(This is the penultimate draft of the paper that appears in *Philosophical Quarterly* 50 (2000) pp. 518-26)

Rigidity, Occasional Identity, and Leibniz's Law

By Simon Langford and Murali Ramachandran

André Gallois (1998) attempts to defend the *occasional identity thesis* (OIT), the thesis that objects which are distinct at one time may nonetheless be identical at another time, in the face of two influential lines of argument against it. One argument involves Kripke's (1971) notion of *rigid designation* and the other, Leibniz's law (affirming the *indiscernibility of identicals*). It is reasonable for advocates of (OIT) to question the picture of rigid designation and the version of Leibniz's law that these arguments employ, but, the problem is, *some* form of rigidity is required for one to affirm the occasional identity of objects, and *some* (restricted) version of Leibniz's law must be conceded if *identity* really is involved. Gallois accordingly recommends an account of rigidity and a version of Leibniz's law to this end.[1] We find Gallois' proposals entirely inadequate to their task. We aim in this paper is to explicate and defend an alternative approach for occasional identity theorists. We do not seek to defend (OIT) per se; our aim, rather, is simply to show that the arguments from rigid designation and Leibniz's law are inconclusive.

Let's begin with an outline of these arguments.

1. The arguments against (OIT)

1.1. The argument from rigidity. Suppose one attempts to affirm the occasional identity of certain objects by uttering a pair of statements of the form:[2]

(1) At t_1: α is β
(2) At t_2: α is not β

where t_1 and t_2 are distinct times and 'α' and 'β' are referring expressions. Now, if the reference of either 'α' or 'β' can vary over time, that is, if either is *temporally non-rigid*, both statements may be true without any objects being only occasionally identical. For example, the following instances of (1) and (2) are both true:

(1a) In 1999, the British Prime Minister is Tony Blair.
(2a) In 1995, the British Prime Minister was not Tony Blair.

Yet, their truth does not signify the (merely) occasional identity of any individuals; in particular, it does not signify (or require) the existence of an individual who is distinct from Tony Blair in 1995 but identical with him in 1999. This is because the definite description, 'the British Prime Minister' is temporally non-rigid: it refers to (or, if you prefer, denotes) Tony Blair in 1999 but refers to John Major in 1995.

---

[1] There are some important differences between his 1998 defence of (OIT) and an earlier one (1990). We will focus on the more recent work.

[2] "At t: α is (is not) β" should be read as shorthand for: "at t: α and β exist and α is (is not) β".

So, if a pair of statements of the form of (1) and (2) are to jointly entail the occasional identity of objects, it must be true of 'α' and 'β' that each refers to the same object at any time in which it refers at all; each must, that is, be a *temporally rigid designator*. However, the argument continues, if 'α' and 'β' are temporally rigid designators, those instances of (1) and (2) cannot both be true! Here's why:

The rigid designation argument

1.	'α' and 'β' are temporally rigid.	Premise
2.	"At t_1: α is β" is true.	Premise
3.	'α' and 'β' corefer at t_1	from (2)
4.	Whatever 'α' or 'β' refer to at t_1 they refer to at all times (at any rate, at all times in which they refer at all).	from (1)
5.	'α' and 'β' corefer at t_2.	from (3) and (4)
6.	"At t_2: α is not β" is *not* true.	from (5)
7.	Hence, "At t_1: α is β" and "At t_2: α is not β" are not both true.	from (2) and (6)

Let us telegraph how Gallois's response to this argument and ours differ. Gallois introduces a weaker notion of rigidity, *temporal quasi-rigidity*, on which (4) does *not* follow from the claim that 'α' and 'β' are temporally quasi-rigid designators. We, on the other hand, believe we can do full justice to our initial characterisation of temporal rigidity, *but still deny that (4) follows from (1)*.

1.2 The argument from Leibniz's law. Leibniz's law maintains that identical objects do not differ in any way—whatever property one object has, the other also has:

(LL) $(x)(y)(\phi)[x=y \rightarrow (\phi x \rightarrow \phi y)]$

That identity implies indistinguishability seems indisputable; but an occasional–identity theorist, believing as she does that certain objects may be identical at one time but distinct at others, is surely entitled to relativize (LL) to times, *viz. pace* Gallois (1998, p. 81):

(LL_T) $(x)(y)(t)(\phi)[\text{at } t\text{: } x=y \rightarrow (\text{at } t\text{: } \phi x \rightarrow \text{at } t\text{: } \phi y)]$

However, even this restricted version of (LL) forms the basis of an argument against (OIT). The argument appeals to two further principles which, following Gallois' use of the phrase 'instability implication' (1998, p. 90), we shall call *stability principles*:

($Stab_1$) $(x)(t)(\phi)[\text{at } t\text{: } \phi x \rightarrow (t')(\text{at } t'\text{: at } t\text{: } \phi x)]$
(Informally: if a proposition is true at any time, then *that it is true at that time* is *always* true.]

($Stab_2$) $(x)(t)(t')(\phi)[(\text{at } t\text{: at } t'\text{: } \phi x) \rightarrow \text{at } t'\text{: } \phi x]$
(Informally: if it is ever true that a proposition is true at a certain time t, then it *is* true at t.)

These principles are *prima facie* plausible. For example, in 1998, Bill Clinton was the US President; that he has the time-indexed property of being-US-President-in-1998 is true of him now and was true of him in 1997. Indeed, the proposition *that Bill Clinton is the US*

President in 1998 is surely *eternally* true. Yet, (LL_T) and these principles jointly threaten the compatibility of (1) and (2):

The Leibniz's law argument

1.	At t_1: α is β	Premise ((1))
2.	At t_2: α is not β	Premise ((2))
3.	At t_2: α is α (given the assumption in footnote 2)	obvious truth
4.	At t_2: α posseses the time-indexed property of being-identical-with-α-at-t_2. (Symbolically: At t_2: λx(at t_2: $x=\alpha$)α)	from (3)
5.	At t_1: α posseses the time-indexed property of being-identical-with-α-at-t_2. (At t_1: at t_2: λx(at t_2: $x=\alpha$)α)	from (4) and ($Stab_1$)
6.	At t_1: β posseses the time-indexed property of being-identical-with-α-at-t_2.	from (1), (5) and (LL_T).
7.	At t_2: β *is* identical with α	from (6) and ($Stab_2$)
8.	(1) and (2) are not both true.	(2) and (7) are contradictory

Again, let us telegraph how Gallois's response to this argument and ours differ. Gallois upholds (LL_T) fully, so he floats two ways an occasional identity theorist might block the argument; one denies ($Stab_2$), thereby blocking the move from (6) to (7), while the other denies ($Stab_1$) and blocks the move from (4) to (5). We, however, recommend restricting the domain of properties the quantifier '(ϕ)' ranges over in (LL_T) to exclude *time-indexed* properties; we therefore reject the move from (5) to (6).

Let us consider Gallois' position in more detail now.

2. Gallois' defence of occasional identity

2.1. Temporal quasi-rigidity. It will be useful to work with a concrete example. Here is a candidate example of occasional identity from Gallois (p. 25).[3] At T_1 an amoeba, call it AMOEBA, is about to undergo division. At T_2 one member of the resulting pair is living out its life in a pond, and the other is being viewed on a slide under a microscope. Call the amoeba in the pond at T_2 POND, and the amoeba being viewed under the microscope at the same time SLIDE. Now, the question raised by the argument from rigidity is whether there is a notion of temporal rigidity on which 'SLIDE' and 'POND' are rigid but both (1b) and (2b):

(1b) At T_1: SLIDE = POND
(2b) At T_2: SLIDE ≠ POND

are true.

Gallois contrasts his favoured notion of temporal quasi-rigidity with a notion of temporal rigidity he stipulatively defines as follows (1998, pp. 72ff.):

[3] We don't claim this a plausible candidate, but this should not affect the discussion of whether Gallois has a satisfactory response to the arguments from rigidity and Leibniz's law.

(Rig*) If a designator d is *temporally rigid*, and d designates x [at some time], then d designates y [at some time] only if x is *always* identical with y.

We agree with Gallois that if temporal rigidity requires as much as (Rig*), then the argument from rigidity goes through, and (1b) and (2b) could not both be true. (In our view, though, the initial characterisation of a temporally rigid designator—as a term which designates the same object at all times in which it designates anything at all—does *not* demand as much as (Rig*). More on this in §3). Quasi-rigidity, by contrast, does not require such x and y to be *always* identical:

(QRig) If a designator d is *temporally quasi-rigid*, and d designates x [at some time], then d designates y [at some time] only if x is *at some time* identical with y.

Gallois claims we may consistently hold (1b), (2b) *and* that 'SLIDE' and 'POND' are temporally quasi-rigid designators (call this the *compatibility* claim). The quasi-rigidity of 'SLIDE', for example, is not refuted by the fact that it designates POND at T_1 but does *not* designate POND at T_2.[4] All that the quasi-rigidity demands is that what 'SLIDE' *does* designate at T_2 is identical with POND at *some* time or other. And we know this condition is met: for, 'SLIDE' designates SLIDE at T_2, and SLIDE *is* identical with POND at some time, *viz.* T_1. So, to reiterate: 'SLIDE' is a quasi-rigid designator that designates POND at T_1 but designates SLIDE at T_2 and *not* POND, even though POND exists at T_2. Thus, step 4 of the argument from rigidity does not follow from the assumption that 'SLIDE' is temporally quasi-rigid designator: apparently the argument *is* blocked.

What, then, is wrong with Gallois' solution? Well, on a strict reading of (QRig) it provides only a *necessary* condition for (temporal) quasi-rigidity, and Gallois (1998) nowhere specifies any further conditions that have to be met. This shortfall undermines his support for the compatibility claim. For, it could be that the further conditions that need to be met in order for the names to be quasi-rigid *would* conflict with the conjunction of (1b) and (2b). On the other hand, reading (QRig) as a *definition*, so the 'if' is read as 'if *and only if*', raises a more perplexing problem. To be sure, the reasoning behind the compatibility claim now goes through; but, as we shall now see, it is not clear now *which* amoebae (1b) and (2b) jointly affirm to be occasionally identical at T_1.

A natural view is that (1b) and (2b) jointly affirm the occasional identity of whichever amoebae the terms 'SLIDE' and 'POND' quasi-rigidly designate. But Gallois nowhere specifies what has to be true for a term d to be a quasi-rigid designator of an object x. Extrapolating from our present reading of (QRig), one might reasonably conclude:

(QTR*) d temporally rigidly designates x *iff* d designates y at some time t only if x and y are identical at some time.

However, by (QTR*), the name 'SLIDE' comes out quasi-rigidly designating AMOEBA, SLIDE *and* POND! For, even though it does not designate AMOEBA or POND at T_2, what it does designate at T_2 (SLIDE) *is* identical with AMOEBA and POND at T_1. Likewise, the name 'POND' comes out quasi-rigidly designate AMOEBA, SLIDE *and* POND. So, why should the joint

[4] It designates POND at T_1 because it designates SLIDE at T_1, which is identical *at that time* with POND and AMOEBA; it doesn't designate POND at T_2 because, by stipulation, it designates SLIDE at that time, which is disitinct *at that time* from POND.

assertion of (1b) and (2b) be read as affirming the occasional identity at T_1 of SLIDE and POND rather than of AMOEBA and POND, say, or, intuitively-worse, of POND and POND?

And consider the following development of Gallois' example. Let T_3 be a time soon after T_2 and suppose SLIDE and POND are in the same predicament at T_3 as they were in at T_2. But suppose the terms 'SLIND' and 'PODE' are introduced by the following definitions:

> "Let 'SLIND' designate SLIDE at T_2, POND at T_3, and nothing at any other time."
> "Let 'PODE' designate POND at T_2, SLIDE at T_3, and nothing at any other time"

The only objects the terms 'SLIND' and 'PODE' could designate *are* identical at some time, namely, at T_1; so, both terms count as temporally quasi-rigid designators! And by (QTR*), both terms come out as quasi-rigidly designating SLIDE and POND, *aswell as* AMOEBA— something neither designates at *any* time! We find these results totally counterintuitive. To our mind these new designators, 'SLIND' and 'PODE', should not be counted as being temporally rigid *in any sense*.

We contend, therefore, that Gallois has not successfully rebutted the argument from rigidity; his definition of quasi-rigidity is either crucially incomplete or yields absurd conclusions.

2.2. Gallois' defence of (LL_T). As we have said, Gallois fully endorses (LL_T).:

(LL_T) $(x)(y)(t)(\phi)[\text{at } t\text{: } x=y \rightarrow (\text{at } t\text{: } \phi x \rightarrow \text{at } t\text{: } \phi y)]$

But he does not take this to be incompatible with (OIT); the Leibniz's law argument against (OIT) appeals not only to (LL_T) but also to the stability principles:

($Stab_1$) $(x)(t)(\phi)[\text{at } t\text{: } \phi x \rightarrow (t')(\text{at } t'\text{: at } t\text{: } \phi x)]$
($Stab_2$) $(x)(t)(t')(\phi)[(\text{at } t\text{: at } t'\text{: } \phi x) \rightarrow \text{at } t'\text{: } \phi x]$

Gallois reckons that occasional identity theorists are entitled to reject one of these instead. For, he argues (1998, ch. 3, §5), they have grounds for maintaining one or other of the following two principles:

(E) $(x)(t)(t')(\phi)[(\text{at } t\text{: at } t'\text{: } \phi x) \leftrightarrow (\exists y)(\text{at } t\text{: } x = y \ \& \ \text{at } t'\text{: } \phi y)]$[5]
(A) $(x)(t)(t')(\phi)[(\text{at } t\text{: at } t'\text{: } \phi x) \leftrightarrow (y)(\text{at } t\text{: } x = y \rightarrow \text{at } t'\text{: } \phi y)]$

Let's consider (E) first. It entails that something has, at t, the time-indexed property of being-ϕ-at-t' if and only if it is identical with something at t which has, at t', the property of being ϕ. By (E), (6) follows directly from (1b) and (5):

(1b) At T_1: SLIDE = POND
(5) At T_2: POND is in a pond.
(6) At T_1: at T_2: SLIDE is in a pond.

[5] John Perry (1972) advocates something like (E). Gallois (1998, pp. 173-79) compares his position with Perry's.

For, (1b) and (5) ensure that SLIDE *is* identical with something at T_1—(namely, POND)—that is in a pond at T_2. But, given this interpretation of (6), (7) does not follow from (6):

(7) At T_2: SLIDE is in a pond.

because (6) does not require that *everything* identical with SLIDE at T_1 be in a pond at T_2.Thus, ($Stab_2$) is invalid and the move from step (6) to step (7) of the Leibniz's law argument is likewise blocked.

The alternative to (E), (A), entails that something has, at t, the time-indexed property of being-ϕ-at-t′ if and only if everything identical with it at t has ϕ at t′. By (A), (7) *does* follow from (6) and the fact that at T_1: SLIDE = SLIDE. But (6) no longer follows from (1b) and (5); indeed, (5) does not even entail (8):

(8) At T_1: at T_2: POND is in a pond.

because (5) does not entail that everything identical with POND at T_1 is in a pond at T_2. ($Stab_1$) is therefore invalid, and the move from step (4) to step (5) of the Leibniz's law argument is blocked.

Neither (E) nor (A) strikes us as correct. Consider a historical figure, e.g. Winston Churchill. It is surely true *now* (in 1999) that he was the British Prime Minister in 1940:

(9) At 1999: at 1940: Winston Churchill is British PM.

By (E), (9) is true only there is someone identical with Churchill *now* who was Prime Minister in 1940. Since nothing is now identical with Churchill, (9) comes out straightforwardly false. (9) does come out true by (A), but trivially so—again in virtue of the fact that nothing is now identical with Churchill. Thus, (A) also renders true absurd propositions like the following:

(10) At 1999: at 1940: Winston Churchill is a stripper.

Of course, if one maintains that Churchill is *always* identical with Churchill, even after Churchill is dead, then these absurd results do not follow. But some account is then owed of *why* the identity holds after he has ceased to exist. And what, for instance, is it for SLIND from our earlier example to be identical with SLIND at times in which SLIDE and POND (and AMOEBA) have ceased to exist?

In any case, we question whether ruling out one of the stability principles by *stipulating* (E) or (A) to be correct can really be regarded rescuing (LL_T). Consider a possible world W in which two men, Brown (a brunet) and Jones (a blond), 'merge' ('fuse', 'meld'—call it what you will) one day before our very eyes to become, what we come to regard as, one individual, whom we dub 'Brones'. Let T_1 be a time soon before the 'fusion' and T_2 be a time soon after we have coined the name 'Brones'. Utterances at T_2 of (10) and (11):

(10) Jones is identical with Brown.
(11) Jones was a blond at T_1.

would, we reckon, be deemed *true*, but an utterance at T_2 of (12):

(12) Brown was a blond at T_1.

would *not* be deemed true. Someone with these attitudes at T_2 would, we suggest, also be prepared to assert the following at T_2:

(10a) It is true *now* that Jones is identical with Brown.
(11a) It is true *now* that Jones was a blond at T_1.
(12a) It is *not* true *now* that Brown was a blond at T_2.

They would therefore deny that (LL_T) is unqualifiedly correct.

Now, suppose someone, a *Galloisian* we may call him, attempts to defend (LL_T) by *stipulating* (E) or (A). This would not satisfy *our* occasional identity theorist. She would agree with the Galloisian that the propositions *he* takes (10a)-(12a) to express *are* incompatible—but these are not the propositions *she* originally took them to express. There appears to be merely a *verbal* difference here; if this is right, it is difficult to see how this could mark a difference between genuine supporters of Leibniz's law and genuine dissenters. Of course, our occasional identity theorist will have to say what precisely is wrong with (LL_T)—we say something in the next section—but this does not make Gallois' defence of Leibniz's law, by way of endorsing (A) or (E), any less dubious.

3. An alternative defence of occasional identity

3.1 Rigidity restored. We claim an occasional identity theorist need not 'weaken' the notion of rigidity in order to block the argument from rigidity. Our initial characterisation of (temporal) rigidity (§2.1) amounted to this:

(Rig1) d is a *temporally rigid designator* if there is an object x such that d designates x at every time in which it designates anything at all. (We shall say d (*temporally*) *rigidly designates* such an object x.)

But here are two other orthodox characterisations:

(Rig2) d is a *temporally rigid designator* if there is an object x such that d designates x at every time in which x exists and at every time in which d designates anything at all. (We shall say d (*temporally*) *exhaustively-rigidly designates* such an x.)
(Rig3) d is a *temporally rigid designator* if there is an object x such that d designates x at every time, period. (We shall say d (*temporally*) *obstinately-rigidly designates* such an x.)

If a term, α, temporally rigidly designates an object, x, in any of the above senses, then it follows that:

α designates y at time t only if x is identical with y at t.

Temporally quasi-rigid designators (à la Gallois) need not be rigid in any of these senses—'SLIND' is a case in point. We contend, however, that instances of (1) and (2):

(1) At t_1: $\alpha = \beta$
(2) At t_2: $\alpha \neq \beta$

could be true even if the names 'α' and 'β' are *obstinately* rigid (and, hence, rigid by all three of (Rig1)-(Rig3))!

The fact is, a name, α, may obstinately rigidly designate an object, x, without either of the following being true:

(a) If α designates an object, y, at some time t, then x and y are *always* identical.
(b) If α designates an object, y, at some time t, then it designates y at every time in which it designates anything at all.

In our fusion-example involving Brown and Jones, for instance, we claim 'Brown' obstinately rigidly designates Brown: it designates him at T_1 and at T_2; 'Brown' designates Jones and Brones at T_2 (for at T_2: Brown = Jones = Brones), but designates neither at T_1, when Jones exists but is distinct from Brown. Likewise, 'Jones' and 'Brones' obstinately rigidly designate Jones and Brones, respectively.[6]

(a) follows from (Rig*) in ♣2.1, which Gallois takes to follow from the standard characterisations of rigidity. As the above example shows, neither (a) nor (Rig*) do follow. Likewise, the example shows that (b)—which is what underlies step 4 of the argument from rigidity (♣1.1)—does not follow either. So, if we are right, there *isn't* a *bona fide* argument from rigidity against (OIT).

3.2. Leibniz's law reconsidered. We have seen (♣2.2) that Gallois' proposals in (LL_T)'s defence—(E) and (A)—apparently prevent one from making sensible, non-trivial, assertions *now* about the dead. Our diagnosis of the problem is that these principles simply fail to recognize that names may be more than quasi-rigid. Once the obstinate-rigidity of names is recognized, the stability principles appear perfectly sensible. But an advocate of the stability principles must qualify (LL_T):

(LL_T) $(x)(y)(t)(\phi)[\text{at } t\text{: } x=y \rightarrow (\text{at } t\text{: } \phi x \rightarrow \text{at } t\text{: } \phi y)]$

We think it natural to restrict the domain of properties the quantifier '(ϕ)' ranges over so that time-indexed properties are discounted.[7]

By the stability principles, something *always* has a time-indexed property, ψ-at-t, just in virtue of it having ψ at t. Time-indexed properties are therefore not part of the genuine fabric of the world, they do not figure in the world's basic ontology. Having such a property at a particular time boils down to having a non-time-indexed property at a, perhaps *different*, time. So, we should not expect objects that are identical at a time to share the same time-indexed properties at that time—for the latter may allude to properties possessed at a different time, a time at which the objects are *not* identical. We *should*, by that reasoning,

[6] Does 'Brones' designate anything at T_1, and if so, what? Because we take names to be obstinately rigid, we take it to designate Brones at T_1 (and at all times). But this does not commit one to the view that Brones *exists* at T_1. Whether he exists then or not depends on further metaphysical views—we have nothing to say about the matter here.
[7] This is not an original proposal—see e.g., Myro (1985), and Gallois (1998, pp. 179-84) for a discussion.

expect objects identical at a time to share the same *non*-time-indexed properties at that time. Hence, our proposed restriction on (LL_T).

So we do not see our restriction as *ad hoc*, as being driven solely by the desire to block the argument from Leibniz's law; it is driven by the intuitive correctness of the stability principles, which in turn stems from the intuitive obstinate-rigidity of names.

We have presented an account of rigidity and version of Leibniz's law that do not threaten (OIT). That was our aim. It may turn out that (OIT) is incoherent for other reasons. Or it may be that the kind of occasional identity allowed by our proposals is not the kind Gallois seeks to defend. But, given the problems facing his position, we would not be surprised if the kind of occasional identity that he seeks to defend really is incoherent.

References

Gallois, A. 1990: 'Occasional Identity', *Philosophical Studies*, 58: 203-24.
—— 1998: *Occasions of Identity* (Oxford: Clarendon Press)
Kripke, S. 1971: 'Identity and Necessity', in Milton K. Munitz (ed.), *Identity and Individuation* (New York).
Myro, G. 1985: 'Identity and Time', in R. Grandy and R. Warner (eds.), *Grounds of Rationality: Intentions, Categories and Ends* (Oxford): 383-409.
Perry, J. 1979: 'Can the Self Divide?', *Journal of Philosophy*, 69: 463-88.