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Penultimate version
September 25, 2018
International Journal for Philosophical Studies 26 (5):763-780 (2018)

Temporary and Contingent Instantiation as Partial Identity

I have argued that instantiation is the partial identity of a universal and a particular, where partial identity is the sharing of an aspect. An advantage of this account was to be that it captured one of Armstrong's initial criteria for instantiation, namely, that it be contingent (1997, 118). However, it has seemed to many, including Armstrong (2006) himself, that because identity is necessary, instantiation as partial identity is not contingent. In response I expand on brief remarks that I made in earlier papers (Baxter 2001, 2013). The goal is to explain how it can make sense that there are cases in which identity is contingent. I rely heavily on Andre Gallois's theory of occasional identity, which starts with temporary identity then moves to contingent identity. However, his explanation how to make sense of his formalisms falls short at a crucial juncture. To fill in that explanation I appeal to my theory of aspects (Baxter Forthcoming). I then use the theory of aspects to explain how it can make sense that there be cases in which instantiation as partial identity is temporary and cases in which it is contingent.

Leibniz's Law, specifically the Indiscernibility of Identicals, is the source of the purported necessity of identity, as well as of other objections to temporary and contingent identity. In presenting my theory of aspects, I have argued that Leibniz's Law has overawed metaphysicians and is overapplied (Baxter Forthcoming). There need to be some restrictions on it. Many regard Leibniz's Law as "an insight absolutely fundamental to our understanding of the logical notion of identity," in Williamson's words (2002, 285). That is fine for formal logic, perhaps. A case still needs to be made that the notion of identity in formal logic is relevant to metaphysics. I think it isn't. I agree with Hume that "philosophical decisions are nothing but the reflections of common life, methodized and corrected," and regard metaphysics as a paradigm example (2000, 12.25). Our theoretical account of numerical identity is a distillation of common uses in which considerations captured by Leibniz's Law play a role but not a defining one. That is not to say that everything in the account will appear commonsensical. There are unexamined consequences of our common uses.

I begin by discussing Andre Gallois's theory of temporary identity.[1] It follows from the theory that there is a perfectly good sense in which something identical with itself at one time is at that time distinct from itself at another. I next apply the lessons learned to show that there is a perfectly good sense in which something identical with itself at one possible world is at that world distinct from itself at another. The lessons defuse a type of argument against contingent identity made famous by Kripke (1971) and originating in work by Barcan Marcus (1947, Theorem 2.31). It will follow that it makes sense that there be cases in which instantiation as partial identity is contingent.

[1] In this paper I am exploring an account of temporary identity different from my official account at Baxter 1988: 211-12. For the record, in that essay things with temporary identity are such that on one diachronic count they are always one single thing, on another diachronic count they are always distinct things, and which count is better varies with time. On that view, numerical identity within a count is not indexed to time. In the current paper, I am exploring an account on which within a count numerical identity *is* indexed to time.

The sticking point in understanding this theory of temporary and of contingent identity is understanding the way in which something identical with itself at one index can be at that index distinct from itself at another. We *seem* to be able to make sense of one direction: two things converging into one. Gallois himself appeals to this seeming ability to make sense of two converging into one when explaining why it makes sense to use the plural then saying that things distinct at one time are identical at another. When we do so "we are referring to two things at a time when they are two, and not one. We are saying of those two things that at some other time they are one" (1998, 69 n. 1). However, we can't *really* make sense of two things converging into one unless we can make sense of the other direction: one thing diverging from itself. And it is very hard to make sense of one thing diverging from itself.[2]

Gallois's apparatus does not sufficiently explain how to understand this divergence. I then show how appeal to aspects helps with understanding it. With this understanding we can make sense of cases in which instantiation as partial identity is temporary and cases in which it is contingent.

Temporary Identity

I have suggested that my theory of Aspects can be used to make sense of temporary identity, concerning which I will follow André Gallois (1998) who calls it "occasional" identity. It is part of the theory that any case of an identity is a case of

[2] Here I am using 'converging' and 'diverging' very generally and not just to indicate change from past to future.

an identity at a time (Gallois 1998, 116). Following Gallois (1998, 69), I will initially formalize temporary identity this way.

(TI) $(\exists x)(\exists y)(\exists t)(\exists t')(\text{at } t\text{: } x=y \ \& \ \text{at } t'\text{: } \sim(x=y))$

For something x and something y and for some times t and t', x is numerically identical with y at t and x is numerically distinct from y at t'. Let's say that a and b and T and T' provide a particular example.

(1) at T: a=b & at T': ~(a=b)

At T a and b are identical and at T' they are distinct.

Gallois (1998, 38) assumes that 'at T: Fa' is true just in case a three-place instantiation relation holds between time T and property F and individual a.[3] Based on a suggestion in Varzi's review (2001,292-93) that applies this assumption to identity, I will assume that, in general, instantiation for Gallois is a relation between a time, a relation, and (the n-tuple of) the relevant relata of that relation at that time. (Let a property be regarded as a one-place relation.) So, for example, the first conjunct of (1) is true just in case instantiation holds of T, numerical identity, and <a,b>. The second conjunct of (1) is true just in case instantiation holds of T', numerical distinctness, and <a,b>. Note that time indexing can be iterated. Instantiation of a time-indexed relation (indexed to t', say) will then be a relation between a time, t, instantiation, and (the n-tuple of) its relevant relata at time t, one

[3] I myself don't share this assumption. I don't explain my own view here, but for the record I take it that 'at T: Fa' is true just in case the relevant aspect of a that exists at T shares an aspect with the universal F.

relatum of which is the time t'. So for instance, "At T': at T: a=b" would be true just in case instantiation holds of T', instantiation, and <T, =, <a,b>>.[4]

The most difficult objection to the contention that identity is temporary is based on Leibniz's Law. Here by Leibniz's Law I will mean the Indiscernibility of Identicals.

(LL) (x)(y)(x=y --> (F)(Fx <--> Fy))

For any things x and y, if x is numerically identical with y then for any property F, F is had by x if and only if F is had by y. However, if identity can be temporary, then it stands to reason that indiscernibility would apply to things only when they are identical. Indiscernibility should not be thought to apply to them when they are distinct, just because they were identical at some other time. Suppose it did. Suppose temporary identity entailed unqualified indiscernibility.

(LL*) (x)(y)(t)((at t: x=y) --> (F)(Fx <--> Fy))

Then, the fact that at T' it is true of a that it is distinct from b, it would follow that at T' it is true of b that it is distinct from itself. The argument assumes that the indiscernibility licenses the substitution of identicals.

(2) at T: a=b

(3) (F)(Fa <--> Fb)

(4) at T': ~(a=b)

(5) at T': ~(b=b)

But nothing can be distinct from itself at any time.

(DI) (x)(~(∃t)(at t: ~(x=x)))

[4] I'm grateful to Marcus Rossberg, Lionel Shapiro, and Toby Napoletano for discussion on these points.

Thus, to avoid violating (DI) it stands to reason that if there is temporary identity, then the indiscernibility enjoined by Leibniz's Law should be temporary, too (Gallois 1998: 81).

(LL**) (x)(y)(t)((at t: x=y) --> (F)(at t: Fx <--> at t: Fy))

For any things x and y, and any time t, if at time t, x is numerically identical with y then for any property F, at that same time t, F is had by x if and only if at that same time t, F is had by y.

However, a similar objection seems to arise given temporary Leibniz's Law. From (2) and (LL**) we get that at T, a and b have all the same things true of them.

(6) (F)(at T: Fa <--> at T: Fb)

Now one of the things true at T of a is that at T' it is distinct from b. I, like Gallois (1998, 81), am taking for granted that among the properties things can have at various times are time-indexed properties.[5]

(7) at T: at T': ~(a=b)

So, since anything true of a at T is true of b at T, it follows from (6) that at T, b is distinct from b at T'.

(8) at T: at T': ~(b=b)

At T, b is distinct from itself at T'. This is an unsettling result because of its resemblance to (5).

Note however, that (8) does not violate the principle (DI) that nothing can be distinct from itself at any time. The principle would be violated only if (8) entailed (5). But there is no reason for the temporary identity theorist to grant an entailment

[5] For instance, it is now true of me that in 1960 I was a schoolboy.

from (8) to (5). Indeed, there is reason not to grant it. (8) should be true only if at T b is identical with something that is distinct from b at T'. And it is. At T, b is identical with a, and at T' a is distinct from b. On the other hand, (5) should be true only if at T' b is identical with something that at that same time T' is distinct from b. But that is not the case. At T' b is no longer identical with a or anything else that at T' is distinct from b. The principle involved is Gallois's principle (E): [6]

(E) (x)(t)(t')(F)(at t: at t':Fx <--> (∃y)(at t: x=y & at t': Fy))

For any x, any times t and t', and any property F, at t it is true of x that at t' it is F, if and only if there is a y such that at t, x is identical with y and at t' y is F.

So far so good for a defense against the objection seemingly raised by considering temporary Leibniz's Law. (8) is still unsettling, however. And, even if we can accept (8), Gallois's type of reasoning leads to another unsettling result. Consider principle (E). From this principle and the fact that b is identical with itself both at T and at T', it follows that at T, b is identical with itself at T'.

(9) at T: at T': b=b.

Based on Gallois's answer to a similar problem (1998, 135-37) we should conclude that, surprisingly, (8) and (9) are not contrary. Both can be true. It just has to be both that at T, b is identical to something that at T' is distinct from b, and that at T b is identical to something that at T' is identical with b. And both hold. At T, b is identical with a (which is distinct from b at T') and is identical with b (which is identical with b at T'). In other words, (8) and (9) are not contrary because at T b is identical with things that are distinct at T'.

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[6] Gallois also discusses an alternative principle (A) that has the 'y' in (E) bound instead by a universal quantifier (Gallois 1998: 84, 89).

Gallois himself (1998, 137) puts the situation more generally. There he explains how it can be that at a time t, thing x is always identical with x and yet at that same time t, x is sometimes distinct from x. These are not contraries, he says, for the reasons I've gone through above. Take (8) above, which entails that at T, b is sometimes distinct from b.

(10) at T: at some time that b exists: ~(b=b)

Yet at any time, something that exists at that time is such that at any other time at which it exists it is identical with itself. So it follows that being identical with itself at any time that it exists is true of b at T.

(11) at T: at any time b exists: b=b

(10) is true because at T, b is identical with something that is distinct from b at T', namely a. On the other hand, (11) is true because at T, b is identical with something that is always identical with b when it exists, namely b.

If we call the facts about something at each of the times it exists its "history," then Gallois is saying that the (8) and (9) are not contrary, nor are (10) and (11), because at T b is identical with things with different histories.

In wondering about this explanation, let me focus just on (8) and (9) which are simpler. The explanation why they are not contrary is, again, that (8) is true because of b's identity at T with a (which is distinct from b at T'). (9) is true because of b's identity at T with b (which is identical with b at T').

The explanation works as long as we use 'a' and 'b' to keep track of the things with different histories. But why are we allowed to do this? At T, a=b. At T, a and b don't have different histories. So we can equally say (8) is true because of b's identity at T with b (which is distinct from b at T'). (9) is true because of b's identity at T with a (which is identical with b at T'). Now the explanation doesn't make any sense at all. It contravenes (1) on which it is supposed to be based. How then can the explanation have made sense originally?

In explaining how to understand something having at T both of differing histories, we appeal to something that at T has one of the histories and not the other, and something that at T has the other history and not the one. The explanation keeps track of which of the things identical at T is a, with just the one history, and which is b, with just the other, in order to explain why what they are identical with at T, namely b, has both histories. But how can things identical at T be such that one has one history, one has the other, and one has both? Call this the discernible identicals question.

The crux of the matter is the appeal to something that at T has one of the histories and not the other, and something that at T has the other history and not the one. What is there at T to be identical with a at T' while not being identical with b at T'. What is there at T to be identical with b at T' while not being identical with a at T'? There is just the one individual at T. How can it take a path through time that diverges from the path it takes? We seem to be able to make sense of two things converging into one, but we can't really make sense of it unless we can make sense of one thing diverging from itself. And it is very hard to make sense of one thing diverging from itself. [7]

[7] Here again I am using 'converging' and 'diverging' very generally and not just to indicate change from past to future.

In a nutshell, to understand the explanation why (8) and (9) are not contrary we have to be able to understand the difference at T between something identical with b at T and something "else" identical with b at T. But there can be no difference at T if all the same things are true of them at T.

What is needed is some structure in the thing that at T both a and b are identical to. An analogue to what is needed is provided in Timothy Pawl's (2016) defense of conciliar Christology. At the early ecumenical councils, at which much of Christian dogma was established, it was decided that various seemingly contrary predicates were true of Jesus Christ, for instance, being capable of death and not being capable of death. A defense of such doctrine needs to show that, despite appearances, these predicates are not contrary. Rather, both can be true of one individual at the same time. The stratagem that Pawl adopts is to make use of the conciliar claim that Jesus has two natures--one human and one divine--where a nature is an individual instance of a species of the lowest type. The claim is that these two natures are made one by a miraculous "hypostatic union." What makes it true that Jesus is capable of death is that Jesus partly consists of a nature that is capable of death. What makes it true that Jesus is incapable of death is that Jesus partly consists of a nature that is incapable of death. Thus, predicates that would indeed be contrary for a one-natured thing, are not contrary for a two-natured thing (Pawl 2016, 159).

Gallois is implicitly using a similar stratagem, I think. Identity at time T serves as the analogue to the hypostatic union. Things a and b are the analogues to the two natures. The explanation why the apparently contrary histories are not really contrary, is that one predicate is true of the thing identical at T to both a and b in virtue of being identical with a, and the other predicate is true of the thing identical at T to both a and b in virtue of being identical with b. The difference between a and b, somehow preserved at T despite their identity at T, is supposed to give the structure needed to make sense of the explanation why the histories, that would be contrary of a thing without the structure, are not really contrary.

I myself do not understand the hypostatic union unless it would be identity. To my mind, only identity can make two things one unitary thing (at the cost of their two-ness), as opposed to two things merely unified. So although Pawl's picture of the two-natured Jesus helps us see the structure we need, it would suffer from the same problem as Gallois's picture. That problem is how to preserve some difference between identical things.

My theory of aspects is designed to do this kind of work. I think the temporary identity theorist needs to appeal to aspects in addition to individuals. I think that the conciliar Christologist should make the same appeal to aspects as well, but will leave that aside.

Just as a reminder, I take an aspect of an individual to be an entity that has some but not all of the properties of the individual (Baxter Forthcoming).[8] An aspect is numerically identical with the individual it is an aspect of. Aspects of the same individual are thus numerically identical with each other. Nonetheless, aspects of the same individual can qualitatively differ from each other as well as from it. The

[8] It might be that some properties are had only by aspects. Perhaps being known by the ancients to appear in the morning is not had by Venus but rather is had by Venus insofar as it appears in the morning. I'm grateful to Philipp Blum for the suggestion and example. Another example, from Toby Napoletano, might be the property of being an aspect.

canonical way to refer to an aspect is 'x insofar as it is F' where 'x' designates an individual and 'F' designates a property that the individual or some aspect of it has.[9] Leibniz's Law and even temporary Leibniz's Law quantify over individuals. They are silent about aspects. Thus the theory of aspects denies Leibniz's Law when quantification over aspects is added, without violating standard, Leibniz's Law temporary or not.

The answer to the discernible identicals question above will be that there is an individual at T with both histories, and it has an aspect with only one of the histories and an aspect with only the other, and the individual and the aspects are all identical at T.

The relevant aspects for Gallois's theory of temporary identity would be aspects of the individual which at T has both histories. They would be that individual insofar as at T it has only a's history, on the one hand, and that individual insofar as at T it has only b's history, on the other. Call the former the "a-aspect" and the latter the "b-aspect."

The proposal is that individuals distinct at one time are aspects of the same individual at another. Note that the temporally indexed properties of each individual when it is distinct from the other remain unchanged when it is an aspect of the same individual the other is an aspect of. For instance, the temporally indexed properties of a when it is distinct from b are the same ones as those had at T by the a-aspect.

[9] Note that not everything referred to with such an expression is an aspect. Given the principles listed in Baxter (Forthcoming), the fact that I am not an aspect entails that I insofar as I am not an aspect exists. That would entail that I insofar as I am not an aspect am not an aspect. If every expression so constructed with 'insofar as' referred to an aspect, then it would be that I insofar as I am not an aspect am an aspect, as well. So there would be a contradiction. However, 'I insofar as I am not an aspect' simply refers to an individual--me. I'm grateful for discussion with Philipp Blum and Nick Stang on this point.

I had asked what is there at T to be identical with a at T' while not being identical with b at T'? And, what is there at T to be identical with b at T' while not being identical with a at T'? What there are, are the differing aspects: the a-aspect and the b-aspect.

The proposal raises the need for a distinction concerning referring expressions. Let's distinguish narrow reference from broad reference. The rough idea is that a term narrowly refers to something that, at every time, has the same history regardless of what else it is identical with at any time. A term broadly refers to something that at some time has an additional history that it lacks at some other time, because of being identical with something at the one time that it is distinct from at the other time.

In other words, 'a' narrowly refers to a just in case 'a' refers to a when it is not identical with anything that it is distinct from at another time, and refers to the a-aspect when a is identical with something it is distinct from at another time. When narrowly referring, 'a' thus refers to something whose time-indexed properties are invariant. Principle (E) does not hold. Instead what let's call principle (I) holds:[10]

(I) (x)(t)(t')(F)(at t: at t':Fx <--> at t': Fx)

Note that there is a perfectly good sense of trans-temporal identity between what 'a' refers to at one time and what 'a' refers to at another, when 'a' is used to refer narrowly. They are trans-temporally identical just in case they have the same

[10] I am assuming that because Gallois thinks things can have properties at times at which they don't exist (1998: 84 n. 7), the simpler (I) can be used instead of Gallois's "transmission principle" which is conditional on x existing at both times (1998: 96).

history. This will be an equivalence relation. It will not be numerical identity, however, which is had only at a time.

In contrast 'a', when used to refer broadly, refers at each time to the complete individual an individual is identical with at that time. Principle (E) holds when referring broadly and so when 'a' refers broadly, it refers to something whose time-indexed properties vary with time. It is when referring broadly that inferences to sentences like (8) are possible. Note that when 'a' is used to refer broadly, what it refers to at one time is not trans-temporally identical in our sense with what 'a' refers to at another. When 'a' is used to refer broadly, a has a different history when it is identical with b than it does when it is distinct from b (cf. Gallois 1998, 113-117).

The explanation why (8) and (9) are not contrary did not make sense when using 'a' and 'b' to refer broadly. It does, however, make sense when using them to refer narrowly. When giving the explanation we needed to use 'a' and 'b' to keep track of things with different histories, even though in (8) and (9) 'b' is used to refer to something with both histories. To understand the sentences while also understanding the explanation why they are not contrary, we needed to distinguish broad and narrow reference.

I take it that Gallois, in his formal system, is always using referring expressions broadly. It is only in informal explanation that he uses expressions to refer narrowly. Or, more accurately, the only way to understand his informal explanation is to use the theory of aspects to characterize narrow reference and then interpret him in his informal explanation as using expressions to refer narrowly.

There is still a bit of unsettlement. The apparent opposition between (8) and (9) seems present in (8) itself, and the explanation of how they are not contrary doesn't seem yet fully to remove the unsettling nature of (8).

(8) at T: at T': ~(b=b)

The reason, I think, is that the sameness of type of the 'b's seems to *show* an identity even as that identity is being *said* not to hold by the '~'.[11] This appearance gives us the feeling that according to (8) at T there is a contradiction true of b at T'. However, with our distinction concerning reference we can explain the appearance while not acceding to it. If 'b' is read as referring narrowly then there is a contradiction. Given (I), the impossible (5) would be true.

(5) at T': ~(b=b)

However, in (8) 'b' is to be read as referring broadly, as in all of Gallois's formulae. The *shown* identity is the identity at T. The *said* distinctness is the distinctness at T'. The differing histories of a and b referred to narrowly are both had at T by b referred to broadly, since at that time it has both the a-aspect and the b-aspect.

At root, what made Gallois's temporary identity hard to understand was the difficulty understanding how it could make sense for something to take a path through time that diverges from the path it takes. That difficulty is crystalized in the difficulty understanding (8). With the theory of aspects we can make sense of this situation.

[11] See Wittgenstein 4.1211 on showing an identity.

Note that one way to express (8) is that an individual identical with itself at one time is at that time distinct from itself at another. What the theorist means is that something numerically identical to the individual at the one time and something differing that is also numerically identical to the individual at that time are respectively identical to numerically distinct individuals at the other time. That is, at T b has differing aspects that are respectively trans-temporally identical with things distinct at T'.

Temporary Identity and Existence

Given (1), b referred to broadly has an aspect at T that it lacks at T', namely the a-aspect. Individual b has the a-aspect when it is identical with a, but lacks the a-aspect when b is not identical with a. At T', the a-aspect of b does not exist. The cases that Gallois considers and explains are cases of temporary identity between things that exist both when identical and when not. We see now that there is another kind of case to consider, namely, the case in which things are identical at one time and one of them is not in existence at another time.

How to formulate this kind of case is not clear. Gallois introduces an existence predicate, 'E', without comment (1998, 46 n. 7, 96). At first blush one might assume that, say, 'Ex' is shorthand for, say, '(∃y)(y=x)'.[12] One might also assume that to exist at a time is to be identical to something at that time, whereas to not exist at a time is to be identical to nothing at that time. However, these assumptions cannot be correct. Gallois says that individuals can have properties at

[12] I'm grateful to Catherine Diel for wondering about this.

times when they do not exist (1998, 84 n. 7). Presumably one of the properties would be being identical with itself. So the individual would be identical with something at a time at which it does not exist. So 'E' must mean something different.

Presumably, we should think of existence as a primitive property relative to time, the way identity is supposed to be, not a property defined in terms of the existential quantifier. In that case, temporary identity involving non-existence would be formulated:

(TI**) (∃x)(∃y)(∃t)(∃t')(at t: x=y & at t': Ex & at t': ~Ey)

For some x and some y and some time t and some time t', at t x is identical with y and at t' x exists and at t' y does not exist. An example would then be:

(12) at T: c=d & at T': Ec & at T': ~Ed

From this the unsettling results would be

(13) At T: at T': Ec

(14) At T: at T': ~Ec

At T, c exists at T' and yet at T, c does not exist at T'. The explanation why these are not contrary is that c is identical with something at T that at T' does exist, namely c, and yet also c is identical with something at T that at T' does not exist, namely d. We can make sense of the explanation, as before, if we use the theory of aspects to make the distinction between referring broadly and referring narrowly. In the unsettling pair of sentences 'c' refers broadly, but in the explanation 'c' and 'd' refer narrowly. What there are at T to have the different histories are different aspects. Let's call them the c-aspect and the d-aspect. Let the c-aspect be c, referred to broadly, insofar as it has just the history of c, referred to narrowly. Let the d-aspect be c, referred to broadly, insofar as it has just the history of d, referred to narrowly. That it has these differing aspects is why the complete individual at T has both of the different histories.

Note that in this situation, c, referred to broadly, has aspects at T that it lacks at T'. Individual c has the c-aspect when it is identical with d but not at times when it fails to be identical with something it is distinct from at another time (that is, not at times when c is identical only with c referred to narrowly). Individual c has the d-aspect aspect when it is identical with d, but lacks this aspect when c exists and d does not. We saw something similar before: b has the a-aspect when it is identical with a, but lacks the a-aspect when b is not identical with a.

Temporary Instantiation

Now we can turn to temporary instantiation. What is needed to explain temporary instantiation is just this kind of situation in which an individual has an aspect at one time that it lacks at another, even though at the first time the aspect is numerically identical with the individual it is an aspect of.[13]

Just as a reminder, instantiation, on my view, is a cross-count partial identity between a particular and a universal, namely, their sharing an aspect (Baxter 2001). An aspect of the particular in the particulars count is cross-count identical with an aspect of the universal in the universals count. All particulars collectively are the same portion of reality as all universals collectively. On one standard of counting--

[13] If I were fully developing my own view I would say that the situation is one in which an individual insofar as it exists at one time has an aspect that that individual insofar as it exists at another time lacks. That is, the individual has temporal aspects that differ in their sub-aspects.

the particulars count--reality consists of all the various particulars. On another standard of counting--the universals count--reality consists of all the various universals. When a particular instantiates a universal, an aspect identical with that particular on the particulars count is identical with that universal on the universals count.

Temporary instantiation, then, is the situation in which at one time the particular and the universal share an aspect and at another time they do not share that aspect. For example, in May, on the particulars count, the leaf is numerically identical with the leaf insofar as it is green, and in May, on the universals count, Greenness is numerically identical with Greenness insofar as the leaf has it, and whenever they exist the leaf insofar as it is green and Greenness insofar as the leaf has it are cross-count identical.[14] In other words, the leaf is green in May. However, in December the battered, desiccated leaf hanging on stubbornly is not green. In December, on the particulars count, the leaf exists but the leaf insofar as it is green does not exist. Likewise, in December, on the universals count, Greenness exists but Greenness insofar as it is had by the leaf does not exist. Because an individual, whether a particular or a universal, can have an aspect at one time and not at another, instantiation can be temporary.

Contingent Identity

What can happen at another time can happen at another possible world. So identity can be contingent. We can see that by using worlds instead of times as indices in the

[14] For more on cross-count identity see Baxter 2018: 193.

formulae concerning temporary identity, following the lead of Gallois (1998, 149). It is part of the theory that any case of an identity is a case of an identity at a world.

(CI) $(\exists x)(\exists y)(\exists w)(\exists w')(\text{at } w\text{: } x=y \ \& \ \text{at } w'\text{: } \sim(x=y))$

There exists something x and something y and there exist worlds w and w' such that x is numerically identical with y at w and x is numerically distinct from y at w'. Let's say that a and b and W and W' provide a particular example.

(15) at W: a=b & at W': ~(a=b)

Assume an analogue to (E) following Gallois (1998, 149).

(E_w) $\Box\ (x)(w)(w')(F)(\text{at } w\text{: at } w'\text{: } Fx \longleftrightarrow (\exists y)(\text{at } w\text{: } x=y \ \& \ \text{at } w'\text{: } Fy))$

Necessarily for any x, for any worlds w and w', and for any property F, at w it is true of x that at w' it is F, if and only if there is a y such that at w, x is identical with y and at w' y is F. It follows from (15) and E_w that

(16) at W: at W': ~(b=b)

At W, b is distinct from b at W'.

Akin to the temporal case, let's call the facts about something at each of the worlds at which it exists, its "modal history." We can understand (16) because at W b is identical with something with the modal history of a, namely a. Being distinct from b at W', rather than identical to it at W', is part of the modal history of a. At W at which a and b are identical, the relevant individual is the individual with both the modal history of a and the modal history of b. In this explanation, 'a' refers at W to that individual insofar as it has the modal history of just a. Call this the modal a-aspect.

We can make sense of the explanation because, akin to the temporal case, we can distinguish a modal version of narrow reference from a modal version of broad reference. The term 'a' narrowly refers to a just in case 'a' refers to a at any world at which it is not identical with anything that it is distinct from at another world, and refers to the modal a-aspect at any world at which a is identical with something that it is distinct from at another world. So, as before, when referring narrowly 'a' refers to something with the same modal history in every world. When used to refer broadly, it refers to something that has additional modal histories at worlds at which 'a' is identical to things it is distinct from at some other world. Likewise for 'b'. Akin to before, the terms 'a' and 'b' refer broadly in the formulae but narrowly in the informal explanation of why the formulae make sense.

As Gallois (1998, 142-46) points out, a claim like (15) involves a rejection of the celebrated argument that identity is necessary (Kripke 1971; Barcan Marcus 1947, Theorem 2.31). That argument uses Leibniz's Law to argue from the fact that necessarily anything is identical to itself, to the conclusion that necessarily anything is identical to anything it is identical with.

(i) a=b

(ii) $\Box$ (b=b)

(iii) $\Box$ (a=b)

If identity and Leibniz's Law can be indexed to worlds, as Gallois suggests, then this argument does not go through. So besides (CI) we have:

(LL$_{w}$) $\Box$(x)(y)(w)((at w: x=y) --> (F)(at w: Fx <--> at w: Fy))

Necessarily, for any things x and y, and any world w, if at w, x is numerically identical with y then for any property F, at that same world w, F is had by x if and only if at that same world w, F is had by y. Let's suppose the relevant world is the actual world, W, and assume (15).

(i') at W: a=b

It is certainly true that

(ii') (w) (at w: b=b)

However, given (15) it does *not* follow that

(iii') (w) (at w: a=b)

That would follow by Leibniz's Law only if things identical at any world were indiscernible at all worlds. However, the theory of contingent identity specifically rejects such a version of Leibniz's Law. The closest we can get to (iii') in the case under consideration is

(17) (w) (at W: at w: a=b)

(17) is true because at W a is identical with something, namely b, that at all worlds is identical with b. Of course, it also follows that

(18) (∃w)(at W: at w: ~(a=b))

After all, at W a is identical with something, namely a, that at some world, namely W', is distinct from b. And it also follows that

(19) (∃w)(at W: at w: ~(b=b)

After all, at W b is identical with something, namely a, that at some world, namely W', is distinct from b.

Like before, (19) is unsettling before the explanation of how it can be true is understood. Again, in (19) and the other formulae 'b', as well as 'a', is used to refer broadly. In the explanations how to understand the formulae they are used to refer narrowly.

I am guessing that what makes (ii) seem so obvious is that it is equivalent to the claim that it is not possible for something to be distinct from itself.

(iv) $\sim\Diamond\sim(b=b)$

The seeming obviousness of (iv) may have helped drive opinion against contingent identity. With unrestricted Leibniz's Law allowing the substitution of 'b' for 'a', the following argument would seem decisive by yielding a conclusion that contradicts (iv).

(v) $a=b$

(vi) $\Diamond\sim(a=b)$

(vii) $\Diamond\sim(b=b)$

But for reasons like those above the conclusion does not follow. The closest thing to the conclusion that is true is (19), which we now understand. Let me use 'trans-modally identical' to indicate that something at one world has the same modal history as something at another. At W, b has differing aspects that are respectively trans-modally identical with things distinct at W'.

Contingent Instantiation

Note that given (15), b referred to broadly, has an aspect at W that it lacks at W'. Let's call it the a-aspect. Let the a-aspect be b insofar as it has just the history of a, referred to narrowly. Individual b has this aspect in any world in which it is identical with a, but lacks this aspect in any world in which they are distinct.

Now we can turn to contingent instantiation. What is needed to explain contingent instantiation is the fact that an individual, whether particular or universal, can have an aspect at one world that it lacks at another, even though an aspect is numerically identical with the individual it is an aspect of. [15]

Contingent instantiation, then, is the situation in which at one world the particular and the universal share an aspect and at another world they do not share that aspect. For example, in the eternal Spring world, on the particulars count, the leaf is numerically identical with the leaf insofar as it is green, and in the eternal Spring world, on the universals count, Greenness is numerically identical with Greenness insofar as the leaf has it, and whenever they exist the leaf insofar as it is green and Greenness insofar as the leaf has it are cross count identical. In other words, the leaf is green in the eternal Spring world. However, in the eternal Winter world, the battered, desiccated leaf hanging on stubbornly is not green. In the eternal Winter world, on the particulars count, the leaf exists but the leaf insofar as it is green does not exist. Likewise, in the eternal Winter world, on the universals count, Greenness exists but Greenness insofar as it is had by the leaf does not exist.

[15] If I were fully developing my own view I would say that the situation is one in which an individual insofar as it exists at one world can have an aspect that that individual insofar as it exists at another world lacks. That is, individuals have modal aspects that may differ in their sub-aspects.
On this view an individual insofar as it exists at a world is an aspect of that individual--an aspect differing but numerically identical with its other modal aspects. And so, its aspects at a world are sub-aspects of the relevant modal aspect. In conversation in spring term 1999 Armstrong compared his, David Lewis's, and my views of modality to classic positions in the philosophy of mind: his was like monism, Lewis's was like dualism, and mine was like double-aspect theory.

Because an individual, whether a particular or a universal, can have an aspect at one world and not at another, instantiation can be contingent.

Conclusion

An appeal to aspects lets us understand how something identical with itself at one index can at that index be distinct from itself at another. The relevant indices have been times and worlds. As a result, we can see how it can make sense that there be cases in identity is temporary and cases in which it is contingent. Thus, we can see how it can make sense that there be cases in which instantiation as partial identity is temporary and cases in which it is contingent.[16]

[16] I'm very grateful for discussion with the participants in the "Indiscernbility-of-Identicals and Non-Standard Ontologies" workshop in Ligerz, Switzerland, April 2018--Philipp Blum, Nick Stang, Catharine Diel, Simona Aimar, and Saloni de Souza--and also for comments from John Troyer, Keith Simmons, and especially Toby Napoletano.

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