope is identical with a physical event constituted by a physical trope since the mental trope just *is* the physical trope (also, the object and the time are identical). So, there will be no worry of exclusion. In this way, trope theorists claim that they non-reductively solved the exclusion problem: mental causal powers are guaranteed by trope identity, while mental irreducibility is guaranteed by type non-identity.

3. There are two ways to understand tropes. One takes tropes to be like events, the other takes tropes to be like properties (See Loux 2015). Most of the discussion of the trope is formulated by taking tropes as constitutive properties of events. See, for example, Robb (2013: 222). Also, it is under the property understanding that trope theorists' claim that tropes do not have properties (see below for the relevant discussion) makes best sense since what they are arguing against is the existence of properties of properties, rather than properties of events. So, hereafter when I say "tropes," I use the term to refer to something like a property, rather than an event. I thank an anonymous referee for reminding me the different understandings of tropes.

The most discussed issue of the trope solution is the problem of mental quausation (Macdonald & Macdonald 2006; Noordhof 1998; also see Ehring 2011; Robb 1997; 2013; 2017; Tiehen 2019 for discussions of the problem). The core idea of this problem is that even though the trope solution can guarantee the causal powers of the mental event by identifying the mental trope with the physical trope, the trope's being mental or not does not make a difference to whether the event has the powers. The trope does not confer the causal powers *qua* mental, but *qua* physical. A common way to motivate this quausation problem is to adopt a modified version of *Physical Causal Closure* and *Exclusion*, roughly as follows.[4]

> *Physical Type Causal Closure*: Any trope that constitutes a sufficient cause event is a physical trope (that is, the trope falls in a physical type); and being physical is sufficient for the trope to confer sufficient causal powers for the event to cause the effect.
>
> *Type Exclusion*: If being of one type is sufficient for a trope to confer the causal powers, then the trope's being of other types is irrelevant to its conferring the powers.

These two principles are also *prima facie* plausible. *Physical Type Causal Closure* is secured by physicalism. *Type Exclusion* is intuitive: as long as the trope is already of a type that is sufficient for it to confer some causal powers, its being of other types or not will not change the fact that it confers those powers. Put together, these two principles lead to the conclusion that only being of a physical type is relevant for a trope's power-conferring. Then, the irreducible mental type is never relevant. Even though a mental trope can confer causal powers, the trope does not confer those powers *qua* mental. There is still no distinctive *mental* causal power.

This quausation problem of tropes is similar to the quausation problem of events that haunts Donald Davidson's anomalous monism (Davidson 1980). Davidson holds that token causal relations need to be grounded in strict causal laws that only exist in physics. So, for a mental event (for Davidson, an event that is truly described by a mental predicate) to be causal, Davidson suggests that it needs to be identical with a physical event. In this way, that event is truly described by both a mental predicate and a physical predicate, thus can be grounded in a physical strict law. Critics (Honderich 1982; Kim 1984; Sosa 1984) charge that although Davidson's identifying a mental event with a physical event will secure the causal powers of the mental event, this event, both mental and physical, is not causal *qua* mental, as it has the causal powers *only* because it is grounded in

4. A similar presentation is given in Ehring (2011: Ch. 5).

a *physical* strict law. The mental property, these critics say, is causally irrelevant. By presenting the quausation problem of tropes, opponents of the trope solution claim that the trope solution fares no better than anomalous monism.

The proponents of the trope solution, on the other hand, want to rebut the trope quausation problem by cutting down the similarity between the trope solution and anomalous monism. Because of the similarity, the proponents of the trope solution take the trope quausation problem to be saying that a trope can have a mental property and a physical property at the same time, and these properties determine the trope's ability to confer causal powers; but, according to the problem, the mental property is never causally relevant (Gibb 2017; Robb 1997; 2001; 2013; 2017). To rebut the quausation problem of tropes, these proponents of the trope solution argue that, unlike events, tropes are not the kind of entities that suit for having properties. Saying that tropes have properties, as they see, is making a categorical mistake. For example, Robb remarks that "[a] causally relevant property F [(the trope)] simply does not have various aspects such that one can legitimately ask whether some but not others are responsible for F's being causally relevant" (Robb 1997: 191), and that "[m]ore simply: there are no tropes of tropes" (Robb 2013: 222). Similarly, Gibb (2017: 271) also says that "I do not take [the quausation problem of tropes] to be a troubling one because I do not consider that second-order properties [(viz., the properties of tropes)] should be admitted in one's ontology." They also presented arguments against the existence of properties of tropes. Robb (1997) argues that if tropes have properties, it will lead to a vicious regress: the properties of the trope will have further properties, these further properties will have even further properties, *ad infinitum*. Because of this, Robb believes that we need to cut the regress from the very beginning and say that tropes do not have properties. Gibb's argument stems from the distinction between substance and property. Here is what she says: "[t]raditionally, one way of characterizing the distinction between substance and property is that substances are entities that bear properties, whereas properties are entities that are borne by substances. If properties bear properties this cannot be correct for then the former properties would have to be classified as substances" (Gibb 2017: 272). If tropes do not have properties, trope theorists say, then they do not confer causal powers *qua* mental or *qua* physical, the quausation problem does not make sense at all. In this way, trope theorists believe that they have solved the quausation problem.

2. A Dilemma for the Trope Solution: The First Horn

I agree with trope theorists that there are important differences between the trope solution and anomalous monism, and arguably tropes do not have

properties. However, simply breaking down the similarity and denying the existence of properties of tropes cannot solve the trope quausation problem. That is because even if tropes do not have properties, it is still possible for tropes to confer causal powers in virtue of other things. For example, it could be that the causal powers come from the types (which are considered as classes rather than properties of tropes) into which the tropes fall. In this picture, tropes inherit powers from types. This position is plausible under certain presuppositions, and I will come back to those presuppositions a moment later. For now, it is enough to see that if this position is true, and a given trope can fall into both a physical type and a mental type, then the trope quausation problem persists even if tropes do not have properties: following *Physical Type Causal Closure* and *Type Exclusion*, the physical type, rather than the mental one, will be chosen as causally relevant. Then the trope is still not causal *qua* mental.[5]

The reason why denying the existence of properties of tropes cannot solve the quausation problem is that doing so cannot secure a mental source of causal powers. The motivation behind all kinds of *qua* questions is to find the source of the causal powers at issue. People want to know where those powers come from ultimately. Answering "*qua* hot" to the question "the kettle burns me *qua* what, *qua* red or *qua* hot?" means that the powers come from the property of being hot. Similarly, the *qua* question asked to anomalous monism also intends to query the source of the causal powers of the event: the event's having causal powers cannot be a brute fact, we need an explanation of it. In the case of tropes, to make sure that tropes are causal *qua* mental, it needs to be the case that the ultimate ground of causal powers is something mental. Denying the existence of properties of tropes is a decent first step towards that end since doing so stops the physical properties of tropes from being candidates of sources of causal powers. But only doing that is not enough, since there can be physical entities other than physical properties of tropes that are the sources of causal powers. A firm mental ground of the powers is yet to be found.

5. To quickly rebut a possible objection to this position. As I have said in Section 1, tropes fall into mental types because of their shared causal profile. Then someone may worry that the current position will get things backwards: if tropes get powers from types, then they do not fall into types because of their causal profiles. This objection is harmless because tropes can fall into mental types in the following way under this position. First of all, note that under this position physical types are the sources of causal powers since the exclusion reasoning in the type level will go through. Then, tropes get their causal powers from physical types. How do tropes fall into physical types? They can fall into physical types because of their exactly similar categorical nature, since physical types are exactly similar types. After getting powers from physical types, tropes can fall into mental types because of their causal profiles.

A promising candidate for this mental ultimate ground is the trope itself. Under the trope identity theory, the trope is both mental and physical.[6] Then, if the trope itself can be the ultimate ground for the causal powers, the trope is causal *qua* mental. Then the quausation problem will be solved. Trope identity theorists do make the move towards this direction. Robb (1997: 191) claims that "[t]ropes are not causally relevant *qua* this or that, they are causally relevant (or not), period." Combining this with the move to deny the existence of properties of tropes, it seems that trope theorists believe if tropes do not have properties, then the ultimate ground would automatically be tropes themselves.

However, as is shown by our previous argument, this is not the case. Causal powers can have other type-like grounds even if tropes do not have properties: under certain presuppositions, the types, as classes, can be the sources of causal powers. The presuppositions are about the nature of causation. Under certain understandings of causation, causal powers will have grounds other than tropes. For example, under the Humean notion of causation, a trope's categorical nature (or non-causal intrinsic nature) can persist across different possible worlds while the causal powers that the trope confers can vary because causal laws are different among those worlds.[7] To give a toy example, a black trope will absorb most of the light in our world, but in another world with very different causal laws, it could be the case that black tropes reflect, rather than absorb, most of the light. Exactly similar (in the respect of categorical nature) black tropes confer different causal powers in different possible worlds. This shows that under certain theories tropes do not confer powers primitively. Causal laws determine the powers a trope can confer under the Humean theory.

The presupposition about the nature of causation lurks behind the trope quausation problem. The problem charges that only the physical type, rather than the mental type, that the trope falls in is causally relevant. It shows that this problem presupposes that types (whatever their natures are) are the sources of causal powers, rather than tropes. Then according to our analysis above, to make types sources of causal powers, the quausation problem needs to presuppose certain kinds of causal theory. Specifically, the trope quausation problem needs to presuppose the generalist notion of causation according to which causal laws are the grounds of token causations.[8] Only with this presupposition, the *qua*

6. Trope theorists often say that the same trope can be both mental *and* physical (see, for example, Robb 2013: 222). Dwayne Moore (2019) argues that it is problematic to use "and" when speaking of one thing, and such a term used by the trope theorists hints an underlying problem for the trope theory. Since Moore and I are presenting different problems for the trope theory, I will not discuss his position in detail. I will keep the conventional use of "and." But readers should be aware that this use might be problematic.

7. For the Humean notion of causation, see, for example, Ellis and Lierse (1994).

8. For the difference between the generalist notion and singularist notion of causation, see Michael Moore (2009).

mental or *qua* physical question makes sense. Under the generalist notion of causation, a trope gets its ability to confer causal powers from the types in which it falls because it is types, rather than token tropes, that are characterized by causal laws. Only when a trope falls into a type can it inherit the causal powers from the causal law which characterizes the type. In this way, tropes do not confer causal powers primitively, the powers come from laws of nature. So, under the generalist presupposition, the *qua* question is actually asking, which causal law is relevant here, the mental law or the physical law? Following *Physical Type Causal Closure* and *Type Exclusion*, the quausation problem of tropes concludes that only the physical law and the physical type are relevant, so the trope does not confer causal powers *qua* mental.

With these analyses of the quausation problem in hand, we can see that for the trope identity theory to rebut the problem and insist that tropes are the very sources of causal powers, it needs to deny the generalist notion of causation.[9] Instead of the generalist notion, the trope theory needs to adopt the singularist notion of causation according to which token causations are grounds of causal laws. Under the singularist notion of causation, law-like type-level causal statements such as "smoking causes lung cancer" are mere generalizations of token-level causation. Types do not confer causal powers, an event has causal powers only because of its own nature. In this way, a trope's ability to confer causal powers does not come from a causal law but from itself. If the singularist notion is presupposed, we do not need to appeal to types to ground token causation, since there is no further ground of causal powers apart from the tropes. Only then can we safely claim that an event has the causal powers it has because of its constitutive trope, period. Only in the singularist picture can the trope be the very source of the causal powers. In this picture, it makes no sense to further ask the *qua* mental or *qua* physical question. The original quausation problem is finally solved.

Some trope identity theorists believe that the trope solution is compatible with a wide range of different accounts of causation (for example, Tiehen 2019: 153). Now we can see that they must be cautious at this point. They must carefully choose the notion of causation. For example, they cannot choose the regularity notion and the counterfactual notion, since those notions are generally taken as generalist notions,[10] and this kind of notion directly leads to the quausation problem. Only under the singularist notion can the trope theory rebut the quausation problem. Now we have finished the first horn of our promised dilemma: the

9. Note that many classic works on tropes do deny the generalist notion of causation. For example, Campbell (1990).

10. There can be counterfactual theories of singularist causation. But such theories need to presuppose modal realism, a position many find hard to swallow. See Michael Moore (2009).

generalist notion of causation leads to the (original) quausation problem, so, trope theorists need to adopt a singularist notion of causation to avoid it.

3. A Dilemma for the Trope Solution: The Second Horn

The second horn of the dilemma says that adopting the singularist notion will lead the trope solution to a new quausation problem: under the singularist notion of causation, the event does not have causal powers *qua* non-reductively mental, but only *qua* reductively mental. That is, the causal powers only come from some mental properties (that is, tropes) that can be reduced to physical properties, rather than some mental properties that are irreducible to physical properties. Indeed, all the causal powers come from a mental trope, but this mental trope is identical with, that is, reducible to, a physical trope. Some reducible mental entities, rather than irreducible ones, are the sources of the causal powers. The irreducible mental stuff, the mental types, do not confer causal powers under the singularist notions of causation. We do not have something which is both irreducible and causal here. Since the existence of that kind of thing is crucial for non-reductive physicalism, then the trope identity theory cannot be non-reductive in the way we care about (trope theorists may contend that their position is non-reductive in other ways. More on this later).

Why is it important that irreducible mental stuff confer causal powers? Why cannot we be content with the situation that there are some irreducible mental things, viz. the mental types, only that those things are epiphenomenal? That is because the kind of non-reductive physicalism we care about in the discussion of the exclusion problem is a metaphysical position whose aim is to grant that non-reductive mental properties are real building blocks of our world (Kim 1993). We can call this sort of non-reductionism "property non-reductionism." A commonly accepted criterion of being real is what Kim (1993: 348) calls "Alexander's dictum": to be real is to have causal powers. Then, for the mental properties to be both real and irreducible, they need to have (or confer) causal powers that are distinct from the powers which are had by physical properties. For property non-reductionists, if those non-reductive mental properties are absent in a description of the world, then this description is incomplete: it fails to capture some distinctive power-conferrers. Now adopting a singularist notion of causation makes it the case that types of tropes never confer causal powers. Then the mental type, although irreducible to the physical type, is just something epiphenomenal and irreal.[11] On the other hand, under the current picture, although

11. Some may say that under the singularist notion types can have powers derivatively. But I find this claim unintelligible. If types are mere collections of tropes, then how do those

a mental trope confers powers and is real, it is something reducible. If the trope identity theory adopts a singularist notion of causation, we will not have something that fulfills both the irreducibility requirement and the reality requirement of property non-reductionism. Trope identity theory, then, collapses into a property reductionism in this situation.[12]

Facing such criticism, trope theorists may contend that property non-reductionism is not so valuable after all—we do not need something which both confers causal powers and is irreducible, what we want is just that mental events are causal and that mental types are multiply realizable, thus irreducible (see, for example, Robb 2013). Also, they will contend that such non-causal irreducible mental types are enough for psychology since these types are explanatorily indispensable.[13] Their idea is similar to Putnam's famous peg-hole example (Putnam 1975). To explain why the peg cannot go through the hole, an explanation specifying all the micro-physical details of the peg and the hole can be a sufficient explanation, but not a good one. Rather, the simple explanation that the side of the peg is longer than the diameter of the hole is a good one since it adequately provides the needed illumination in an accessible way. Trope theorists may say that mental explanations, the explanations which take irreducible mental types as explanantia, are just like the simple explanation: they provide explanations that are different from, and better than, the physical explanations which take physical types as explanantia. For example, they may say that for the explanandum that Tom is crying, the pain is a better explanans than the complex neural realizer of the pain since it provides the needed information in a simple way.[14]

I believe the analogy with the peg-hole case cannot help the trope theory. Under the singularist picture, mental types cannot provide us with any explanations which are different from physical explanations, even though the mental types are irreducible. Indeed, explanation is an epistemic activity, which aims to improve one's epistemic status (Kim 1989: 94). However, few take explanation

collections themselves *confer* or *have* powers? They do not do anything in any causal processes, even derivatively.

12. Susan Schneider (2012) also takes the trope solution to be a reductive position. But she does not notice that the trope solution is reductive only if it adopts the singularist notion of causation.

13. Through personal correspondence, Robb tells me that he thinks irreducible mental types are useful in this way. For other proposals that take irreducible mental types to be explanatorily important, see, for example, Baker (1993), Raymont (2003).

14. This may sound like causal proportionality promoted by Yablo (1992). Some philosophers (for example, Woodward 2008) claim that proportionality is a constraint for causal explanation rather than causation, and claim that mental explanations are indeed better than physical explanations when they are proportional. If what they say is true, it seems to be in conflict with my position to be argued below. But the conflict is just appearance. The proponents of proportionality are property non-reductionists who hold that mental properties are irreducible. This makes them immune to my criticism to the trope theory under singularism.

to be purely epistemic, in the sense that an explanation is achieved as long as it gives people a feeling of "Aha." (If explanation is in that sense purely epistemic, then to the question, say, "why the car is running," the explanation saying that the driver is casting a spell would be as good as the explanation appealing to the physical mechanics of the car since both explanations would give someone a feeling of "Aha.") Many philosophers (for example, Kim 1988; 1989; Salmon 1984) believe that true explanations are backed by objective relations between the explanans and the explanandum. This is what Kim calls "explanatory realism." Specifically, the position is as follows.

> Explanatory Realism: *C* is an explanans for *E in virtue of* the fact that *c* bears to *e* some determinate objective relation R. (Kim 1988: 226, original italic)

Here *C* and *E* stand for propositions, while *c* and *e* are events. So, according to this position, the truth of an explanation is grounded in the objective relation between two events corresponding respectively to the explanans and the explanandum. Under explanatory realism, the explanatory work is primarily done by the objective relation. In the case of causal explanations, the objective relation is the causal relation between the two events at issue. Now under the singularist picture, all the causal work is done by the event constituted by the reducible trope which falls in both the physical type and the mental type. Then, for an explanation that contains an irreducible mental type as the explanans to be true, it needs to be backed by the causal process from the event constituted by the reducible trope to the effect. Given explanatory realism, even though we are having the irreducible mental type as the explanans, the explanatory work is primarily done by the trope-event and the causal relation between it and the effect. As a result, this mental explanation will be essentially the same as the physical explanation which contains the physical realizer of the irreducible mental type as the explanans. This is because in this physical explanation, the explanatory work, according to explanatory realism, is done by the same causal process from the trope-event to the effect. We do not have two different explanations here. Rather, we have just one, which appeals to the same causal process. The reduction of causal powers leads to the reduction of explanations. So, given explanatory realism and trope identity under the singularist picture, there is no explanatory advantage of irreducible mental types—mental explanations are not better or simpler than physical explanations, they are just the same.

The above claim is, of course, controversial. The claim adopts the external individuation criterion of explanations. According to this criterion, an explanation is individuated by the causal process it appeals to, and two explanations are the same as long as they appeal to the same causal process (Kim 1988). Such

a criterion is criticized by some philosophers (Gibb 2009; Marras 1998). They contend that as long as explanation is an epistemic enterprise, explanations that contain different types as explanantia but appeal to the same causal process cannot be the same explanation because different types will have different explanatory powers in different contexts. Marras (1998) gives us the following example. Consider the following two explanations to the occurrence of the collapse of a building: (a) "The earthquake caused the building to collapse"; and (b) "The event that is on p.5 of today's newspaper caused the building to collapse." Marras argues that even though these two explanations are backed by the same causal process that the earthquake caused the collapse of the building, they have different explanatory powers: those who do not know which event is on the newspaper will not feel that the collapse of the building is explained. So, Marras concludes, these two explanations are different, since only one of them can change the epistemic status of those who do not know what event is in the newspaper.

However, even though it is true that in many everyday contexts like the one Marras depicts, the choice of the explanans will decide whether the explanation is successful for certain people, the external individuation criterion is still defensible in our context. The reason why in the Earthquake Case the two explanations have different explanatory powers is that knowledge backgrounds vary among different receivers of the explanations. This is what we mean by saying that the explanatory power of a certain explanation varies in different contexts. Given this feature, we can even imagine some contexts in which the receivers of the explanations do not even know what an earthquake is, then in that context explanation (a) will not be explanatory either. However, in our current context, such an influence from the difference of knowledge backgrounds and context variation will be missing. The context in which we debate whether mental types are reducible to physical types and whether mental types are explanatorily indispensable is *the context of science*. In this context, we want to know whether psychological explanations are necessary *in addition to* physical explanations, and whether psychology itself is needed *in addition to* physics. Here, people do not worry whether the reference of certain type terms, such as "pain" and "C-fiber firing," is known to the scientific community since trained scientists and philosophers generally have the needed knowledge background. So the kind of concern raised in the Earthquake Case does not raise in our context. Moreover, in such a context, scientists and philosophers aim to reveal the objective structure of the world, or at least to be as close to it as possible. Then, to provide a scientific explanation, we aim to explain the occurrence of a certain effect by presenting the objective mechanism that leads to the effect. In other words, in the context of science, scientific explanations are made to reveal what is really happening out there in the world. Then, to judge whether certain explanations to a given effect are the same

in the context of science under the presupposition of explanatory realism, it suffices to see whether these explanations appeal to the same structure of the world, namely, the same causal relations between the same cause and the same effect, to explain the occurrence of the effect. The influence of knowledge backgrounds of the explanation receivers removed in the context of science, we can conclude that under the singularist trope theory, a mental explanation is the same as the relevant physical explanation because both explanations appeal to the same causal process from the event constituted by the reducible trope to the effect.

That being said, people may still have the intuition that mental explanations and physical explanations are different. Given explanatory realism, this intuition, I suggest, actually comes from the implicit belief that causal-power-conferring mental properties, no matter tropes or universals, are different from physical properties. That is just the belief in property non-reductionism. If that position is true, mental explanations and physical explanations will be backed by different causal processes—one by the mental causal process and the other by the physical causal process. Then, those explanations will indeed be different. Here we spot another advantage of property non-reductionism over the trope-identity-but-type-non-identity position (if we put the exclusion problem aside for a moment): it does not only guarantee that mental causal-power-conferrers are different from physical power-conferrers but also guarantees that mental causal explanations are different from physical causal explanations, even under the presupposition of explanatory realism.[15]

This is the second horn of the dilemma. If the trope identity theory adopts a singularist notion of causation, it will encounter a new quausation problem which charges that the trope confers causal powers *qua* reductively mental, rather than *qua* non-reductively mental. Then, the trope identity theory cannot retain a property non-reductionist position. What is worse is that, under the singluarist picture, trope theorists cannot make sense of the claim that irreducible mental types provide different and better explanations than physical types, given the plausible presupposition of explanatory realism. The trope identity theory is both a property reductive and an explanation reductive position under the singularist notion of causation.

In sum, I have presented the following dilemma for the trope identity solution to the exclusion problem: the trope solution must either adopt a generalist notion of causation or a singularist notion of causation; but, either way, it will encounter a quausation problem. The *qua* problem, original or new, still haunts the trope solution and prevents it from being a successful non-reductive theory.[16]

---

15. For a similar idea that property non-reductive physicalism is better in this respect, see Dwayne Moore (2016).

16. Apart from the generalist notion and the singularist notion, there is also the position which takes type causation and token causation to be equally fundamental, and neither can be generated

4. Objections and Replies

In this section, I will consider two objections to the dilemma above, one to the first horn, the other to the second, and make my replies.

(1) Ehring (2003; 2011) believes that even if types can be seen as causally relevant, the relevance of the mental type will not be excluded by the relevance of the physical type. Here Ehring can be seen as saying that even if we hold a generalist notion of causation (thus types are causally relevant), the original quausation problem can be solved. The way Ehring solves the problem is as follows. Since the mental type *M* supervenes on physical types, on each occasion where *M* is instantiated there is a physical type also instantiated. Then, on a given occasion, the causal powers that *M* confers to produce a certain effect *e* are identical with (or are a subset of) the powers that *P*, the realizing physical type, confers to produce *e*. On another occasion where *M* is realized by a different physical type *P**, the powers that *M* confers to produce *e* are identical with (or are a subset of) the powers that *P** confers to produce *e*. The idea is, on every occasion where an effect is produced, *M* shares the causal relevance with its physical type realizer on that occasion. Since the causal relevance of the physical types does not exclude itself, *M*'s causal relevance is then secured. At the same time, the irreducibility of *M* is retained because it contains different tropes from any *P*.

I believe the relevance of *M* is still redundant in Ehring's picture. We have an independent reason, that is, *Physical Type Causal Closure*, to believe that the physical types are causally relevant. But we do not have a similar independent reason to believe the mental types are relevant. Then, compared to saying that the mental type shares causal relevance with the physical type, a more plausible position is to say that the relevance belongs totally to the physical type, and the mental type occupies none. The explanatory success of psychology may appear to be a reason to say that the mental type is relevant. However, if we reason from the perspective of causal laws (since we are presupposing generalist notion of causation here), we will find that a physical law that connects the physical type with the effect type is more fundamental than the psychological law that connects the mental type to the effect type. Moreover, on each occasion

from the other. However, I find this position very implausible. For one thing, this position entails that our psychological theories, which are constituted by laws connecting types, cannot be used to predict what would happen in a single person, since that would be token causation. So, I will not consider this position here. I thank Tung-Ying Wu for reminding me of this position.

of mental causation, it is highly probable that the application of the physical law can ground the application of the psychological law. This shows that the ultimate source of causal powers is the physical law and the physical type, not the mental ones. Then, the mental types will be excluded by *Type Exclusion*. It will not be the case that *M* will share the causal relevance of the realizing base on each occasion, as Ehring thinks. Rather, *M* is causally impotent in every case.

> (2) I have argued that mere type irreducibility cannot retain the trope solution to be a robust kind of non-reductive physicalism. Some may disagree with me on this point. They say that many classic non-reductive physicalist theories hold a token-identity-while-type-non-identity position, for example, Fodor's theory (Fodor 1974; 1989; 1991; 1997), but we believe these positions are robust non-reductive physicalism, we do not think Fodor is a reductionist.

I have two replies to this objection. First, it is important to note that it is not my claim that every token-identity-while-type-non-identity position will collapse into a reductive position. My claim is that such a position will collapse when it adopts a singularist notion of causation. It is only under the singularist picture that mental causal-power-conferrers are reductive. Also, it is only under the singularist picture that mental explanations are the same as physical explanations. If Fodor is defending a property non-reductionism, then his theory can adopt a generalist notion of causation to avoid the collapse.

Second, and more importantly, my dilemma against the trope theory can be seen as a general argument against any token-identity-while-type-non-identity physicalist positions, or at least any such position that has a similar structure as the trope identity theory. Any such position will encounter similar situations: either it adopts a generalist notion of causation and encounters the quausation problem according to which token causes, which are both mental and physical, are not causal *qua* mental; or it adopts a singularist notion of causation and finds itself collapsing into a kind of reductionism of both causal powers and explanations. Therefore, Fodor's position, or any token physicalist position, is not a robust non-reductive position either, just like the trope identity theory.

5. Conclusion

I have argued that the trope solution faces the dilemma which charges that the solution will encounter a quausation problem no matter whether it adopts a generalist notion or a singularist notion of causation. Because of this, the trope identity solution cannot solve the exclusion problem non-reductively. Moreover,

almost all kinds of token physicalism will encounter similar dilemmas. So, it seems that token physicalism is a shaky position.

Acknowledgments

I thank John Heil, Christopher Hill, David Robb, Tung-Ying Wu, Kun You, Lei Zhong, and two anonymous referees for their very helpful comments and advice on earlier versions of the paper.

References

Baker, Lynne Rudder (1993). Metaphysics and Mental Causation. In John Heil and Alfred R. Mele (Eds.), Mental Causation (75–96). Oxford University Press.

Bennett, Karen (2003). Why the Exclusion Problem Seems Intractable and How, Just Maybe, to Tract It. *Noûs*, *37*(3), 471–97. https://doi.org/10.1111/1468-0068.00447

Campbell, Keith (1990). *Abstract Particulars*. B. Blackwell.

Davidson, Donald (1980). Mental Events. In *Essays on Actions and Events* (207–25). Clarendon Press.

Ehring, Douglas (1999). Tropeless in Seattle: The Cure for Insomnia. *Analysis*, *59*(1), 19–24. https://doi.org/10.1093/analys/59.1.19

Ehring, Douglas (2003). Part-Whole Physicalism and Mental Causation. *Synthese*, *136*(3), 359–88. https://doi.org/10.1023/A:1025143104108

Ehring, Douglas (2011). *Tropes: Properties, Objects, and Mental Causation*. Oxford University Press.

Ellis, Brian and Caroline Lierse (1994). Dispositional Essentialism. *Australasian Journal of Philosophy*, *72*(1), 27–45. https://doi.org/10.1080/00048409412345861

Fodor, Jerry A. (1974). Special Sciences. *Synthese*, *28*(2), 97–115. https://doi.org/10.1007/BF00485230

Fodor, Jerry A. (1989). Making Mind Matter More. *Philosophical Topics*, *17*(11), 59–79. https://doi.org/10.5840/philtopics198917112

Fodor, Jerry A. (1991). You Can Fool Some of the People All of the Time, Everything Else Being Equal: Hedged Laws and Psychological Explanation. *Mind*, *100*(397), 19–34. https://doi.org/10.1093/mind/c.397.19

Fodor, Jerry A. (1997). Special Sciences: Still Autonomous After All These Years. *Philosophical Perspectives*, *11*(s11), 149–163. https://doi.org/10.1111/0029-4624.31.s11.7

Gibb, Sophie (2009). Explanatory Exclusion and Causal Exclusion. *Erkenntnis*, *71*(2), 205–21. https://doi.org/10.1007/s10670-008-9150-x

Gibb, Sophie (2017). The Mental Causation Debate and Qua Problems. In Michele P. Paoletti and Francesco Orilia (Eds.), *Philosophical and Scientific Perspectives on Downward Causation* (265–77). Routledge.

Heil, John and David Robb (2003). Mental Properties. *American Philosophical Quarterly*, *40*(3), 175–96.

Honderich, Ted (1982). The Argument for Anomalous Monism. *Analysis*, *42*(January), 59–64. https://doi.org/10.1093/analys/42.1.59

Horgan, Terence E. (1989). Mental Quausation. *Philosophical Perspectives*, *3*, 47–74. https://doi.org/10.2307/2214263

Kim, Jaegwon (1973). Causation, Nomic Subsumption, and the Concept of Event. *Journal of Philosophy*, *70*(8), 217–36. https://doi.org/10.2307/2025096

Kim, Jaegwon (1976). Events as Property Exemplifications. In Myles Brand and Douglas Walton (Eds.), *Action Theory* (310–26). D. Reidel.

Kim, Jaegwon (1984). Epiphenomenal and Supervenient Causation. *Midwest Studies in Philosophy*, *9*(1), 257–70. https://doi.org/10.1111/j.1475-4975.1984.tb00063.x

Kim, Jaegwon (1988). Explanatory Realism, Causal Realism, and Explanatory Exclusion. *Midwest Studies in Philosophy*, *12*(1), 225–39. https://doi.org/10.1111/j.1475-4975.1988.tb00167.x

Kim, Jaegwon (1989). Mechanism, Purpose, and Explanatory Exclusion. *Philosophical Perspectives*, *3*, 77–108. https://doi.org/10.2307/2214264

Kim, Jaegwon (1993). The Nonreductivist's Troubles with Mental Causation. In *Supervenience and Mind: Selected Philosophical Essays* (336–57). Cambridge University Press.

Kim, Jaegwon (1998). *Mind in a Physical World: An Essay on the Mind-Body Problem and Mental Causation*. MIT Press.

Kim, Jaegwon (2005). *Physicalism, or Something Near Enough*. Princeton University Press.

Loux, Michael J. (2015). An Exercise in Constituent Ontology. In Gabriele Galluzzo and Michael J. Loux (Eds.), *The Problem of Universals in Contemporary Philosophy* (9–45). Cambridge University Press.

Macdonald, Cynthia, and Graham Macdonald (2006). The Metaphysics of Mental Causation. *Journal of Philosophy*, *103*(11), 539–76. https://doi.org/10.5840/jphil20061031110

Marras, Ausonio (1998). Kim's Principle of Explanatory Exclusion. *Australasian Journal of Philosophy*, *76*(3), 439–51. https://doi.org/10.1080/00048409812348551

Moore, Dwayne (2016). Explanatory Exclusion and Mental Explanation. *Philosophical Psychology*, *29*(3), 390–404. https://doi.org/10.1080/09515089.2015.1119263

Moore, Dwayne (2019). Autonomous Mental Causation and Mental-Qua-Mental Causation. *Philosophical Forum*, *50*(2), 245–267. https://doi.org/10.1111/phil.12219

Moore, Michael (2009). Introduction: The Nature of Singularist Theories of Causation. *The Monist*, *92*(1), 3–22. https://doi.org/10.5840/monist20099211

Noordhof, Paul (1998). Do Tropes Resolve the Problem of Mental Causation? *Philosophical Quarterly*, *48*(191), 221–26. https://doi.org/10.1111/1467-9213.00097

Putnam, Hilary (1975). Philosophy and Our Mental Life. In *Mind, Language, and Reality* (291–303). Cambridge University Press.

Raymont, Paul (2003). Kim on Overdetermination, Exclusion, and Nonreductive Physicalism. In Sven Walter and Heinz-Dieter Heckmann (Eds.), *Physicalism and Mental Causation: The Metaphysics of Mind and Action* (225–42). Imprint Academic.

Robb, David (1997). The Properties of Mental Causation. *Philosophical Quarterly*, *47*(187), 178–94. https://doi.org/10.1111/1467-9213.00054

Robb, David (2001). Reply to Noordhof on Mental Causation. *Philosophical Quarterly*, *51*(202), 90–94. https://doi.org/10.1111/1467-9213.00217

Robb, David (2013). The Identity Theory as a Solution to the Exclusion Problem. In Sophie C. Gibb, Edward J. Lowe, and Rognvaldur Ingthorsson (Eds.), *Mental Causation and Ontology* (215–32). Oxford University Press.

Robb, David (2017). Power for the Mental as Such. In Jonathan D. Jacobs (Ed.), *Causal Powers* (205–16). Oxford University Press.

Salmon, Wesley (1984). *Scientific Explanation and the Causal Structure of the World*. Princeton University Press.

Schneider, Susan (2012). Non-Reductive Physicalism Cannot Appeal to Token Identity. *Philosophy and Phenomenological Research*, *85*(3), 719–28. https://doi.org/10.1111/j.1933-1592.2011.00534.x

Sosa, Ernest (1984). Mind-Body Interaction and Supervenient Causation. *Midwest Studies in Philosophy*, *9*(1), 271–81. https://doi.org/10.1111/j.1475-4975.1984.tb00064.x

Tiehen, Justin (2019). How Counterpart Theory Saves Nonreductive Physicalism. *Mind*, *128*(509), 139–74. https://doi.org/10.1093/mind/fzx034

Woodward, James (2008). Mental Causation and Neural Mechanisms. In Jakob Hohwy and Jesper Kallestrup (Eds.), *Being Reduced: New Essays on Reduction, Explanation, and Causation* (218–62). Oxford University Press.

Yablo, Stephen (1992). Mental Causation. *Philosophical Review*, *101*(2), 245–80.