

**GAVIN MERRIFIELD**

## Individual Identity and Accountability in a Level 1 Multiverse

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I would like to thank Turl for his overview of the various forms of the multiverse hypothesis and its possible points of contact with Christian theology.<sup>1</sup> It is an area of much potential confusion due to the overlapping language of several distinct ideas. The inadvertent mixing of these separate ideas often leads to problems in both scientific and theological discussions of their consequences. Turl's commentary, utilising the hierarchical structure of Tegmark,<sup>2</sup> provides a useful framework for clearer discussions on this topic.

In that spirit I wish to note a few thoughts in regard to points made by Turl concerning the meaning of individual personhood and accountability in a Level I Multiverse (L1M). The existence of an L1M provides reasonable help for solutions to a number of current cosmological conundrums. This lends weight to their likely reality and so Turl's concerns are a priority area for engagement.

### Dualism in a Level 1 Multiverse

Turl's concerns with L1Ms rest on the claim that identical constructs of matter will arise throughout the L1M due to statistical probabilities and that these identical constructs are equivalent to an L1M's producing identical persons. This he argues leads to a negation of personal accountability and spiritual identity for those who might understand personhood as originating in some way from the composition and arrangement of physical matter. In order to preserve individual identity and spiritual accountability Turl suggests that a dualistic perspective on personhood must be adopted and a purely physical perspective on personhood must be rejected.

Turl views this as the only realistic way to preserve a real sense of individuality that is compatible with the claims of Christianity concerning personal accountability before God in an L1M. However there are problems with this conclusion.

### Physical personhood?

The first problem is in Turl's dismissal of individual personhood arising

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1 Turl, J. 'Do many worlds make light work?', *Science and Christian Belief* (2012) 24, 55-79.

2 Tegmark, M. 'The multiverse hierarchy' in Carr, B. (ed.) *Universe or Multiverse?* Cambridge: Cambridge University Press (2007), pp. 99-125.

from the physical. Turl is right to dismiss ideas of personhood residing in a simplistic reductionist arrangement of the physical matter composing an individual. This however is not the position of emergent perspectives on personhood that he seeks to counter; rather it is the perspective of a hard form of atheistic materialist reductionism rejected by all theistic believers. Emergent perspectives while rooted in the physical are not purely reductive in this manner, but rather are productive allowing for unique outcomes (persons) from identical starting conditions (arrangements of physical matter).

Here Turl falls victim to the same conflation of terms due to language similarities as has vexed multiverse discussions. The language used to describe the possible physical origins of personhood can easily become confused, mixing emergent concepts with purely reductionist accounts of human personhood as Turl appears to be doing here.

### **Non-Casual connectivity in a Level 1 Multiverse?**

Secondly, even if we were to agree that in an L1M individuals are simply reducible to their constituent parts and to the arrangements of those parts, the distances that have been calculated to separate such identical physical constructs are so large that causal connection between them is impossible. In order for these constructs to have any influence or effect (and so shared accountability) upon one another we would need to invoke either some sort of speculative physics or alternatively a God-originating spiritual connection between these otherwise self-contained beings.

These vast distances render such identical constructs non-causally connected to each other. This preserves the individual accountability and personal identity of these constructs as distinct from one another. At this distance scale there is no known physical mechanism that would generate a collective consciousness or even unconsciousness between these constructs.

Turl argues that only a non-material spiritual quality can truly separate these L1M beings in the sight of God and provide individual personal spiritual accountability. I would suggest instead that the physical nature of these persons, grounded in the reality of our L1M, coupled with the limitations of the native laws of physics of that L1M impose personal individuality and accountability upon any physically identical constructs without needing to invoke a separate spiritual aspect to their personhood.

If one were to speculate as to what might create a binding pan-spatial connection between identical constructs then a dualistic spiritual perspective might in fact be a consistent method of accomplishing this – the very opposite conclusion to that Turl suggests as an outcome from a dualistic perspective.

Given that personal identity is shaped by physical identity but also by individual actions, decisions and genuine physical uncertainties in that physical identity, it is unclear to me just how identical two physical constructs can be practically said to be for any reasonably significant length of time – certainly on a timescale to make individually accountable moral and ethical choices.

As to the eschatological concerns of Turl, given the possibility of emergent individuality within our current space-time continuum, it seems unlikely that God would not be consistent with the preservation of that physically derived individuality into the new heavens. People as individual persons rather than uncorrelated collective entities seem to be very much what He is concerned with and about.

### **Conclusion**

Although Turl raises some concerns with respect to the integration of emergent Christian viewpoints on personal identity in an L1M they are not insurmountable. Indeed the practical restrictions operating across an L1M as derived from universal law operating across the entire domain of an L1M impose the individuality that Turl is concerned would be lost with existence in an L1M. Taken from this viewpoint Turl's dualistic-imposed individuality is not only unsupported by evidence, but is ultimately unnecessary.

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## **JOHN TURL**

### **Response to Gavin Merrifield**

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I thank Gavin Merrifield for his response to my article, and welcome the opportunity to reply to his comments, and enlarge on an important issue which was originally limited by space and focus.

The concern of 'Do Many Worlds Make Light Work?' in general was whether multiverse theories raise problems for Christians. Merrifield is concerned with three paragraphs<sup>1</sup> (hereafter referred to as the 'Section') of the article where I consider the claim by Tegmark, and others, that in

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<sup>1</sup> Turl, E.J., 'Do many worlds make light work?', *Science & Christian Belief* (2012) 24 (1), 59-60.

the Level 1 Multiverse (L1M) there will inevitably be exact duplications of persons, or ‘doubles’. The thrust of the Section was that the L1M would certainly not be a problem for a dualist, but might be for a monist. This is not quite the same as is conveyed by Merrifield’s opening statement, that I ‘suggested that the ... identity and ... accountability of individuals is lost because of the likelihood of physical replication across the ... Level 1 Multiverse’ and that I viewed ‘this problem as an argument in favour for a dualistic perspective of personhood’, which appears to make the argument for dualism my goal. Perhaps it would have been clearer had I stated explicitly at the outset that my own beliefs are dualist, but I was attempting to maintain a degree of personal detachment from the options in the argument. What I actually said was that *if* you are a dualist, you would *not* think that there is any implication of threat to identity<sup>2</sup> in the event of your having a double somewhere, but that *if* you were some form of monist, you *might* find it to be a problem. However I accept that having suggested that such a problem might exist, it is incumbent on me to justify my statement further if challenged.

Merrifield states that I argue that the existence of doubles would lead to ‘a negation of personal accountability and spiritual identity for those who might understand personhood as originating in some way from the composition and arrangement of physical matter’. However, I actually only discussed the issue of identity, that of accountability being a much wider problem for monism and not directly related to the multiverse problem.

Merrifield accepts my belief that physical reductionism cannot account for personhood. It was not possible in the Section to make more than a passing mention of the distinction between hard monism and other forms, such as dual-aspect monism. I therefore referred the reader to my earlier article, ‘Substance Dualism or Body-Soul Duality?’,<sup>3</sup> in which I analysed such positions more extensively. From the ‘Philosophy’ section of that article it will be seen that it is my contention that it is difficult if not impossible to construct a thoroughgoing non-reductive monism. It was therefore natural for me to direct the possible problem in the L1M to the reductive monist, because of my belief that all non-dualistic philosophies lead ultimately to that position. Perhaps I should have added a rider that for anyone who nevertheless feels comfortable with any form of non-reductive monism, the L1M would not present any more of a problem than it does for the dualist, since the purpose of my article as a whole was to explore the extent to which multiverses were acceptable to Christians. But my conviction is that non-reductive monisms are internally inconsistent. I will not attempt

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2 Some care needs to be exercised in understanding the word ‘identity’, which is used throughout here to refer to a person’s individuality or character. The word ‘identical’ is used to refer to an exact equivalence between two hypothetical ‘doubles’.

3 Turl, E.J., ‘Substance dualism or body-soul duality?’, *Science & Christian Belief* (2010) 22 (1), 57-80.

to rehearse the arguments here, but will comment only on Merrifield's statement that 'Emergent perspectives while rooted in the physical are not purely reductive in this manner, but rather are productive allowing for unique outcomes (persons) from identical starting conditions (arrangements of physical matter).' The problem for emergentism is nothing to do with the uniqueness or otherwise of the outcomes. It is solely concerned in the backward direction with breaking the inanimate causal chain, and in the forward direction with the production of rationality and responsibility. No matter how complex the emergence, no one has yet succeeded in showing how these two prerequisites of the *imago dei* can emerge from particles and principles, nor even how quantities can give rise to *qualia*. Indeed Prof. Peter Clark, in his comment on the debate arising from my earlier article, said that 'Phenomenal consciousness does indeed seem to be beyond the explanatory power of objective science.'<sup>4</sup> The question we have to ask, if we assume that there is 'only one kind of stuff', is 'Should it?'

I am puzzled by Merrifield's section on 'Non-Causal Connectivity in a Level 1 Multiverse' because at no point did I suggest that any form of communication between hypothetical doubles was possible, or even necessary for my argument. The substance of my argument was that if God in the resurrection were to consider the re-creation of two persons who were, before death, identical in *all* respects, a single re-creation would in principle serve for both. Who then would it be? Whose consciousness would it have? Would there, in fact, be any sense in which the consciousness of either continued into the newly-created entity, or would the latter simply be a third identical being? If so, how could a re-creation of *both* of them instead be any better? Could they be regarded in any sense as resurrections of the originals as opposed to fresh copies? I admit to using the argument to highlight a possible difficulty for non-dualists, but it would be up to them to say whether this was an objection to the L1M from their point of view. Thus at no point did I suggest (or intend to suggest) that there was a problem due to some sort of 'collective or joint consciousness' on the part of the doubles during their existence before death. It is later that the problem arises. The 'threat' to identity to which I referred was not imagined to arise through any form of mutual communication, but through the mere existence before God of two identical 4-dimensional 'templates' contending for representation in the new world. Merrifield's final speculation that dualism might in fact be counterproductive seems to be unfounded. I am not sure that I fully understand what he is suggesting, but it sounds as if he is imagining the human spirit to be capable of transcending all spatial boundaries, and then somehow merging with its 'soulmate'. Christian dualists may have difficulty in assigning properties to their notion of 'spirit', but they do not thereby make themselves vulnerable to any spiritual hypothesis on the table.

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4 Correspondence, *Science & Christian Belief* (2010) 22 (2), 171-172..

One of the points at which a justification of emergentism often breaks down is that where decisions, actions and circumstances enter the discussion. In my earlier article I commented in the section headed 'Non-Reductive Physicalism: a negation of principle' on some examples of this. It is very easy, even after asserting that there is only one sort of stuff in the world, for a non-dualist to claim that reductionism is not inevitable by reverting to the high-level language of human perception and experience. Thus Merrifield takes it as a 'given' that personal identity is shaped not only 'by physical identity but also individual actions, decisions and genuine physical uncertainties in that identity'. But if you are consistent in your beliefs and interpretation then there is no ultimate distinction among any of those factor categories. All must be, at bottom, particles and energy. There is nothing else, and they don't have a choice.

As for the extent of the parallelism between any two identical physical constructs, it is admittedly difficult to imagine how two persons, identical in all respects, could preserve that equivalence for any significant length of time compared with the human lifespan. But that is because of our inability to get our minds round arguments based on infinities. The force of Tegmark's argument is that in a *truly* infinite L1M, entire Hubble volumes, or 'universes' will be replicated, and not just once. If you still think that sounds improbable, it is because you haven't really grasped the implications of the word 'infinite'. In a classical (deterministic) multiverse, identical universes would follow identical paths. But even with quantum uncertainties, in an infinite L1M, all solutions of the universal wavefunction will occur more than once, regardless of your view of the L3M. It seems to me that possibly the only escape from the conclusions of the argument might hinge on a consideration of the types of infinity involved. The L1M seems to me to be the same sort of infinity as the sequence of positive and negative integers, that is to say you can imagine axes in space with a series of Hubble volumes being matched up with integers (though in 3 dimensions). This 'countable' infinity is known as 'aleph-null'. But the infinity of possibilities for physical processes is more like that of all real numbers. No real unquantised measurement, such as position, can be fully represented by a finite number of decimal places. This is what gives rise to the effect in chaos theory of 'sensitive dependence on initial conditions'. Thus the number of conceivable universes might correspond to the infinity of real numbers, known as 'aleph-one'. Since aleph-one is known to be 'infinitely' greater than aleph-null, the argument in favour of duplicate universes might fail. Intriguing as this line of thought may be, we are perhaps in danger of being side-tracked from the original purpose of my article. If any non-dualist Christian, of whatever persuasion, feels that the possibility of L1M doubles is not a problem, then that contributes to my aim of finding the minimum number of areas of conflict between multiverse theories and Christianity, which should be welcomed.

Finally, it has to be asked whether Merrifield succeeds in his own inten-

tion to argue ‘that a Level 1 Multiverse strictly enforces that identity and accountability upon emergent physical beings living within it without a need to invoke a dualistic perspective’. The only argument advanced for this position seems to be that possible doubles are causally quarantined from each other by vast distances. But practical restrictions on causal connectivity or communicability do not ‘impose’ individuality on any beings whether they are identical or not. On the contrary it is through our interactions with others that individuality becomes apparent and develops. It would in fact be logically impossible to have strictly identical doubles if they had any causal connection, or meaningful communication, because cause and effect are asymmetrical. The L1M debate really only has relevance to the implications of the possible existence of doubles. It has nothing whatsoever to say about the meaningfulness of identity and accountability. It is the reality of these concepts, and others, such as free will and rationality, which are at the core of the monism-dualism debate. These are the issues with which Merrifield would have to engage if he wishes to support his claim. It would therefore seem to be going a step too far to claim that my notion of individuality is ‘ultimately unnecessary’ solely on the basis of the content of his response.

It is indeed fortunate that our resurrection hope is not dependent on our understanding of how it is to be achieved. It was the purpose of my first article in *Science and Christian Belief*, ‘All Things New’<sup>5</sup> to show that a traditional belief in a ‘new Heaven and a new Earth’ was reconcilable with modern cosmology. However much we differ in our views of both human constitution and the many worlds that may or may not exist, we have this common confidence that through faith in Christ we shall have a share in God’s ultimate plan for his marvellous and mysterious multiverse.

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5 Turl, E.J., ‘All things new’, *Science & Christian Belief* (2007) 19(2), 139-160

**DON PAGE**

## **Response to John Turl and Gavin Merrifield**

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John Turl and Gavin Merrifield have produced an interesting debate about the nature of personal identity in a universe or Level 1 multiverse so large that there are exact copies of at least the physical properties of a person. In his original article, Turl pointed out that a substance dualist could believe that although the physical properties are the same, the two persons

could have different souls. Merrifield misunderstood Turl to be arguing for substance dualism and proposed that a productive rather than a reductive emergent perspective might eliminate the potential problems with exact copies. Turl corrected Merrifield's misunderstanding of his position and noted that the exact copies would not present any more problems to a non-reductive monist than to a dualist.

However, Turl then expressed his belief that 'non-reductive monisms are internally inconsistent'. He further wrote, 'No matter how complex the emergence, no one has yet succeeded in showing how these two prerequisites [rationality and responsibility] of the *imago dei* can emerge from particles and principles, nor even how quantities can give rise to qualia.' There are indeed deep mysteries here, and yet I personally see no obvious reason why rationality, responsibility and qualia could not arise from particles and principles with sufficiently subtle properties created by a suitably intelligent God. I do recognise that these subtle properties, at least the qualia of sentient experiences, seem to go beyond the properties described by current physics or even by proposed 'completions' in so-called – and misnamed – 'theories of everything' such as superstring/M theory. As I once remarked to John Searle in a Chinese room in Beijing where we were both participating in a conference on the philosophy of science, to me the laws of physics for the universe are the syntax and the sentient experiences are the semantics. Searle seemed surprised at my remark but did not give any objection during the half hour that we talked.

Let me make an observation about duplicate copies of humans in a sufficiently large universe or Level 1 multiverse that might be interesting to consider. Let us consider a toy model of a one-dimensional universe that I shall represent by a string of letters, with E for empty parts, A, B, C for various other parts and with X for a part with a human and all that he or she knows about:

...EEAXBXCEE... = ...EEEAXBXCE... = ...EAXBXCEEE...,

where the ... at each end represent more empty parts to the left and right of the non-empty part AXBXC. The three expressions above represent three different ways of representing this universe, with the ... at the ends representing different numbers of empty parts E. By the translation invariance of the laws of physics, these three expressions represent the same universe, just using a different origin for the 'x-axis' along which the sequence of letters lies. In each of these representations there are two identical copies X of the human and all he or she knows about, but beyond what is known to each copy, the universe has the region A to the left of the left copy of X that is different from the B that is to the left of the right copy of X, and it has the region B to the right of the left copy of X that is different from the C that is to the right of the right copy of X. So although to the human and all he or she (though of course the same sex for each copy!) knows about, there is no distinction between the two copies, to someone

like God who can see the entire universe, there is a distinction between the positions of the two Xs relative to the rest of the universe. So one might say that the two copies of X are intrinsically precisely the same, but to God they do have different relationships from the rest of the universe (totally unknown to the either copy of the person).

However, there is yet another interesting point that can be made. If we write the third representation directly below the second representation, we get

...EEEAXBXCE...

...EAXBXCEEE...

Using the x-coordinate for the position of X, we see that in the third representation the position of the right copy of X is at the same position (say  $x = 0$ , since it is in the middle between the two sets of ...) as the position of the left copy of X in the second representation of the universe. So in each of these representations, we might say that there is the same person X at the same position, but that the surroundings are different.

To exhibit the translation invariance (independence of where the origin of the x-coordinate is, for example) in a quantum theory of the universe, we say that the quantum state is a superposition of its representations for all possible origins. That is, we would say that the quantum state for the toy model universe described above is the superposition of the ...EE-EAXBXCE... and ...EAXBXCEEE... representations (and all other choices of the origin as well). Then if we focus on the person X at  $x=0$  (in the middle between the two sets of ...), we can say that there is one such person, the same in both representations that have become two different components of the quantum state. That is, in this way of expressing things, the left person in the first component is the same as the right person in the second component, but the surroundings are different.

In this way two copies of the person (with locations relative to different surroundings, though the person must be unaware of the differences in the surroundings in order to be the same for both copies) can be re-interpreted as one copy with two different sets of surroundings. Thus it is ambiguous whether the left X is a different copy from the right X, or whether the left X in the second representation is precisely and numerically the same as the right X in the third representation, but just with different surroundings that the person is totally unaware of. That is, not only are the two copies of X indiscernible intrinsically (i.e., by the person who has no access to the surroundings), but each one may be considered to be numerically identical to the other.

This consideration has the consequence that in one way of speaking, one can say that if the universe is large enough, there is a doppelganger of me at some enormous distance to the right that is locally indistinguishable

from me, though to a God's eye view he is at a different position relative to other things in the universe that neither he nor I (with identical knowledge) knows about, such as having his doppelganger (me) at the enormous distance to the left. But in another way of speaking, each doppelganger is the same me, but just with different surroundings. That is, given my properties that I say are here, there is one quantum component of the quantum state of the universe in which there is a doppelganger far to the right, and there is another quantum component in which there is a doppelganger at that same distance to the left.

I am not sure that these considerations change many of the philosophical issues, but they do seem to make it more ambiguous to make any attempt to say that the doppelganger (if truly the same; if one postulates souls that are always distinct one would thus rule out doppelgangers) is not identical to (indistinguishable with and numerically the same as) me.

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