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Publisher: Routledge

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Performance Research: A Journal of the Performing Arts

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rprs20>

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Version of record first published: 09 Oct 2012.

To cite this article: Ted Hiebert (2012): The Speed of Broken Light: A meditation on duration and performance, Performance Research: A Journal of the Performing Arts, 17:5, 82-91

To link to this article: <http://dx.doi.org/10.1080/13528165.2012.728445>

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The Speed of Broken Light

A meditation on duration and performance

T E D H I E B E R T

INTRODUCTION

In the year 1900, the French playwright Alfred Jarry wrote a manual for how to build a time machine. The text was complex – involving gyroscopes, temporal inertia and the harnessing of ether. Yet, despite its complexity, the proposition seemed plausible enough that the scientists of his day took the time to prove that his theory would not work. Perhaps they were nervous that an artist might have come up with the secret first – or perhaps they simply wondered if, in his own creative way, he wasn't on to something important.

A space opens up – a duration of contemplation, whether motivated by engagement or by the desire to disprove is perhaps of secondary importance. Most important is that this machine provokes a time and space in which it occupies the intellectual mind of artists and scientists alike, for the time their contemplations endure.

A century later, artists Christian Kuras and Ben Tanner created a slightly different machine – a time machine that, this time, actually works – or that simply works a bit more literally. The device consists of a chair and table, atop which are mounted a series of dials, switches and lights. To travel through time, one sits at the table and holds on. The secret of the machine, of course, is that we are already travelling through time – at a standardized rate of 60 seconds per minute, the machine redirecting our attention to the real-time passage of time as it happens.

A space closes down – the phenomenological paradox: an instant has no duration. And yet, despite the paradox, one might still speak of

the duration of an instant. This speech act must itself be the instant in question however, or else it exits its own instance to describe itself from across the room.

The story has recently become more bizarre, as scientists try to come to terms with recent CERN (the European Organization for Nuclear Research) experiments in which muon neutrinos – a form of subatomic particle – seem to have broken the speed of light (Than 2011), threatening to travel backwards in time. In a strange twist, these peculiar little particles have out-performed the established rules of science, doing what no scientists believed possible, and in so doing proving that performance has the ability to precede its explanation. For the muon neutrino does not simply defy scientific understanding. Along the way, these quantum particles also open up a space where other seemingly implausible propositions might be entertained, for a time. This is the speed of broken light – the duration of a re-enactment that precedes the actions it refers back to; a speed where the imaginary overtakes the boundaries of the real; a time without firm external referent but with deep internal implications.

This essay is a meditation on the meaning of duration in a world where the speed of light has been challenged, and consequently the boundaries between questions of performance, representation and duration have begun to blur.

THE PERFORMANCE OF DURATION

There is something inevitably dramatic about the idea of a time machine, a concept that can be so compelling because it activates both

the cultural fascination with technological accomplishment and the poetic spirit of the imagination. Theoretically plausible – according to many versions of quantum physics – such a machine is nevertheless beyond the productive capacities of current science, making it technically impossible as anything other than a thought experiment or an exercise in imagination. As the focus of such an exercise however, the potential of the time machine begins to manifest – not simply an idle set of contemplations that playfully activates the irrational mind, but a contemporary example of the ancient formula for aesthetic practice as a rendering of ‘plausible impossibility’ (Aristotle 1997: xxv). There is something about impossibility that fascinates the human mind, and all the better when it also evades clear quantification, made approachable despite the ultimate illogic of the formulation. Indeed, one might theorize that the spaces created by these sorts of aesthetic suspensions are also markers of a certain form of duration.

From a perspective such as this, one might propose that the concept of the time machine – as perhaps any concept with aesthetic proclivities – is already, in some way, a catalyst for a meditation on duration. The action of the impossible is to create an alternative space of consideration, while the plausibility of the proposition is what will determine the duration of the encounter.

HOW TO BUILD A TIME MACHINE

One notable example of a meditation on the time machine is that of Alfred Jarry. Best known for his invention of ‘pataphysics’ – the science of imaginary solutions¹ – Jarry was also adept at creating these solutions himself. One such imaginary solution is expanded in a short essay called ‘How to construct a time machine’ (Jarry 1965). Jarry’s manual is built on the premise that a time machine would need, primarily, to isolate its occupant from the passing of time, which would then make it possible to move

¹ For a full account of ‘pataphysics’ see Jarry (1996: 22).



■ Time Machine (No Going Back). Christian Kuras & Ben Tanner, 2011

within the duration of events. Leveraging scientific discourses of the period, which focused on the study of ether, relativity and the emergence of multiple constructs for the understanding of space and time, Jarry hypothesized that the model of the gyroscope could be used to create a machine that was 'transparent to successive intervals of time' (119), in effect shielding the machine and its occupant from temporal progression. The more quickly the frames of gyroscope turn, the more temporally immobile the machine: '[T]he machine's immobility in time is directly proportional to the rate of rotation of its gyrostats in space' (120). As the rate of rotation of the gyroscopic frame increases, a temporal interval is eventually obtained that outpaces the succession of the present. When these conditions are met, the machine begins to move in time, progressing towards the future. When the machine reaches a certain degree of acceleration, the gyroscopic rotation hits a point of reversibility, at which point travel into the future becomes travel into the past (conceived as the negative future).

To accompany his speculations on the working of gyroscopes and duration, Jarry theorizes that time has at least three dimensions, extending into the past, present and future. To accompany these dimensions, he further proposes an imaginary double of both the past and the present. The 'imaginary present' and the 'imaginary past' are those times created by time travel – the imaginary past being a past created when the time machine returns to the present changed as a result of time travel, while the imaginary present is the point where the machine reverses its forward trajectory and begins to move through the future into the past. It is a complex, but provocative suggestion – made all the more so by Jarry's insistence that a failure to appreciate the imaginary dimensions of time is to miss the point of what the machine is designed to reveal. These imaginary dimensions – one might suggest – are in fact the real point of the essay, without which 'an observer sees less than half of the true extent of time' (121).

The result of this imaginary doubling is curiously philosophical, allowing Jarry to propose through his speculation on the time machine, a definition of duration and memory. The process is twofold: the machine must first reduce the future to a value of zero, and then reduce zero to a value of negative time. Memories are made, not as isolated moments outside of lived reality, but as that which time passes through, creating durations in the process. For Jarry, 'duration is the transformation of a succession into a reversion. In other words: the becoming of a memory' (121). And to link duration and memory in such a way is also to insist on an embedded thinking of time – whether through the observation that a time traveller must enter into a technological relationship in order to perceive the imaginary, or through the insistence that one must go *through* time in order to create memory. A memory is not left behind; it's an event turned inside out. If duration is the becoming of a memory, then memory is the destiny of duration – real or imagined.

THE THEATRE OF TECHNOLOGY

Despite the complexities – and perhaps the irreconcilable absurdities – of Jarry's time machine, there is a performative insistence that grows out of his text, casting the instruction manual in a space between the real and imaginary presents it describes. In some ways, in this manual Jarry invented not merely a time machine, but a new form of theatre – one which proposed a script for the real world, and which factored in both scientists and artists as members of the audience. Indeed, as the story goes, some thinkers found Jarry's story sufficiently plausible that they took time to research, contemplate and even test aspects of the thinking the time machine essay describes. Whether this was the intention or not is largely beside the point, except to suggest that the dramatic mind of a playwright may have already conceived of ways to include an audience, or in this case a reader, in the unfolding drama. It's a formula that is partly prescriptive and

partly improvisational, since an audience is never contractually bound to Jarry's script, nor is any audience bound to the script of such a text. Instead, the story sets a context as much as it sets a stage, a moment when the artistic imaginary serves as catalyst for technological contemplation. One might even suggest that any speculative text, or perhaps any text at all, can be seen as a dramatic object of this sort, if cast in the right light, or seen from the perspective of an imaginary present.

There is a blurring of boundaries caused by such a proposition, a present in which the 'plausible impossibility' of the script results in – to use a phrase coined by Samuel Taylor Coleridge – a 'suspension of disbelief', if for no other reason than the time machine gives a reader pause for a moment of technological contemplation (Coleridge 1905: 145). Unlike Coleridge's original use of the phrase, however, this suspension of disbelief is also a blending of real and performative contexts, stepping out of the fictional with real world pretense. It's like that moment when Antonin Artaud eloquently describes the 'theatre of cruelty', a form of theatre that infiltrates and erupts into the real, undermining the differences between actors and audience. To capitalize on the social fascination with time and technology is to turn this theatrical principle into a general rule of pataphysical (imaginary) engagement. That the story is one of a time machine is also important in a literal sense, since a certain irony will always be implied in the act of spending time on the contemplation of time. Seen in this way, Jarry's story catalyzes a reflexivity of duration, theorizing the very time it takes to engage the story. This reversibility makes clear a certain technological way of thinking, a time machine designed to cast duration itself as a form of properly theatrical engagement.

It would be a mistake, however, to isolate the technological from the dramatic in theorizing Jarry's story. Instead, there is something to be gained by understanding the reversibility between the two, something that points to a larger conflation of social and cultural thinking. One might be reminded of Roland

Barthes' insistence that technology is not part of an isolated information evolution, but always something with social implications. Barthes' argument comes out of an analysis of photography for its roots in theatre – and not in the history of representation where photography is so often seen as the technological heir to a history of realist painting (Barthes 1981: 31). Speaking of the sentimentality a photograph is able to evoke, in part because of its assumed relationship to the real, Barthes makes the compelling argument that the power of the image has less to do with its representative force than with its relationship to death (9). The power of photography is symbolic rather than representational, implicating time and memory before the fidelity of appearances. Remembering (from Jarry) that duration and memory have a similar tie, one might expand Barthes' thesis on photography to a more general proposition on technology itself. Thus implicated in a social drama, the camera – like the time machine – ceases to be about information or representation in isolation from the events it catalyzes. Instead, it is the deeply irrational side of photography, the imaginary present, that persists with images now speaking – as Walter Benjamin once famously declared – in someone else's head (Benjamin 1969: 227). Thus is the future scripted through a selective technological manipulation of the past.

To conceive of duration as a form of theatre – as opposed to a unit of measurement or of the containment of time – is to reframe the question of the time machine such as to accentuate the dramatic hidden dimensions of technological thinking.

THE PROXIMITY OF NON-DURATION

Jarry's manual for building a time machine contains a provocative formula for realizing what he calls the imaginary dimensions of duration. The first step in Jarry's instructions call for the attempt to reduce the passage of time to zero, thereby isolating the body from the normal momentum of the present. In

order to move through time, it is necessary to begin by understanding the ways that time already moves through us. To isolate ourselves from time, consequently, would be to build a machine capable of separating the temporal simultaneity of spaces. To reduce time to zero is not to freeze the world around us, as a logic of photography might suggest, but rather to freeze ourselves such that the world carries on without us. Jarry's question consequently is less about defining duration and more about constituting a perspective from which to perceive – and freeze – duration from the inside out. The proposal might be likened to an elaborate formula for suspended animation, opening oneself to impossibility before the question of plausibility even enters the picture. As one encounters oneself suspended in this way, one also finds that the world simply keeps going on. One emerges from suspension to find the world (hopefully) changed, and a little more interesting for the time that one has spent in isolation.

The problem remains, however, of how to purposefully elicit this reduction of time to zero – to purposefully indulge in the duration of the moment, intensifying and thereby expanding and extending that moment for the place it occupies in a larger temporal context.

TIME MACHINE (NO GOING BACK)

A hundred years after Jarry, artists Christian Kuras and Ben Tanner have created another time machine, one with the potential to fulfil in real ways the first step of Jarry's formula. Kuras/Tanner frame their project through a man they either discovered or invented – a man named Allan Monroe, whose identity is as unaccounted for as are the realities of the machine he created. Allan Monroe, according to the artists, has built a time machine that takes Jarry's formula literally – as much a machine for the cultivation of the present as for the purposeful reduction of the future to a state of zero. The machine is nothing special to look at. Although electrically powered, it's uncertain whether the electricity has an impact on the functioning of

the machine – it's possible that its only purpose is to power the myriad of lights, switches and dials that form the components of the console. On the ground, a foot pedal – re-appropriated from an old sewing machine perhaps – guides the time traveller's voyage. It's not quite a series of interwoven gyroscopes, as is Jarry's proposed original, but it does seem like it would serve the purpose of anchoring thought, if not time itself.

To operate the machine, one sits at the console, monitoring dials and switches as time begins to pass within the surrounding room. While there is some ambiguity about the ways in which the various controls can be made to interact, what is clear is that the machine is designed not only to emphasize the passage of time, but to articulate duration as it happens. As a catalyst for memory and experience, the machine foregrounds the presence of the user, accommodating the material present at the same time as it activates the durations of the imaginary present. When optimized the machine also begins to reduce the perception of time to zero, suspending the awareness of the user by providing a consistent and persistent focal point from which to subsume external events. Whereas for Jarry the time machine was about foregrounding the possibilities for different durations and events, the version proposed by Monroe is designed to foreground time itself, putting the user in a position to observe the passing of duration as time unfolds.

In some ways, this time machine, like that proposed by Jarry, is not really about harnessing the power of time at all but about harnessing the power of human attention. Seen as an information object, the time machine tells us nothing we do not already know – the succession of time is revealed for its quantified numerical dependency at the constant rate of 60 seconds per minute. Seen as a dramatic catalyst, however, the possibilities of the machine unfold with the power of interpretive engagement, expanding and collapsing duration as only an imaginary present can do. The importance of this project begins to manifest when one asks what it would be like to sit at such a machine, visualizing the performative

possibilities of the technological moment. It's worth spending a moment to give substance to such a visualization – building something of a thought experiment out of the work of itself.

I sit down at the desk, turn on the time machine, and watch as the dials flip and fluctuate. There may be some noise associated with such a machine. There may also be some noise coming from the room around me. I dial up the machine to drown out the room, allowing me to focus on the machine. I quickly tire of trying to understand how one setting differs from another, but I get the sense that is not really the point. I begin to question my focus, and then I realize that I am engaged in a non-activity. Increasingly engaged. My perception of time reduces to zero – cognitively unified with the progression of time as it happens, unfolding in the room around me. The perfect non-activity – carried forward by the inertia of the durational moment. The experience – I imagine – is only as good as my ability to remain unfocused on anything else, absorbed by the momentum of the experience. It then occurs to me that the realization has thrown me out of the experience. Rather than proximity to the passing of time, I emerge into reflective distance, ejected by the machine.

HOW TO BREAK THE REALITY PRINCIPLE

It's a fine line between technological facilitation and the overwriting of human possibilities, especially when the case in point is one that duplicates – and perhaps intensifies – nothing more than the ability to pay attention. Like Jarry's time machine, the Monroe contraption occupies time in a particular way, accessing duration through the human imagination in order to foreground the experience itself. It's as if the entire point of the machine is to unify the perception of time with the progression of time – unify attention and duration, and thereby reduce the difference between the two to nil. In this there is something of a short-circuit being proposed, part willful negligence, part phenomenological indulgence – in both instances supported by the technological apparatus that delineates the experience.

The easiest way to break with reality is to forget that it is there – to indulge in a non-reality for a moment or to create or embrace an imaginary present that overwrites the effects of the real.

With the Kuras/Tanner time machine, attention becomes performative, embedding itself in a critical awareness of duration. Like Jarry's essay – which resists reduction to idle speculation on the question of time by occupying a certain temporality of its reader's experience – the Kuras/Tanner machine purposefully uses the reductive capacities of technology to intensify, rather than undercut, the experiential equation. The time traveller sits at Monroe's console in order to purposefully collapse the distance between the real and the imaginary durations that would otherwise be competing for attention. It's a cognitive solution to a technological problem; to understand time as it happens is perhaps to already implicate oneself in the drama of an imaginary moment, doubling the present technologically and with it duration.

It's a curious proposition, however, particularly given the poignant critique of technological culture by theorists such as Paul Virilio who insist that the speed of technological culture is literally debilitating to human perceptual experience (Virilio 2000: 57). Virilio's anxiety is understandable, with the codes of information culture perpetually rising to undercut the phenomenological possibilities of experience; experience that, without the help of technology, would be too slow to apprehend the codes of cultural living. Without specialized equipment, the contemporary bases of science, communication and engineering are simply inaccessible to the human body – whether the genetic codes of biological science, the mathematic processing of quantum physics or the optical perception of molecular or astronomical scale. Therefore, given the incapacity to keep pace with the new speed of technological culture, why not simply embrace the human speeds of inadequate perception and the non-durations that result from watching the world speed by while one sits at the time machine console?

Unify the perception of time with the progression of time – the search for the phenomenological instant is not to be found in time travel but in its opposite, what the German philosopher Peter Sloterdijk calls ‘critical proximity’ as the slow speed of thought thrown out of the technological game (Sloterdijk 1987: xxxiii). For Sloterdijk, the proposition is a necessary intervention into the increasingly rhetorical structures of cultural understanding that seem always to hold human experience accountable to intellectual (or scientific) proposition. Instead of the reflective critical distance of humanist meditation, Sloterdijk calls for a critical proximity to experience, living too close to the performative moment to be ever fully certain of generalizable truth. And, seen as a technological strategy, critical proximity can be pushed, intensified through experiments like the Kuras/Tanner time machine and pushed to a limit in which it reverses into its opposite. Pure proximity: an absence of any critical distance whatsoever. Perhaps even an absence of criticality. The myth of the temporal present. No going back.

To conceive of non-duration as a form of proximity – as opposed to a willful neglect of reflective critical distance – is to reframe the question of the time machine to accentuate the imaginary dimensions of technological thinking.

THE ILLOGIC OF NEGATIVE DURATION

That the perception and progression of time can be unified – in the form of an instant or a present moment – also means that in some way they can be pulled apart, creating disruptions and distortions to the experience of duration. This is one premise of time travel. In order to travel back in time, one needs to leverage against one another different rates of temporal progression – either by freezing time and finding one’s way backwards through the frozen landscape, or by moving forward through the imaginary present into the reality of the past. The first of these options – that of leveraging light speed against speeds slower –

is one that comes from, among others, Albert Einstein and the theory of special relativity (Einstein 1905). The second – the idea of moving forward into a reversal of the future – is the second stage of Jarry’s time machine formula (Jarry 1965). This second stage is not about ownership or control but about experience – moving through time backwards in order to experience memory as it happened. It’s the moment where we begin to think of memory as the experience of negative time – an imaginary past carried forward into the reality of the present, or a fragment of the past itself imagined forward into the future.

Between Einstein and Jarry, then, a new space of imaginary contemplation opens up – an imaginary solution that is no less real for having been imagined, as if to suggest that the thought experiment at a certain point in time, takes on a mind of its own, and turns the experience of duration inside-out in the process.

ON THE BACK OF A MUON NEUTRINO

Albert Einstein famously dreamed of riding on a beam of light, a thought experiment that allowed him to imagine the implications of light speed – and ultimately to determine some of the tenets of what became his theory of special relativity (Einstein 1951: 49). Among the observations Einstein derived from this experiment was the claim that light will always travel at a constant speed, relative to the position from which it is perceived, yet irrespective of other perspectives which may be in motion themselves. Whether one is seated and immobile, or travelling at the speed of light oneself, light maintains its light speed pace, relative to the position from which it is observed (Einstein 1905). One of the strange consequences of this relative invariance of light speed is the suggestion that the progression of time can be made to shift, depending on the state of motion in which one finds oneself. Einstein described this consequence with the example of clocks, one of which was made to travel at light speed and consequently progressed more slowly than the other.

What Einstein didn't know was that as he imagined himself holding on tightly to his beam of light, a muon neutrino slowed down to watch him as he imagined the new and fascinating world of light-speed travel.

Scientists in the Opera Collective recently claimed to have measured a muon neutrino travelling faster than the speed of light (*OPERA* 2011). The measurement – still awaiting verification by the scientific world – was the result of particle experiments at the European Organization for Nuclear Research (CERN) in which a beam of neutrinos was sent from their starting point in Switzerland to the Gran Sasso National Laboratory in Italy. The experiment – CERN neutrinos to Gran Sasso (CNGS) – was designed to study neutrino oscillation as well as to measure neutrino velocity. Except that, in a series of experiments conducted in September 2011, the neutrinos actually arrived more quickly than they should have, outpacing one of the foundational rules of quantum physics, that no particle with mass can travel faster than the speed of light.

The neutrino, of course, did not know any better. Nobody told it that it wasn't allowed to transgress light speed. It's a bit uncertain what it might have done if it knew – and perhaps also a bit beside the point. As measured, there was a 60 nanosecond difference in speed between the neutrinos and the expectations of the Opera team, informed by the limit horizon that is the speed of light. A total of 60 nanoseconds, it turns out, makes a lot of difference: 'The existence of faster-than-light particles would wreak havoc on scientific theories of cause and effect. 'If things travel faster than the speed of light, A can cause B, but B can also cause A'' (Stephen Parke cited in Than 2011).

There is something almost theatrical about the story of the muon neutrino – a tiny particle that does not obey the laws of physics as we know them – brought to the media spotlight amidst contradictory claims, scientific hesitations and a general sense of disbelief that Albert Einstein could have been wrong about the speed of light being a limit horizon of cosmological possibility. And yet, if the neutrino

holds the key to a reversal of causality, who knows what the cause might actually be. All that can be said for sure is that the speed of light appears to have been broken, and with it, the sensical premises of a mathematics bound to the limits of time as we understand it.

THE SPEED OF BROKEN LIGHT

There is a strange space – or time – that opens up in the 60 nanoseconds between when the muon neutrino arrives in Gran Sasso and when light catches up. It is not exactly a negative space, but it is not exactly discernible either. It is a space of fables, where other strange stories of time, skewed and distorted, also impact on the possibilities for performance and living. One example of such a story of distortion is the saying 'a watched pot never boils', the kettle refusing to perform as an actor on stage – perhaps in part because the observer's attention reaches a boiling point first and, like the muon neutrino, needs to wait for the kettle to catch up. It is as though the act of watching extends the duration of the event, or as if the anticipated end point becomes the receding horizon, which time must attempt to catch.

Imagine if these distortions of time could be harnessed – the extra time it takes for light to arrive in Italy carving out a pocket of time to be activated for the productive possibilities it might yield. It's not quite time of course – it's duration, or more specifically a form of negative duration that exists in excess of the clock time of communal perception. One might term such a duration one of pure performance, different from the non-durations of the Kuras/Tanner project in the sense that it no longer depends on the technological intensification of proximity; instead, the question of proximity never even occurs to the muon neutrino. Capable of speeds beyond those of light, the neutrino turns duration properly inside out.

There are other versions of these strange causal moments as well – some playfully imagined, others purposefully expanded in order to challenge the thresholds of the speed of reality all the more intensely. Jean Baudrillard's

(1994) story is one example, in which the map precedes the territory it describes. Itself an extension of a story by Jorge Luis Borges – of a map so detailed it covers exactly the landscape around it (Borges 1998: 325) – Baudrillard's sequel is distinguished as an argument for technological simulation that is increasingly the only way to competently understand a world of information. For Baudrillard, the map of the world is much more comprehensive than the reality that once lay beneath, a world governed not by the laws of the real, but by the hyper-reality of the code. Codes, of course, can only be imagined – or understood through processed algorithms and technological thinking. With the quick pace of technology, Baudrillard theorizes, reality simply cannot keep up.

Another version of the story comes from the French art critic Nicolas Bourriaud, who – in his treatise on *Relational Aesthetics* – provides a provocative description of what might be thought of as a new aesthetic rule. The proposition seems to build on those of the plausibly impossible and the suspension of disbelief, suggesting that there is something purely imaginary – even hyper-real – about the ways the codes of performance function today. For Bourriaud, contemporary art is like a hallucination proposed purely as a catalyst for dialogue (Bourriaud 1998: 49). The existence or non-existence of the hallucination notwithstanding, the duration of the artistic dialogue depends on a willingness by both parties to engage in a conversation that ultimately has no verifiable or agreed upon object of discussion. The immediacy of the imaginary encounter determines the duration of the event.

In each of these instances, the question of duration begins with imaginary points of reference – imaginary presents (perhaps even in the doubled sense of the word, catalysts for durations of imaginary engagement but also gifts that sit in a relationship of excess to the territories they portend to describe). These are spaces that are also times, since they require the activation of awareness no less than those of Kuras/Tanner and Jarry – yet

they are different in the sense that they are, ultimately, unmappable for the simple reason that representation is bound to the speed of perception, whereas the ability to manifest is no longer bound by the speed of light – the speed of representation itself. The only way to make sense of such durations would be to see them turned inside out – territories that erupt out of the maps that describe them in hallucinatory and unpredictable ways, re-writing the maps as they go, or leaving them to blow – as in Borges' original – lonely in the wind.

The speed of broken light is a marker of durational possibility – the unmarked time of events no longer bound to explanation, indeed events that can defy and even outperform the codes meant to contain them. Beyond the speed of light, no representation is possible – at least not in a human sense. What does remain possible, however, is the human capacity to imagine and perform, in defiance of the illogic that these new systems entail.

POSTSCRIPT: THE SPEED OF FAULTY FIBER OPTICS

As the final sections of this paper are being written, breaking news reports an error in the experiment at CERN. Muon neutrinos, turns out, have not broken the speed of light at all (Reich 2012). Instead, a faulty fibre optic cable is claimed responsible for the mistaken values and measurements. It is not the first time that the results have been contested, with stories ranging from the miscalculation of distance on the part of the scientists, to unmeasured shortcuts through other dimensions – which would ostensibly allow for the neutrinos to arrive in San Gasso at faster than light speeds, but without breaking the dictates of special relativity (Grossman 2011).

Except there's no way to really know for sure – the muon neutrino might have utilized its faster-than-light capabilities to go backwards in time and break the fibre optic cable just as easily as physicists themselves could have overlooked such a simple experimental possibility. In either case, in some ways, the damage has already

been done – and now even if the speed of light remains intact, the scientific imagination has already begun to imagine travel at the speed of neutrinos.

There's also the version of the story where this is a familiar state for many of us: we can't keep up to the speed of technological advance, so it's understandable how light might not be able to keep up to the speed of the neutrino.

In this, there is an allegory waiting to happen – a new story of the cave, not seen through Plato's praising of light as the catalyst for enlightenment, but the neutrino as catalyst for a new form of darkness. Not that which results from the lights being turned out, but that which happens when light can no longer keep up to the speed of the imaginary. This is the speed of broken light – less a theory than a practice, less data than an unfolding story, less an understanding than a performance, less time and more duration. This is no longer Jarry's version of the story in which duration is the 'becoming of a memory'. This is the opposite – a new world of neutrino speeds where what is at stake is the duration of experience where memories undo themselves, becoming stories of performative duration.

Not the becoming of a memory, but the becoming of an imaginary possibility.

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