

Against Branching Identity

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Abstract: Would you survive if your consciousness branched into two or more streams? Commonly discussed within the context of split-brain scenarios, this possibility might soon become commonplace with mind uploading technology. Cerullo (2015) suggests that after nondestructive mind uploading and other branching scenarios, personal identity would continue in two streams of consciousness. Thus he argues for what he calls branching identity. In this discussion, I evaluate the theory of branching identity and Cerullo's arguments for it, concluding that branching identity is insufficiently justified and does not yield a better interpretation of branching cases than provided by Parfit (1984).

Key words: branching identity; non-branching axiom; personal identity; consciousness; mind uploading; Relation R

1. Introduction

If your mind or consciousness were duplicated, would there be two genuine instances of you? That is, would your personal identity branch into two streams? Advances in brain scanning and nanotechnology may soon make mind uploading possible, rendering these questions non-hypothetical. Nondestructive mind uploading occurs when your psychological makeup, and perhaps even your consciousness, is copied and transferred to a machine while keeping your brain (and thus mind) intact and functioning.¹ Standard psychological theories of personal identity imply that there can be only one consciousness that is truly you.

Cerullo (2015), however, advances a theory of branching identity that claims that a person can branch—such as due to nondestructive mind uploading—yet retain personal identity in both branches. In this discussion paper, I evaluate Cerullo's theory of branching identity and supporting arguments. After explaining Cerullo's theory, for contrast purposes I explain how the reductionist view of personal identity formed by Parfit (1984)—particular what he calls "Relation R"—handles branching scenarios. Then, I evaluate various arguments Cerullo offers in favor of branching identity, arguing (in some cases) that they do not effectively support the theory and that, even if they do, branching identity does not provide an explanatory advantage over Parfit's Relation R. Although the theory of branching identity challenges our assumptions, ultimately it does not uphold its promise.

2. Cerullo's Theory of Branching Identity

Cerullo (2015: 23-24) accepts a broadly functionalist theory of mind according to which the brain's informational processing architecture underpins the existence of mental states and the mind. Because the functional architecture of the mind is multiply realizable, including via non-biological substrates, it makes uploading physically possible.

¹ For example, the Brain Preservation Foundation (<http://www.brainpreservation.org/overview/>) is dedicated to studying and promoting such possibilities.

Given functionalism, Cerullo (2015: 25) presents branching identity as a new theory of personal identity that allows branching of consciousness while retaining identity. Branching identity contradicts the non-branching axiom (that identity cannot branch) that many theorists, including advocates of psychological identity and closest continuer theories, assume. Cerullo (2015: 20) seeks a theory of personal identity that “preserves the continuity of consciousness.” This is the “continuation of subjective experience within the same entity through time” (Cerullo 2015: 20), obtaining between any two entities P_1 and P_2 “if P_2 contains half or more of the psychological structure of P_1 ” (Cerullo 2015: 29).

Qualifications are needed. First, the standard of “half or more” is supported by split-brain scenarios (discussed below). Second, “psychological structure” refers to Cerullo’s functionalist commitment. Third, the condition “if P_2 contains...” is stated as a sufficient condition; therefore, I assume Cerullo thinks other conditions may also yield continuity. Fourth, Cerullo assumes for simplicity’s sake that there is no temporal gap between P_1 and P_2 (and any further branches, P_3 , P_4 , etc.), although he seems to think a gap would not prevent continuity (Cerullo 2015: 29) and I agree. Fifth—and this is the unique aspect of his theory—one’s consciousness can branch and continue in two or more streams, *yet one’s personal identity is maintained: it is you—your consciousness—in the two branches.*

I call attention to Cerullo’s use of the phrase “same entity.” Does he mean consciousness itself, which suggests that the inclusion of “same entity” is redundant, or some kind of substance that *has* the consciousness? He probably intends the former, for the latter would add unnecessary complications and perhaps make uploading impossible. Moreover, the phrase “same entity” signifies a problem concerning exactly what Cerullo intends with the concept of branching identity. Cerullo (2015: 20, 27) rejects the terminology of qualitative identity (two things sharing all the same types of qualities) and numerical identity (something being identical to itself). But can branching identity genuinely move beyond these conceptual boundaries to give us something new? I examine this issue further in section 4.2.

Next, I explain the view of personal identity formulated by Parfit (1984), which I will use as a contrasting tool when evaluating Cerullo’s arguments.

3. Parfit’s Reductionism, Relation R, and Consciousness

Parfit (1984: 210) supports a reductionist theory of personhood and personal identity. Persons exist as a set of psychological and physical features, but not as separately existing entities like Cartesian Egos (Parfit 2015: 216). Concerning the identity of persons over time, in normal cases (the lives of most actual people) personal identity is maintained because of what Parfit dubs “Relation R” (Parfit 2015: 206, 215). Relation R consists of the holding of psychological connectedness (direct psychological connections such as memories, beliefs, intentions, and other representational states) and continuity (strong connectedness, i.e. a sufficient number of connections).

Relation R obtains not only in cases involving a single person over time but in branching cases too, whereas personal identity does not. That is, R can branch but personal identity cannot (Parfit 1984: 262). Branching occurs in split-brain cases and imagined cases such as “My Division” (Parfit 2015: 253-261). If you branch (divide, fission), everything that really matters to your continuity or survival is there (R): each branch is psychologically continuous with the original, remembers the original, and carries forward the intentions of the original. But neither branch is strictly *you*—personal identity is not maintained. Do not regard branching as death, urges Parfit (1984: 262)—it

is a form of survival, albeit an unusual one. In sum, if each branch has everything that matters, then personal identity cannot be what matters. What matters is that there will be someone who is psychologically continuous with you (R obtains). There is no irreducible *you* that can retain personal identity through branching. That kind of self is illusory (Parfit 1984: 223-226).

A recurring theme in my evaluation of Cerullo's arguments, discussed below, is that branching identity does not provide any benefit over Parfit's analysis of branching based on Relation R. To that end, I first need to explain Cerullo's interpretation of Parfit. Cerullo (2015: 22) asserts that "Parfit claims that memory and psychology are entirely what a person consist of and he rejects anything extra such as consciousness or qualia." It is true that psychological states ground Relation R, but it's not obvious that Parfit "rejects the very notion of continuity of consciousness" (Cerullo 2015: 22). Asking what happens to our continuity of consciousness when we awaken from uploading, Cerullo (2015: 22) even says that "Parfit is saying we were never awake to begin with."

However, while Parfit holds that consciousness is neurologically grounded, he does not deny that (and other parts of his view do not require him to deny that) persons are conscious and have qualitative experiences. In fact, he affirms the existence of the "unity of consciousness" although he denies its necessity for survival (Parfit 1984: 247), as well as two resulting "streams of consciousness" in branching cases (Parfit 1984: 247, 288). And Parfit (1984: 204-209) explicitly accepts a broadly Lockean view of persons as conscious beings, with rich inner lives comprised of beliefs, desires, episodic memories, etc.² It is true that what matters more to Parfit's view is the continuity of psychological states—the *contents* of consciousness—but, as I will explain, these psychological states give one's consciousness a personal feel.

Parfit does not explicitly define 'consciousness' and he does not seem to think consciousness is necessary or sufficient for personal identity given that Relation R involves just psychological states themselves. Yet if we accept that consciousness is a real capacity of humans—which I do not see evidence for Parfit denying—I think we can include it as part of Parfit's conception of a *person* without including it as part of his account of *personal identity* or what matters in our survival over time. To explain further I need to characterize how I understand consciousness. I do not intend to give a complete theory of consciousness. But I do need a working characterization that is consistent with Cerullo's functionalist theory of mind and acceptance of qualia as well as how Parfit seems to conceive of consciousness.

I suggest that consciousness is, minimally, a capacity of an organism to instantiate qualia and be aware (not necessarily self-aware) of some of its mental states (thoughts, beliefs, memories, perceptions, etc.), which normally manifests when it is awake and attending to external or internal phenomena. This characterization in terms of capacity contrasts with defining consciousness strictly in terms of individual conscious states themselves, thus reflecting the distinction between a *conscious creature* and a *state of consciousness* found in Rosenthal (1986: 351). It seems that persons (and some other creatures) have both a particular capacity for consciousness and particular states of consciousness that jointly give them a subjective, inner feeling. There is something *it is like* to be that person or creature (Nagel 1974). What it is like is due to the (i) particular cognitive and other psychological capacities of that creature, and (ii) the various, particular psychological states that are states of consciousness (or, if latent, that can become states

² Locke (1994), in his *Essay* (Book II, Ch. XXVII), argues that insofar as a later state of consciousness remembers an earlier state of consciousness, the two states are part of one consciousness. Parfit (1984: 205-206, 219-223) summarizes various problems with memory as the sole criterion of identity, and therefore he holds that memory is just one part of Relation R.

of consciousness under appropriate conditions). In sum, the way one's consciousness feels—the particular identity of one's consciousness—is a combination of one's mental machinery (including sensory systems) *and* mental contents.³

Now, back to Parfit, who claims that I do not survive branching but “the two resulting people are two of my future selves. And they are as close to me as I am to myself tomorrow” (Parfit1984: 302). Ordinary survival generates at each successive slice of time someone that is R-related to the previous self. Relation R also holds with two descendants after branching. Since the two are conscious persons (they have the capacity for consciousness), they will (or can) be conscious of the original's memories, beliefs, etc., just as in ordinary survival without branching. In sum, if all the R states are passed to each branch (i.e., Relation R obtains), and each branch's mental capacities (including sensory capacities, if it has any, which it might not if it's a computer upload) are qualitatively identical, then when each branch's capacity for consciousness is realized, each will be filled with exactly similar contents and should feel the same from the inside. This claim will be important during my discussion of Cerullo's arguments.

4. Cerullo's Arguments for Branching Identity⁴

4.1. Split-brain Cases

Split-brain scenarios occur when the corpus callosum, the bundle of nerves connecting the brain's hemispheres, is severed. The standard interpretation, which Cerullo (2015: 21-22) follows, is that this produces two consciousnesses—one associated with each hemisphere—in the same skull. Cerullo uses split-brain scenarios as a testing ground for theories of personal identity.⁵ Since both split-brain cases and nondestructive uploading involve branching of consciousness, there is reason to think that predictions in the actual cases (split-brain) will carry over to the hypothetical cases (e.g. uploading).⁶

Before further discussing Cerullo's view, note that not everyone accepts the double consciousness interpretation. Pinto, et al. (2017) suggest, based on their observations and tests of two split-brain patients over several years, that these patients do not have independent spheres of consciousness. Consistent with previous findings, the two subjects they studied did not do well at comparing visual stimuli across the left and right fields of vision. However, they “were able to respond accurately to stimuli appearing anywhere in their visual field” (Pinto, et al. 2017: 1235). This is striking, for it

³ Another way to put this point employs *awareness* versus the *information of which you are aware* (Graziano 2013: 13): the awareness is a capacity directed at information (from the senses, from the sub-consciousness, etc.), but the information will determine, to a large degree, what the awareness attends to and how it feels to have that awareness. Additionally, consider the distinction between phenomenal-consciousness and access-consciousness (Block 1995). Although a person can have one without the other (Block 1995: 233), it seems that one's phenomenal-consciousness (the ‘what it's like’ aspect of consciousness) is fleshed out and has a particular feel owing at least partly to the states one can and does access (access-consciousness).

⁴ I evaluate all the arguments in Cerullo's paper, save what he calls the “popping qualia” argument (Cerullo 2015: 26), which I'm not sure I fully grasp. Inspired by the fading and dancing qualia arguments found in Chalmers (1996), Cerullo uses the popping qualia primarily to demonstrate problems with standard theories of personal identity; however, even if sound, the argument does not show that the Parfitian response to branching cases is inferior to Cerullo's theory of branching identity.

⁵ There is no identity problem if just one half of the brain survives and carries forward consciousness since that half would carry one's identity.

⁶ Split-brain cases can be modified to closely mirror uploading cases—e.g. Parfit (1984: 254-255) imagines his two brain halves with equal content being placed in duplicate bodies.

shows that despite deficiencies some kind of connection between hemispheres remains; a thread of unity is present. Pinto, et al. (2017: 1235) conclude that “even without massive communication between the cerebral hemispheres, and thus increased modularity, unity in consciousness and responding is largely preserved.”⁷ Unity of consciousness and cross-communication imply there is just one consciousness. Furthermore, as mentioned by Pinto, et al. (2017: 1232), one of the pioneers of split-brain studies noted that although split-brain patients have trouble reporting what’s in the left visual field with the right hand and vice versa, “striking modifications and even outright exceptions can be found among the small group of patients examined to date” (Sperry 1968: 733). Lastly, several other researchers⁸ have identified split-brain patients who maintained “some kind of interhemispheric integration of information” (Pinto, et al. 2017: 1232). Therefore, it is not obvious that we should conclude that there are two consciousnesses.

These reasons might be judged insufficient to overthrow the standard interpretation, even if it challenges its use without question.⁹ Let’s suppose the standard interpretation is correct.

Cerullo (2015: 20) argues that three common theories of personal identity (biological, psychological, closet continuer) do not satisfactorily answer the split-brain quandary as to whether “Lefty” or “Righty” maintains one’s identity. There are four options. Favoring either Lefty or Righty (options one and two) as the sole continuant of one’s consciousness appears arbitrary, for each has exactly what the other has (Cerullo 2015: 21-22). While closest continuer theorists should have to pick one as closest (which one?), biological and psychological identity theorists have two further options. They could deny both Righty and Lefty. But, if *one* is good enough for continuity, how could *two* negate continuity? And if we destroy one, does the other “reactivate” (Cerullo 2015: 21)? I agree with Cerullo about setting aside this solution. A final option is that the brain originally had two distinct selves that the operation separates into distinct streams.¹⁰ This seems ad hoc (Cerullo 2015: 22). Also, since we experience a unified consciousness, this solution is unmotivated within our everyday phenomenological experience.

Therefore, the door is open to claim branching identity: that both Right and Lefty equally possess continuity of consciousness. Avoiding questions about delayed uploading while focusing on instantaneous uploading (Cerullo 2015: 29), branching identity predicts that both Righty and Lefty have equivalent psychology and, importantly, continuity of consciousness (Cerullo 2015: 30). There are other benefits to the theory. If more than two copies of your mind are created, then each copy shares continuity of consciousness (Cerullo 2015: 30). And if person A’s psychology (including memory) is transferred to person B’s brain—a special case of branching—then there is continuity of consciousness in both A and B (or just in B if A’s brain is destroyed) (Cerullo 2015: 30).

Branching identity makes clear predictions in all these branching cases. But I doubt it is “the most parsimonious solution” (Cerullo 2015: 30), since we have a theory that makes similar predictions without positing the strict personal identity of both branches. Parfit’s Relation R allows for the outcome that there are two psychologically equivalent streams of consciousness. In cases of branching, everything that matters obtains (Relation R), although Lefty and Righty (and any further

⁷ See Figure 1 in Pinto, et al. (2017: 1232) for a useful contrast between the traditional view and the cited paper’s new findings.

⁸ Pinto, et al. (2017: 1232) cite Corballis and Trudel (1993), Corballis (1995), Corballis and Corballis (1995), Savazzi and Marzi (2004), and Savazzi, et al. (2007).

⁹ Pinto, et al. (2017: 1236) encourage further investigation of the dwindling group of split-brain patients.

¹⁰ Lewis (1976) discusses this possibility, and Parfit (1984: 258) recognizes it.

branches) do *not* maintain the personal identity of the original mind. One's consciousness splits (or is uploaded); personal identity is lost; but you survive.

Cerullo (2015: 22) agrees that Parfit's view can partially handle split-brain cases. Parfit's view can handle these cases in the sense that, unlike stricter identity theorists such as bodily theorists or Cartesians, Parfit is happy to accept that both branches have everything that you need and, in the most important ways, continue your pre-branching life. Although the relation of personal identity is lost post-branching, on Parfit's view this is not a significant loss since everything that matters in your survival remains. However, Cerullo wants to add that identity is maintained in both branches. But if this is simply double continuity of consciousness, branching identity theory doesn't add any explanatory benefit over the Parfitian solution. For if my claim about consciousness is correct (section 3)—that the two new consciousnesses, emanating from similar mental capacities and equivalent Relation R contents, would feel the same from the inside—then Parfit's view satisfies the explanatory burden without invoking identity.

4.2. Resetting Our Intuitions

Based on several considerations, which I evaluate below, Cerullo encourages us to reset our intuitions to favor branching identity.

4.2.1. Against the Non-Branching Axiom

Unlike previous authors who've rejected the non-branching axiom by arguing that the two branches *are* numerically identical (Ehring 1987, Wright 2006)—using a time travel example, to be discussed below—Cerullo (2015: 20, 27) resists applying the concept of numerical identity. The problem with the term “numeric identity,” Cerullo (2015: 27) argues, is that it assumes by definition that there can only be *one* numerically identical thing.” Instead of rejecting the non-branching axiom by defending the compatibility of branching and numerical identity, Cerullo advances the concept of branching identity against the non-branching axiom.

The non-branching axiom is grounded in the intuition that two spatially distinct streams of consciousness, thinking their own thoughts, cannot be one consciousness (one person). Given the fairly strong intuition behind the non-branching axiom (for persons and ordinary objects), which Cerullo (2015: 28) admits in claiming it's difficult to imagine branching into parts “equally ourselves,”¹¹ I doubt that the non-branching axiom is arbitrary as Cerullo (2015: 27) claims.

We know how to conceptualize the non-branching axiom, but how exactly should branching identity be conceived? As follows: the branches are ‘identical’ because they maintain *branching identity*—not numerical identity, not qualitative identity—in virtue of their being equal continuations of one's consciousness. But what does this mean? We know that the branches—e.g. the original mind in the brain, and the uploaded mind—are spatially distinct. Yet it *could* be one singular, unified consciousness that perceives through two material instantiations (the brain and the upload). However, in that case, it would still represent a kind of numerical identity (with the conscious experiences of the two instantiations unified or integrated in *one* bigger consciousness). I don't think Cerullo has that in mind, for it's too easily interpreted as numerical identity.

¹¹ The phrase “equally ourselves” is ambiguous: equal qualitatively, numerically, or somehow else?

If there is no 'bigger' unifying consciousness, then there are two distinct, independently unified consciousnesses. It is not strict numerical identity for there are two; it is not mere qualitative identity for they both count as you, a single person, according to Cerullo; and it is not just that each has everything that matters (Parfit's view), for according to Cerullo their relation exceeds having everything that matters because they in fact exemplify (branching) identity. What more is this identity that makes it different from Parfit's treatment? It's supposed to be sameness of consciousness. However, as I have argued in section 3, even Parfit could reasonably claim that your consciousness post-branching will feel the same; it will feel like you in virtue of Relation R contents of which each branch becomes aware upon awakening.

4.2.2. Evolution

Why is it hard to accept something branching yet retaining identity? Cerullo (2015: 28) claims that there is no cognitive mechanism for modelling personal identity (including branching models), for "in our evolutionary history problems involving personal identity were not relevant to survival." On the contrary, questions of personal identity have been relevant to our survival and social cohesion for much of human existence.

Presumably identical twins have existed since humankind's beginnings. Twins raise questions about personal identity: 'What makes each twin unique?' 'Are they the same?' 'How are they different?' These questions are not irrelevant to the issue of branching. Second, parents have a natural affinity for their children, not infrequently inculcating them to have psychological traits similar to their own in hopes that children will carry on their projects. Third, it seems that prehistorical humans pondered the afterlife (ancient burial sites support this)—e.g. does a person's life continue past bodily death? These phenomena, going far into our evolutionary history, raise legitimate questions about personal identity in response to which we've developed concepts of sameness (numerical, qualitative).

For the above reasons we seem more equipped to analyze personal identity puzzles, including cases of branching to some degree, than Cerullo acknowledges. We might not need a new concept like branching identity if some combination or alteration of previously established concepts, passed down from our ancestors, can do the job. Parfit's Relation R, combined with the understanding of consciousness per section 3, plays off of the established concepts of identity: the two branches are not numerically identical but qualitatively share everything that matters, and would feel the same from their two independent conscious perspectives. So we may have enough cognitive capacity to understand branching cases without positing a new form of identity.

What if biological or technological changes forced us to ponder branching cases less hypothetically? What if humans developed the ability to branch, amoeba-like? In this case, I think we can still explain quite a bit with the old notions of numerical and qualitative identity. We can say that the two branches are not numerically identical, but they do share all of the same qualities initially. However, maybe the facts of the case would force us to develop a new concept, and say the two are *branching-identical*. Maybe that would be needed to capture the sense that whatever was true about the person, or consciousness, prior to branching is still true but in two places. This takes us back to how to think about branching identity, discussed in section 4.2.1. Furthermore, I've argued, Parfit's approach sufficiently explains the branching cases.

4.2.3. Time Travel

In support of branching identity, Cerullo (2015: 28) claims that we can coherently think about self-visitation situations, in which you travel backwards in time and meet your younger self. In this case, there are two consciously aware individuals that—one might claim—are the same person. Ehring (1987) and Wright (2006) use the self-visitation scenario to argue for something stronger than branching identity: that numerical identity can hold between the two instances of you at different places simultaneously. Demarest (2016) uses this kind of example to argue for a more nuanced conclusion. The reason so many philosophers have accepted the non-branching axiom is that they've assumed that one person cannot have contradictory properties at the same time (as would be the case, e.g., if A splits into B and C, B feels unease about the result while C celebrates it). Demarest (2016: 570) claims that self-visitation shows that one person *can* have contradictory properties at the same time; therefore, having contradictory properties is not sufficient to accept the non-branching axiom. What, then, is wrong with branching, according to Demarest? Her answer: *branching* itself (Demarest 2016: 581). She leaves it a mystery as to why.¹²

Although Cerullo thinks branching identity is different than numerical identity, he nonetheless uses self-visitation to help reject the non-branching axiom. I will argue against the reasoning that self-visitation shows one person can be in two places at the same time.

First, there is a contradictory, equally serious argument to make based on self-visitation: since an older you would be visiting a younger you, and hence you'd be in two places at one time, self-visitation is logically absurd. I am not sure which conclusion to draw—that I can be in two places at one time, or that self-visitation is absurd. But if that's up in the air, then it's not a reliable example for arguing against the non-branching axiom.

Second, if self-visitation is possible it would show that psychological unity or the unity of consciousness is not required for identity.¹³ Without unity, what it would be like to be you would be two different ways simultaneously. Maybe this is as easy to give up as identity is, if self-visitation is accepted as possible. Demarest (2016: 571), for instance, suggests that self-visitation shows that unity is not required for identity, for the very reason that the unity requirement rules out the possibility that the older and younger selves are numerically identical. Instead, maybe self-visitation should be ruled out. Or, perhaps what happens is that at the moment one's timeline loops back on itself, the separate consciousnesses become unified and integrated: a paranormal connection is made so they can share information, like entangled quantum particles.

Third, I wonder how relevant self-visitation is to supporting Cerullo's theory of branching identity. In the scenario there are two streams of consciousness (supposing there isn't an unexpected

¹² Demarest (2016: 580-581) expresses ambivalence about the non-branching axiom, although she tentatively accepts that two branches of you are non-identical owing to branching simpliciter. Also, she makes two main claims about the relation between branching and contradictory properties: (i) that one person can have contradictory properties (support: self-visitation), and (ii) "that branching is sufficient for non-identity, even if there are no contradictory properties" (support: a case where A splits into B and C but B immediately travels to past era, so B and C live their lives completely separately) (Demarest 2016: 570). The latter case doesn't necessarily support my critique of Cerullo's theory of branching identity, since Demarest's concern (as she states "branching is sufficient for non-identity") is numerical identity.

¹³ A person's consciousness is unified, roughly, if the person has internal access to all of his or her representational states. In claiming 'internal access', I'm setting aside the extended mind thesis (Clark and Chalmers 1998), which may do a lot more damage to our sense of identity than branching, for it entails that individuals have mental states in notebooks and other external devices.

unification of consciousness when you meet yourself), and each stream is you at a different age (at different subjective times). But neither the younger nor the older selves have actually *branched* from you or each other. In traveling back to an earlier time, you meet yourself at a different point in your conscious continuity—less like branching streams and more like a stream looping back on itself. These differences, combined with criticisms above, cast significant doubt on the self-visitation argument for rejecting the non-branching axiom. The argument, however, retains some force.

4.3. Qualia Space

Cerullo (2015: 30) holds that qualia space is “a mathematical space that encompasses all qualia,” citing Stanley (1999). Qualia space includes all individual qualitative experiences as well as consciousness itself (Cerullo 2015: 31), since consciousness is a unified whole with its own distinctive character. There are two ways to conceptualize qualia space. One, it could be a “potential space” mapping all possible qualia or, two, it could be “a real existence outside space-time” (Cerullo 2015: 31). We don’t need to decide between these immanent and transcendent interpretations.

If every possible phenomenal experience maps onto qualia space, including the *experience of continuity of consciousness* (a type of qualia), then with a complete understanding of the psychophysical laws and a complete recording of a mind’s total informational state, we’ll be able “to recreate the exact subjective experience of a person at any time point” (Cerullo 2015: 31). Thus, after uploading a person’s subjective experience, if the upload was done nondestructively, we’ll get branching with equal continuity of consciousness in both the brain and the upload. Moreover, since both are “mapped onto the same point in qualia space” they “would be completely identical and share the same phenomenal experience of personal identity” (Cerullo 2015: 31).

Cerullo claims that the continuity of consciousness has a distinct qualitative feel or quale. Let’s ignore that some philosophers (e.g. Dennett 1988, 1991) are highly skeptical of qualia. If a person’s consciousness in general has a distinct qualitative feel, and it is essential to survival or continuation of identity over time, then it needs to be duplicated in branching (as Cerullo recognizes). How best to that? Rather than trying to capture some distinct quale of consciousness or its continuity, focus on what gives a particular consciousness the inner feel it has: the *contents*, i.e., Relation R. As already argued (section 3), by duplicating the mental capacities and the contents of a mind, it seems that the new consciousness would feel the same from the inside as the original. It will feel the continuity that the original feels, due to having the same type of mental machinery (most importantly, including the capacity to experience qualia) filled in with all the Parfitian necessities.

5. Concluding Observations

Cerullo makes us reconsider the non-branching axiom; good. He forms new arguments relevant to personal identity, based on split-brains, qualia space, and other ideas; good. He reminds us to challenge intuitions about entrenched assumptions; good. But we shouldn’t give up the non-branching axiom.

I have two final points. First, as a further reason to doubt branching identity, I note that all of the arguments Cerullo gives in favor of branching identity involve branching only into two streams.¹⁴ However, what if there are, say, ten iterations of branching (in which each branch branches into two more branches) producing a population of 1,024 uploaded versions of you, the population of a small town? How many persons live there? If we hold these branches to be numerically identical,

¹⁴ Cerullo (2015: 30) briefly notes the possibility of more than two branches.

the answer should be *one* person in 1,024 places. Branching identity is not numerical identity—yet it is identity of *some* sort. The branching identity answer should be, I think, that there are 1,024 equivalent instantiations of you, while ignoring the numerical identity answer of ‘one’. This strikes me as implausible. By contrast, Parfit’s analysis has no problem with this: none of the branches are truly ‘you’, identity is lost, but everything that matters is there. And we can add the claim, already established, that the consciousness in each branch should feel the same (or very similar) to the ancestral branches.

Second, as a general conclusion, I do not see a plausible concept of personal identity that goes beyond qualitative and numerical identity. Branching identity seems, for all the reasons discussed, to be a kind of qualitative identity at the moment of creation, with differences accumulating therefrom. But this possibility fits nicely enough under the model of branching given by Parfit’s Relation R, sans personal identity, whilst not resetting our intuitions and not having to incorporate a brand new concept of identity.

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