

THE PHENOMENAL CONTINUITY CRITERION OF PERSONAL IDENTITY IS UNWARRANTED IN THE CASE OF *FISSION*

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ABSTRACT

In this paper, I will concentrate on the phenomenological view concerning the problem of personal identity. My intention is, first, to articulate the phenomenal continuity criterion of personal identity and, second, focus on its ontological claims about the self. I will first argue for the phenomenal continuity thesis, but then I will claim that its metaphysical commitment to the view of phenomenal substances create substantial problems. I will show that in Fission thought experiment, this view falls into the contradictory conclusion that a part is identical to its whole. I will claim that the condition of indirect streamal linkage for the phenomenal substances view makes the whole account unwarranted.

Key Words: *Philosophy of Mind, Metaphysics, Phenomenal Substances, Bridge Problem, Bernard Williams, Personal Identity, Phenomenal Continuity.*

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ÖZET

Bu makalede kişinin özdeşliği problemine dair görüngübilimsel görüşe yoğunlaşacağım. Amacım, ilk olarak, kişinin özdeşliğini açıklamak için ortaya koyulan görüngüsel devamlılık kıstasını açıklamak ve ikinci olarak da bu görüşün benliğe dair ontolojik iddialarına odaklanmaktır. Öncelikle görüngüsel devamlılık kıstasını destekler bir biçimde tartışacağım ancak daha sonra bu görüşün, görüngüsel tözler fikrine olan metafiziksel bağlılığının ciddi problemler teşkil ettiğini iddia edeceğim. Fısyon düşünce deneyinde, bu görüşün çelişkili bir sonuç olan parçanın bütüne eşit olduğu sonucuna vardığını göstereceğim. Görüngüsel tözler görüşü için ortaya koyulan dolaylı akışsal bağlantı koşulunun kıstasın tamamını temelsizleştirdiğini iddia edeceğim.

Anahtar Kelimeler: *Zihin Felsefesi, Metafizik, Görüngüsel Tözler, Köprü Problemi, Bernard Williams, Kişinin Özdeşliği, Görüngüsel Devamlılık.*

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Introduction

From a variety of questions that can be raised about 'person' and 'personhood' one crucial issue is the persistence of the 'person'. What makes me the same person that exists in different periods of time? What guarantees that 'I myself' at this present stage is the same person with the person at an earlier stage? The issue of personal identity centralizes these questions of persistence of the person through time. In the literature, there seems to be two dominant views about the conditions satisfying personal identity. The view of bodily continuity grants the idea that 'persons' survive persistence through time because of an identity relation between their body parts at different times. In this case, I was the same person five seconds ago because my body did not change in any of its essential features. However, due to the several crucial problems about bodily continuity, philosophers proposed an alternative condition: psychological continuity. This time, I survive the persistence through time because my mental states such as my memories, beliefs and thoughts did not change. I remember my childhood and this 'I' is the same 'I' with the child who lived such and such a life.

In this paper, I am going to evaluate a third alternative namely the phenomenal continuity view, which is a relatively new alternative. Just as bodily continuity, psychological continuity faces many crucial problems. Due to these problems Barry Dainton endorses the view that, what makes me the same person is the connectedness of the content of my phenomenal experiences. By means of this he argues that the phenomenal criterion of personal identity can overcome the problems faced by the bodily and psychological continuity views. However, I am going to argue that Dainton's view has its own problems as well. First, I will evaluate Williams cases of personal identity and explain how the phenomenal continuity view reacts to them. Secondly, I am going to evaluate it in terms of the "bridge problem" and show that the phenomenal continuity view succeeds to satisfy the identity relation between the person stages by introducing the idea of phenomenal substances. Thirdly, I will discuss this view in terms of the popular thought experiment of "fission". In the case of fission, I will argue that the idea of phenomenal substances creates a crucial problem. While this view manages to survive the bridge problem, in the case of fission it forces us to accept an unintuitive idea that two persons (with different body and brain) must constitute a single person. This idea violates the law of identity and cannot be defended with ease.

1. Personal Identity with Phenomenal Continuity

As I have implied in the introduction, the account of personal identity with phenomenal continuity is not an orthodox position in the contemporary literature. Although it diverges from the psychological continuity view, it is originally influenced by the Lockean view of personal identity with psychological continuity. Best to my knowledge, the first philosopher who introduced this account is Barry Dainton. The orthodox neo-Lockean view of personal identity with psychological continuity offers a causal relation according to which, mental states (dispositional states) are causally linked to each other. Phenomenal continuity, on the other hand, is genuinely non-causally experiential. For the psychological continuity view it is easy to see why psychological states are causally linked to each other. For instance, if I think about my ability to sing, it causes the memory of my performances to be realized. However, contrary to the psychological connectedness of mental states, the sequences of experiences are non-causally linked to each other. Imagine yourself experiencing a theatre performance. It is not the case that the visual image V1 at t1 causes V2 at t2 or the sound S1 at t1 causes V2 at t2. They simply follow each other as if they were parts of a stream. Dainton and Bayne claim, "Experiences are related by phenomenal continuity when they belong to unified streams of consciousness of the sort we generally enjoy"¹. At this point, we do not need to worry about the nature of this sort of consciousness. We will come to this point later.

The phenomenal continuity is not a special type of psychological continuity but a different type of criterion because when these two criteria are both tested in imaginary cases, Dainton and Bayne claim, psychological continuity fails to be successful but the phenomenal continuity is able to be met with our intuitions. In other words, phenomenal continuity criterion survives the personal identity, while psychological and bodily continuity criteria cannot. To see this, as Dainton and Bayne demonstrate, we can look at the cases generated by Bernard Williams². In order not to put ambiguity I will rephrase the cases not from the original article but I will summarize them from Dainton and Bayne's narration.

¹ Barry Dainton and Tim Bayne, "Consciousness as a Guide to Personal Persistence" *The Australasian Journal of Philosophy* 83(2005), pp. 549-571; see, p. 549.

² Bernard Williams, "The Self and the Future," in Daniel Kolak and Raymond Martin (eds.), *Self & Identity: Contemporary Philosophical Issues* (New York: MacMillan Pub Company, 1991), pp. 181-192; see, p. 187.

We have two cases to consider. (S1) You are a subversive and authorities are going to use brutal torture in order to interrogate you. However, to avoid leaving the marks of the torture, they will relocate you in a different body and torture you when you are in this different body. After the torture they will carry out you to your original body. This body transfer does not require brain-transplant but a brain-state transfer device will put your psychological states into the new brain. After you wake up, you feel very much like your usual self but clearly and in a weird way in a different body. When the torture starts, it will be as bad as you expected.

(S2) The same torture is waiting for you. In this case, your collaborators tell you that a brain-state transfer device will put all your psychological states in storage until the torture ends and a different psychology will be copied to your body that will occupy your brain during the torture.

Having a different set of beliefs and memories will surely not prevent you feeling the pain inflicted on your body [...] At best, if your own memories and beliefs are restored, you will not be able to remember the pain, but this will do nothing to alleviate it when it is inflicted. (Dainton and Bayne 2005, p. 551)

In this case, there seems to be double torture: inflicting pain as well as a drastic psychological manipulation. This is a “complete brainwashing” (ibid.).

Williams intends to show with these cases (originally there are six cases) that psychological criterion fails to explain the personal identity. He concludes, “[...] the principle that one’s fears can extend to future pain whatever psychological changes precede it seems positively straightforward” (Williams 1991, p. 192). He maintains that bodily continuity is at least sufficient for personal identity. Here the evaluation of Williams’ own claims is out of topic. However, while keeping in mind that bodily criterion has its own problems; it is plausible to evaluate a different form of mental continuity: the phenomenal or the experiential continuity.

Dainton and Bayne claim that the ingredients of this view are the phenomenal states. Unlike the psychological view the unifying agent of the states is “phenomenal connectedness” and not causal dependency. The phenomenal connectedness is the idea that conscious states occur together within the “stream of consciousness”. As it can be seen in the example of theater performance, phenomenal connectedness is easy to be conceived in the synchronic cases. They say:

Phenomenal connectedness is simply that relationship of experienced togetherness that holds between all the diverse contents of a typical state of consciousness at a given time, higher-order thoughts included. (Dainton and Bayne 2005, p. 554)

In the diachronic case, we can imagine an extended toothache or watching an airplane floating slowly across the sky. In such cases there is a flow of experiences, which are brief phases of a stream of consciousness experienced. Dainton calls these brief phases, as the “specious present”³. Even though it is easy to understand the diachronic connectedness of experiences, it is a short-lived type of continuity. An experiment shows that the shortest interval that we can distinguish temporally distinct experiences is around 30 milliseconds⁴. On the other hand, a usual stream of consciousness lasts around 16 hours (waking time). They point out:

[...] We can say that experiences at different times that are not phenomenally connected are nonetheless phenomenally *continuous* with one another provided they are linked by an overlapping chain of direct phenomenal connections. (Dainton and Bayne 2005, p. 554)

For the sake of the paper, we may take this idea as it is granted. Nonetheless these empirical evidences are in dispute.

To call back Williams’ cases, according to the phenomenal continuity view you should fear for the future pain in cases S1 and S2 not because there is bodily continuity (surely there is not in S1) but because there is phenomenal continuity. In both cases the stream of consciousness is not broken apart. In S1 you just change your body, while you keep your own stream of consciousness and psychological states as the same. In S2 you change your psychological states with someone else’s states but this cannot prevent your stream of experiences from flowing. If we, for instance, think that you were watching TV, while the brain-state transfer device was operating, we should say that (in S2) after the transfer your flow of visual experiences will be connected to the flow of experiences before the transfer but you have an awkward impression that you do not remember watching TV before. In this case the claim is that such memory alteration does not prevent you from being the same person.

³ Barry Dainton, “The Self and the Phenomenal” *Ratio* 17(2004), pp. 365-389; see, p.374.

⁴ See, Ernst Pöppel, *Mindworks: Time and Conscious Experience* (New York: Harcourt Brace Jovanovich, 1985).

Since, there is personal identity without bodily continuity in S1 and without psychological continuity in S2, the only candidate, which is person preserving, is the phenomenal continuity criterion. As Dainton and Bayne conclude, “[...] Williams’ thought-experiment motivates a phenomenological, experience-based, conception of personal identity” (ibid. p. 561).

Now, what would be the case, if the transfer had been a full mental transfer? In this case both the psychological states and the stream of consciousness are transferred to each other’s body. In this case because you will not be aware of the pain that will be inflicted to your original body (because you will be moved completely to the other body and the phenomenal connectedness is broken), there is no need to fear for the future pain. For short, Dainton and Bayne consider each possible combinatory scenarios including both the streamal and the brain transfer and conclude that without phenomenal continuity a person cannot persist. Thus, they introduce “The Inseparability Thesis”. Accordingly, the self and phenomenal continuity cannot be separated: “all the experiences in a single (non-branching) stream of consciousness are co-personal” (ibid. p. 558).

2. The Bridge Problem

The problems with the phenomenal continuity view arise quickly. The diachronic identity between specious presents (within a single stream of consciousness) may be seen as acceptable, but some pathological cases indicate that this diachronic unity may be corrupted. Additionally, even if we regard “within-a-stream-unity” as unproblematic, it is problematic to establish the diachronic identity between different streams. This problem is known as the “bridge problem”. I will concentrate on two attempts to solve this problem. Perhaps, both attempts fail to solve it.

In cases of epileptic absence seizures, it is indicated that the patients lost their phenomenal flow for a few seconds. However, this loss in phenomenal flow has no necessary influence on the phenomenal continuity⁵. In this case, if phenomenal continuity is not satisfied by phenomenal flow, then phenomenal terms are not sufficient to grant the personal identity. In the case of absence seizures there appears to be an explanation in physical terms⁶, but this overrides the phenomenal continuity explanation of personal

⁵ See, Antonio R. Damasio, *The Feeling of What Happens* (New York: Harcourt, 1999).

⁶ Antti Revonsuo, “The Contents of Phenomenal Consciousness: One Relation to Rule Them All and in the Unity Bind Them” *Psyche* 9(2003), (online source: <http://www.theassc.org/files/assc/2568.pdf>); see, p. 9.

identity. In other words, phenomenal continuity might not be necessary for personal identity.

Another syndrome is cerebral akinesia⁷, which is a neurological pathology of inability to see phenomenal continuity in visual objects. The patient lacks of the ability to see the movement of vision in all three dimensions. The vision that she has consists of partial frames of a scene. She cannot see some frames but catches some others and she has difficulty in adjusting her positioning with respect to the visual input. For example, she has great difficulty in crossing the street because she cannot judge the speed of the cars⁸. This case shows that phenomenal continuity can be broken but still a person continues to be the same person.

The cases like dreamless sleep, vegetative state, or coma are indicators, which screen phenomenal discontinuity between separate streams. If we assume that a person is fully unconscious during a dreamless sleep, then the phenomenal continuity criterion seem to be unmet. Thus, the person after sleep is not identical to the person before sleep. However, this is an absurd conclusion. In this case of discontinuity, Johan Gustafsson suggests implicitly that the closest continuer thesis helps us to solve the bridge problem. Accordingly, he gives the following criterion of identity: "An experience produced by a brain B has diachronic phenomenal connectedness to the temporally most immediate experience produced by B"⁹. Apart from its plausibility, this criterion of identity cannot take part with the phenomenal continuity view, especially with Dainton's view. Apparently, the satisfying agent of the personal identity, for this criterion, is not the "unity-within-consciousness" (Dainton and Bayne 2005, p. 554), but the brain, which remains identical during the sleep. Thus, bodily continuity rather than the phenomenal continuity is necessary for personal identity. In this respect, this attempt cannot be acceptable for the phenomenal continuity thesis.

3. The Account of Phenomenal Substances

Dainton introduces his own solution with a radically new ontological stance concerning the self. He starts with introducing the

⁷ There is only one patient diagnosed with this syndrome. However, there is no doubt in acceptance of in the literature. See, Semir Zeki, "Cerebral Akinesia (Visual Motion Blindness)" *Brain* 114(1991), pp. 811-824.

⁸ J. Zihl, D. von Cramon, and N. Mai, "Selective Disturbance of Movement Vision After Bilateral Brain Damage" *Brain* 106(1983), pp. 313-340; see, p. 315.

⁹ Johan E. Gustafsson, "Phenomenal Continuity and the Bridge Problem" *Philosophia* (forthcoming), (online source: http://johanegustafsson.net/papers/phenomenal_continuity_and_the_bridge_problem.pdf); see, p. 6.

concept of Experience Producer (EP): “any object or system that can directly produce experience in response to external or internal changes” (Dainton 2004, p. 382). Two or more EPs are linked to each other by E-linkage: “at any time *t*, one or more EPs are *E-linked* if and only if (i) they are active, and the experience they are producing are mutually synchronically co-conscious, or (ii) they are not active, but if they were, the experiences that would result would be mutually synchronically co-conscious” (ibid. p. 383).

In this case, an E-system is a collection of E-linked EPs at a given time *t*. Different EPs at different times are con-subjective, if they are directly or indirectly streamally linked. They are “*directly streamally linked* if, and only if, (i) both systems are active and producing experiences that are directly diachronically co-conscious, or (ii) if both systems were active, the experiences they produce would be directly diachronically co-conscious”. And, they are, “indirectly streamally linked if, and only if, they are at either end of a chain of E-systems, the neighboring members of which are directly streamally linked”. Ultimately, “E-systems can be regarded as a distinctive kind of entity: phenomenal substances” and “E-systems and selves are one and the same” (ibid. p. 384).

Concerning this model in the case of dreamless sleep we can say that EPs before and after the sleep are indirectly streamally E-linked. That is to say that the neighboring EPs in both sides are directly streamally linked and co-conscious. The E-system is a unified phenomenal substance and hence the EPs before and after the sleep are identical. Roughly speaking, the criterion of indirect streamal linkage provides the solution for the dreamless sleep cases. It shows that the EPs before the sleep are directly phenomenally connected to the earlier EPs and EPs after the sleep are directly phenomenally connected to the later EPs and because there are no mediating EPs active during the sleep, considering the second part of the criterion of E-linkage, if they were active, they would be directly diachronically co-conscious. Hence, they belong to the same E-system¹⁰.

Additionally, in the pathological cases, this new metaphysics of the self saves the phenomena because these cases indicate only inter-streamal diachronic discontinuity. However, phenomenal continuity should not be necessarily provided by diachronic continuity. Synchronic connectedness of the phenomenal flow can provide sufficient basis for the phenomenal survival. In the case of those pathologies, patients show no such synchronic

¹⁰ This is not a version of the closest continuer view. The claim here is about the potential experience production related to the before and after EPs. In this case, the idea is that they are identical “experiential powers” (Dainton 2004, p. 385).

disconnectedness in their phenomenal flow. For instance, while the patient in the cerebral akinetopsia syndrome has a disability to see a car moving as an experiential flow, she has no difficulty in hearing the sound produced by car-moving. It is reported, "She gradually learned to 'estimate' the distance of moving vehicles by means of the sound becoming louder" (Zihl, Von Cramon & Mai 1983, p. 315). As we see, the patient's phenomenal flow is not completely depleted, but only one phenomenal flow (in this case it is the visual flow) is corrupted. Thus, in this respect synchronic continuity of experiences maintains the phenomenal continuity.

I think this view of phenomenal continuity is at least worth taking it seriously. If we accept the metaphysics of phenomenal substances, then I admit that the phenomenal continuity view is likely to be the best candidate to be the condition of personal identity. However, it is open for suspicion, whether this new metaphysics has unacceptable consequences or not. In other words, I will claim that by accepting the ontological claim of phenomenal substances, we encounter a serious problem in the case of *Fission*. In the last section of the paper, I will evaluate Dainton's treatment of *Fission* and show that the view phenomenal substance makes the phenomenal continuity criterion of personal identity unwarranted.

4. *Fission* Thought Experiment

Dainton provides an explanation of *Fission* thought experiment in terms of phenomenal continuity¹¹. He claims that Leibniz's Law of Identity (LLI) is not violated in *Fission* cases, if we take account of the phenomenal continuity and the phenomenal substance view. He claims that in *Fission* we have one pre-*Fission* person (P) identical to two pro-*Fission* persons (L & R), and this is provided with the view that the external time does not affect these persons in terms of their relations to each other. Personal time of these persons enables us to say that LLI is not violated because they do not share (simultaneously) the same time frame.

Dainton starts by admitting that there is no reason to doubt whether one's stream of consciousness can be divided into two. He

¹¹ I am not going to narrate the *Fission* thought experiment because of the word limitation. Briefly, the idea is that if we split the left and the right hemispheres of one's brain and puts them into identical (not numerically) bodies, which of the new person will be identical to the pre-*Fission* person? To elaborate the idea more widely see, Brian Garret, *Personal Identity and Self-Consciousness* (New York: Routledge, 1998), p. 58. Barry Dainton, *The Phenomenal Self* (New York: Oxford University Press Inc 2008), p. 364.

agrees with Parfit, when Parfit says, "We can come to believe that a person's mental history need not be like a canal, with only one channel, but could like a river, occasionally having separate streams"¹². If it is possible that a stream of consciousness can branch, then *Fission* is worth for consideration. Secondly, he claims that *Fission* is similar to the thought experiment "Backwards Time Travel" in the sense that in both cases not the external time but the personal time is relevant to the issue of personal identity. Dainton says:

However, if we view personal *Fission* solely from the perspective of the type of personal time a dividing person would have, it soon becomes apparent that double existence is no more problematic than it would be in the case of backwards time travel. (Dainton 2008, p. 385)

Putting this similarity out of concern, we need to get the idea of personal time. Firstly, the claim that external time is not relevant in considerations like *Fission*, has its merits on the idea that in such extreme cases (*Fission*, backwards time travel, passage between temporally unconnected universes) the notion of external time does not accommodate the distinctively temporal relations between the different stages of a person's life. In this sense, "we are led to think in terms of personal time at all" (ibid. p. 390). We should not bother with this idea but we just need to know what this idea of personal time actually means.

David Lewis proposes the idea of personal time. According to Lewis, if we examine a backward time traveler's life, we cannot assign the coordinates of his life stages by using the external time¹³. Instead, we can use the ordering relation among person stages. Then the personal time is this ordering relation concerning the succession of personal stages in person's life. Dainton claims that this idea of personal time is neutral to any account of personal identity, and hence it is legitimate to adjust this view for the phenomenal account as the phenomenal time (Dainton 2008, p. 381). According to this adjustment, phenomenal time is the ordering relation among the successive stages of one's states of consciousness (ibid. p. 384) that is defined by the phenomenal substances view¹⁴.

In this respect, in *Fission*, although L & R have the same properties at the same external time, they can still be identical

¹² Derek Parfit, *Reasons and Persons* (Oxford: Clarendon Press 1984), p. 247.

¹³ David Lewis, "The Paradoxes of Time Travel" *American Philosophical Quarterly* 13(1976), pp.145-152; quoted in Dainton 2008, p. 381.

¹⁴ As Dainton does, I will continue to use the phrase personal time. So it will actually means phenomenal time.

because they do not share the same personal time. Hence, they have the same properties at different times. In this case, the symmetry criterion of identity is not violated. P is “separately” identical to L and R because phenomenal continuity is satisfied. And, because L & R share the same properties at different times, so not simultaneously, LLI is not violated. In this context, the external temporality is illusionary. Dainton remarks on this:

The very idea of two simultaneously existing people being one and the same may well strike one as absurd, but this absurdity is a consequence of the unfamiliarity of a novel possibility, rather than that which derives from recognition of an impossibility posing as a possibility” (ibid. p. 390).

Thus far it is enough to see that the possibility of personal time being applicable to *Fission* enables the phenomenal continuity view to overrun the difficulty of LLI. However, even if we accept the idea of personal time, the metaphysics of phenomenal substances creates another contradiction concerning the part-whole relation.

If we examine P, L and R with respect to the conditions of phenomenal substances, then we can see that all of them must be EPs. In this sense, P and R are directly streamally linked because the experiences that they produce are directly diachronically co-conscious. The same goes for P and L linkage too. Secondly, and most crucially, R and L are indirectly streamally linked because (by definition) they are at the two ends of a chain of E-systems (P and P’s predecessors) and the neighboring member of R and L is P. Additionally, P is streamally linked to both L and R. Because the definition is not restricted by temporal linearity, and as it is formulated by non-temporal terms, the branching chain of EPs must be allowed.

All of these are applications of the definitions given for the phenomenal substances. Moreover, Dainton mentions this linkage between P-R and P-L (ibid. p. 386), but what he is missing in his explanation is the L-R linkage. This latter linkage creates the contradiction. Stating the idea that L and R are indirectly streamally linked entails that they are the same enduring E-system¹⁵. In other words, they constitute an E-system. Consequently, after the branching we have not only L and R as phenomenal substances, which are separately identical to P, but also we have a third substance (L+R). This third substance is also identical to P because its constituents L and R are directly streamally linked to P. Hence, we

¹⁵ See definition (3) in Dainton 2004, p. 384.

have the following three identity statements: $P = R$ & $P = L$ & $P = (L+R)$. By transitivity of identity we can entail: $R = (L+R)$. Ultimately, this is self-contradictory¹⁶. Here, there is no solution that can be brought by the account of personal time. Personal time can only be acceptable, if anyhow a notion of time is relevant to the context. However, here this is irrelevant. The contradiction does not arise from LLI, but it arises from the idea that a part cannot be identical to its whole. In this sense, Dainton's conception of phenomenal substances dictates us that L and R constitute a whole $(L+R)$ ¹⁷. Ultimately, we should somehow claim that one of these three identity statements is false. Unfortunately, admitting the phenomenal substance view, all of them must be true and this result is derived from the definitions of the very same system. Thus, the mere alternative to avoid this contradiction is to give up the definition of indirect streamal linkage. However, then the consequences are at stake of creating much worse problems such as the return of the bridge problem in cases like dreamless sleep. This means that the criterion of personal identity by phenomenal continuity due to its view of phenomenal substances is unwarranted.

Conclusion

In this paper, I discussed that despite of its Lockean origin the phenomenal continuity view is not a version of the psychological continuity view. As a distinctly alternative position, it offers genuine solutions to some of the problems with personal identity. Williams cases are strong counterexamples for the psychological continuity view. However, they are not strong enough to discard the phenomenal continuity as the identity condition for the personal identity. Although this success is worth considering, there are other cases which pose important challenges to explain the personal identity. One of these cases is the bridge problem. As it was the case for Williams' examples, for the bridge problem, phenomenal continuity succeeded to give an explanation. However, this time the idea that direct and indirect streamal linkage results in proposing the

¹⁶ Plato, Aristotle, Armstrong, and Lewis are all argued that a whole is identical to its parts. However, here my points need not to get more complexity. There are two supporting examples of my claim: (1) analogically to the former three identity statements, we have: $2 = 1+1$, $2 = 5-3$; $2 = (1+1) + (5-3)$; $1+1 = (5-3)+(1+1)$ is false. Secondly, if we consider membership relation in set theory, $a = \{a, b\}$ is false.

¹⁷ Dainton even claims that phenomeno-spatial unity is not necessary for co-consciousness. See, Barry Dainton, *Stream of Consciousness: Unity and Continuity in Conscious Experience* (London: Routledge, 2000), Chapter 3. And also, Dainton 2008, Chapter 5.

idea that the self is a phenomenal substance. Accordingly, if the sufficient conditions of the self are not more than the phenomenal features of the person, then this new ontology brings crucial consequences. I showed these consequences based on the Fission cases. In the case of Fission, when one person is divided into two, our intuitions force us to say that the resulting person-parts constitute two different selves. However, the idea of phenomenal substances must say that these two person-parts actually constitute a single self. In the case of this I concluded that the phenomenal continuity view is unwarranted.

Although the paper has this conclusion, it does not exclusively discard the phenomenal continuity view. The view can still be hold but in order to do so the phenomenal substance view must be reexamined and substantially changed. The idea of streamal linkage (not to mention the problem with indirect streamal linkage) and EPs are suggestive. In terms of this, if a better ontology for the idea of self is given, then a consistent account of personal identity can be based on the phenomenal linkage of the content of our experiences. The view is suggestive not only because of its original ideas of streamal linkage and EPs but also because of its treatment of the idea of time. Persistence must be handled as a matter of both space and time. In this sense, neither the bodily continuity nor the psychological continuity views have a substantial treatment of time in relation to the self and the identity of the selves.

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