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# Slower Than Time Itself

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## Abstract

This paper is combined with my Master of Fine Art thesis exhibition, *Slower Than Time Itself*. There is a significant discontinuity between how duration is measured by clocks and how it is perceived by the individual. This discontinuity generates pressure both on the individual and the environment. The concept of dualism constructs a dichotomy between people and nature, devaluing that which cannot be measured. In *Slower Than Time Itself* the thesis, sculptural and video works aims to dissolve this dichotomy not by rejecting technology but by embracing it. Can one use clocks to escape time itself? I investigate the works of artists Christian Marclay, Tatsuo Miyajima, Jean-Pierre Gauthier, Janet Cardiff, Francis Alys, Werner Herzog and Chantal Akerman who use technology to explore duration as an artistic medium. I also explore Lutz Koepnick's concept of aesthetic slowness to engage in multiplicity without prioritizing the timescapes sympathetic to human cadence.

## Key Words

Time, Clocks, Horology, Multiplicity, Duration, Aesthetic Slowness, Slow Cinema, Escapement, Timescape

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#### Introduction

If the only tool you have to perceive duration is the clock, do you treat every time as if it were an hour, minute or second? Clocks facilitate a paradigm of tracking time across a stable temporal foundation which enabled the creation of the scientific tradition. Economist Carlo Cipolla noted that "clock making was the first industry to put into practice the theoretical findings of physics and mechanics", sewing the seeds for contemporary technological industries.<sup>1</sup> As such, the clock can be seen as a proxy for capitalistic development and expansion manifest through technology. The usage of a clock requires a structuring of the world which facilitates the normative obsession with measuring, valuing and accelerating time as an integral facet of contemporary life. While is it possible to enact one's day without looking at a clock, its influence cannot be escaped. Modern utilities such as electricity, communication, computers, and navigation are dependent on clocks and their unyielding temporal hegemony. However, there is a significant gap between what is measured by clocks and what is perceived by the individual. The measurement is often regarded as the equivalent to the thing that is measured. Abraham Maslow's Law of Instrument illustrates one of the core concerns with an overreliance on tools: "if the only tool you have is a hammer, [... do you] treat everything as if it were a nail."<sup>2</sup> The rhythmic counting of time is immutable, indefatigable and infallible. Slower Than Time Itself focuses upon the agency clocks exert upon contemporary society and asks what other timescapes are devalued or forgotten by the hegemonic duration of hours, minutes and seconds.

All tools extend the capabilities of our physical body, be it a light bulb that allows us to see farther in the dark than our naked eyes can, or a hammer that allows us to hit harder than our naked hand can. While a tool is designed to reflect the human body's anatomical attributes, the hammer's handle is sized to the hand or the light's switch is sized to the finger, the tool also implores a reciprocal exchange where our thought patterns align to the tool's design attributes. Marshall McLuhan wrote of this in *The Medium is the Message* as "the *message* of any medium

<sup>&</sup>lt;sup>1</sup> Carlo Cipolla, Clocks and Culture 1300-1700 (London: Collins, 1967), 58-59.

<sup>&</sup>lt;sup>2</sup> Abraham Maslow, *The Psychology of Science* (New York: Harper and Row, 1966), 15.

or technology is the change of scale or pace or pattern that it introduces into human affairs."<sup>3</sup> For McLuhan, the principal force of a tool is not what it can exert upon the physical world but what that tool can exert upon the user's perception of the world. The clock's integration with humanity exerts a pressure in our psyche that can be detrimental to relationships with other humans, organisms and the environment. Throughout this text, I will employ the terminology of *scientific time* to describe a paradigm of time which can be measured by a clock, and *intuitive time*, as a paradigm of time which can only be experienced intuitively by the individual. The imbalance of these paradigms can lead to psychological pressure has been the focus of many artists in their attempt to articulate how the time a clock tells is a social construction which displaces other modes of tracking duration which may be more sympathetic to the human condition. The works of Christian Marclay, Tatsuo Miyajima, Jean-Pierre Gauthier, Janet Cardiff, Francis Alys, Werner Herzog and Chantal Akerman will be explored specifically because of the way these artists approach the concept of duration as a generative process and artistic medium. These artists use time-based technology to explore a blending of the dichotomous boundary between scientific and intuitive time such that the two become symbiotic. The purpose of this text is to temper and understand these artists as a means to articulate the constellation that Slower Than Time Itself is operating within.

The tracking of time is by no means a human creation. The measurement of change in Circadian rhythms governs the life of nearly every organism on earth. Where humans differ is the tools and cultural systems we have constructed to measure time have usurped circadian rhythms. Cultural systems built around measured time have been accelerating since the industrial revolution. It is not that an hour or a minute has changed length, but that length has changed value. The cliché *time-is-money* indicates how this acceleration operates instep with exponential economic growth. In turn, economic practices borrow much of their toolkit from the scientific tradition and this paper will dissect the significance of two of the scientific method's core tenets in relation to time – the impulse to *isolate* and to *quantify*.

This process of isolating and quantization of time leads to an acceleration towards instantaneity and places a host of pressures upon the individual and landscape. These

<sup>&</sup>lt;sup>3</sup> Marshall McLuhan, *The Medium is the Message* (Corte Madera: Ginko Press, 1967), 1.

psychological pressures of acceleration on the individual are manifest through anxiety, alienation, fatigue, and amnesia. Lutz Koepnick predicts that as acceleration continues our "attention span shrinks to zero [...] we end up with less—less substance, less depth, less meaning, less freedom, less spontaneity."<sup>4</sup> The progressive quest for increased efficiency, productivity and connectedness favours the tools used to fight it, not the humans they ostensibly fight for. Jonathan Crary notes in 24/7 the increased tempo of modernity, which shifts greater value on the inflexibility of scientific time, yields to the individual "the time of indifference [...] in which the fragility of human life is increasingly inadequate."<sup>5</sup> What is an individual expected or capable of doing within this landscape of temporal acceleration? Are we floating without agency, swept downstream in a river of ever-increasing speed – perhaps towards a waterfall? Perhaps this is why Italian futurist Umberto Boccioni in his 1913 sculpture Unique Forms of *Continuity in Space* fantasized about having a tough metal skin like a fuselage – able to withstand the pressures of speed while travelling through slowness.<sup>6</sup> Turning yourself into a machine is one strategy to survive the acceleration. Hybridization today, instead of the encapsulated identity aspired by Boccioni, looks more like an integrated identity, conflating social media platforms and social life. So what is a healthy threshold between humans and technology in this hybrid identity? Donna Haraway forebodes that in the future, and perhaps already in the present, "our machines are disturbingly lively and we ourselves are frighteningly inert."<sup>7</sup> Crary also sees this hybridization not as symbiotic like Boccioni's prediction but invasive, "deprecation of the weakness and inadequacy of human time" with that of linearity and finitude of the clock's time.<sup>8</sup> In the conflation of human needs to that of technological demands, Crary forebodes that "the long term survival of the [human] individual is always dispensable."9

As a reaction to the armoured and integrated hybridization with technology—a deliberate deceleration and *return-to-the-past* seems advantageous. This desire can be witnessed in the pre-

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<sup>&</sup>lt;sup>4</sup> Lutz Koepnick, On Slowness (New York: Columbia University Press, 2014), 7.

<sup>&</sup>lt;sup>5</sup> Jonathan Crary, 24/7 (Brooklyn: Verso, 2013), 9.

<sup>&</sup>lt;sup>6</sup> Ester Coen, Umberto Boccioni (New York: Abrams, 1988), 218.

<sup>&</sup>lt;sup>7</sup> Donna Haraway, "A Cyborg Manifesto: Science, Technology, and Socialist- Feminism in the Late Twentieth Century" (New York: Routledge, 1991), 152.

<sup>&</sup>lt;sup>8</sup> Crary, 24/7, 29.

<sup>9</sup> Ibid., 9.

industrial aspirations of the nineteenth century Parisian romantics as documented and discussed by Walter Benjamin or in contemporary trends such as the organic movement and prevalence of *off-the-grid* living aspirations. Romantic movements often only strengthen what they hope to fight, validating the normalized trends of time compression through opposition. This is because overly romantic points of view fail to acknowledge the foundational role of technology in Western culture's. Ian Hodder describes human's relationship with technology in terms of *entanglement*.<sup>10</sup> Details of which will be expanded upon in the following chapter but as such, humans have evolved with technology for such a long time that since the development of agriculture our identity has become inseparable from technology.<sup>11</sup> Bernard Stiegler's concept of *cinematic consciousness* developed in his *Technics and Time* series is perhaps the most absolute permutation of this hybridization where our consciousness is actually generated through our use of technology.<sup>12</sup> For Stiegler, like Hodder, humans and technology are indivisible. Stiegler argues that technology, be it books or cinema is Western Culture's primary "act of inheritance [to future generations], succeeded in becoming both genealogical connections and enunciation of that connection between generations."<sup>13</sup>

Lutz Koepnick has identified *aesthetic slowness* as a strategy to harmonize this modern accelerando and avoid the pitfalls of the aforementioned strategies. It employs a deliberate slowing of one's cadence, in step with a romanticised deceleration of time, but instead of being used to reject speed, aesthetic slowness affords greater clarity of it.<sup>14</sup> It allows space and time to simultaneously weigh the past focused gaze of romanticism and the future focused gaze of technological determinism to experience "the opulence and manifoldness of the present."<sup>15</sup> For Koepnick, "slowness is an expanded sense" which allows one to actively engage in multiple tempos without prioritizing the timescapes sympathetic to human cadence.<sup>16</sup> Slowness is able to

<sup>&</sup>lt;sup>10</sup> Ian Hodder, "The Entanglements of Humans and Things: A Long-Term View" (Baltimore: The Johns Hopkins University Press, 2014), 19-20.

<sup>&</sup>lt;sup>11</sup> Ibid., 20.

<sup>&</sup>lt;sup>12</sup> Bernard Stiegler, *Technics and Time, 3* (Stanford: Stanford University Press, 2011), 14.

<sup>&</sup>lt;sup>13</sup> Ibid., 8.

<sup>&</sup>lt;sup>14</sup> Koepnick, On Slowness, 9.

<sup>15</sup> Ibid.

<sup>&</sup>lt;sup>16</sup> Ibid., 10.

permutate itself to embody simultaneous contradictory properties and the spectrum of nonoppositional properties in between. *Slower Than Time Itself* will build upon Koepnick's concept of aesthetic slowness to explore the clock's agency upon Western culture's daily lived experience and suggest a multiplicity. In the exhibition, the use of wood and stone, artifacts of timescapes longer than human perception, are employed in conjunction with digital systems which operate in timescapes shorter than human perception. Deep time, with a perceived permanence, is recorded in the natural materials, is mechanically linked to the ephemeral soundscape of ticking mechanisms. The sculptural and video works describe the interface of body and tool by asking what noise and signal is generated within our entanglement with temporal objects to explore the possibility and ramifications of Stiegler's cinematic consciousness.

#### 1: The Escape of Time

The first section of this chapter aims to establish the context of contemporary societies entanglement with the clock through a gradual refinement of timekeeping technologies. The work of Galileo Galilei instigated a pivotal shift in this refinement through the formation of *dualism*. While previous methods of timekeeping employed a relative blending a human and technological means to record the passage of time, *Dualism* instilled a dichotomous conceptual division between nature and humanity.<sup>17</sup> Sociologist Norbert Elias states how Galileo's measurement of time using observable properties of the natural world, such as rolling a ball down an inclined plane, generated an oppositional system where measured time "as an autonomous nexus represented by eternal laws, 'nature' appears to stand on one side, [while] people and their social world – artificial, arbitrary and structureless on the other."<sup>18</sup> This division also represented a foundational shift in Western societies relationship between the body and the world. No longer connected on a continuum, the human and world are discrete units with wholly different properties. Over centuries of cultural integration and technological refinement,

<sup>&</sup>lt;sup>17</sup> Norbert Elias, *Time: An Essay* (Oxford: Blackwell Publishing, 1992), 115.

<sup>18</sup> Ibid.

timekeeping technologies became ontological onto themselves, completely detached from their traditional solar referent and in turn, their human constituent.

The second section of this chapter will focus on cultural developments that operated in step with the aforementioned technical developments. The formation of dualism generated a detachment with time which allowed it to be treated as an isolated variable. This isolation was conflated with economic systems and led to a perceived acceleration of time. Because measured time could be employed in experiments, navigation and other practical purposes explored by early scientists, Elias notes "the conceptual dualism went hand in hand [and] was the clearly marked differences in the status and value attached to the two types of 'time'."<sup>19</sup> Cultural practices of gaining knowledge through non-linear or non-measurable time, such as those mentioned by Vanessa Watts of the Anishinaabe and Haudenosaunee peoples, were devalued in their apparent opposition to the hegemony of scientific knowledge structures.<sup>20</sup>

The third and fourth sections of this chapter will look at the perceived acceleration of time in contemporary society then address the psychological pressures caused on the individual by this acceleration of time. These psychological pressures are part of the impetus of many of the cited artists to focus on the differences of measured and perceived time specifically in their work. The following chapters will address these artists directly.

#### 1:1. History of Timekeeping

Constructions created to measure the passage of time can be found as early as Stonehenge and likely existed earlier than that. The ancient Egyptians use of obelisks to measure the passage of time through the day is another early example. An Obelisk will create a shadow which moves in relation to the sun's movement throughout the day. While Stonehenge is thought to have acted as a calendrical clock, the obelisk functions closer to a contemporary clock. Utilising the relative

<sup>&</sup>lt;sup>19</sup> Elias, *Time*, 117.

<sup>&</sup>lt;sup>20</sup> Watts, Vanessa, "Indigenous place-thought & agency amongst humans and non-humans (First Woman and Sky Woman go on a European world tour!)" *Decolonization: Indigeneity, Education & Society* 2, 2013 (1): 32.

regularity of the earth's rotation as a datum for timekeeping, the cast shadow traced an arc which was subdivided into twelve equal sections. This is the genus of today's dozenal partitions between day and night but with one key difference. Because the daylight hours were always divided evenly, these proto hours never had a fixed length as daylight duration contracted or expanded through seasonal changes. This system works perfectly if the aim is to divide tasks throughout daylight working hours but the continual state of flux is impractical for temporal experiments. In fact, it was not until 1763 that Philipp Hahn created the *heliochronometer* which allowed the practical synchronising of sundials to a contemporary mode of tracking time with fixed hour length. Not surprisingly, sundials could not work at night or in inclement weather and are less accurate the closer one moves to the poles. While timekeeping through the night is possible through measurement of the changing positions of stars, these methods were subject to the same limitations as the sundials. Specifically, such methods could not be used to measure small increments of time.

The ancient Athenians are credited with creating the *Clepsydra* which used the constant force of earth's gravity to drain a large container of liquid through a small opening. The hourglass works on the same principle using sand instead of water. Both these devices achieve a highly accurate and repeatable measure of shorter duration. However, they often become cumbersome and imprecise to measure longer durations such as a full day and night. Because of these limitations, Elias noted that the Clepsydra was "traditionally a timepiece employed for timing human affairs...[as] a social time-meter."<sup>21</sup> Elias furthers this by differentiating that unlike Galileo who centuries later used a Clepsydra for measuring repeatable properties of the natural world, timing was for ancient Athenians a blending of social and inanimate sequences.<sup>22</sup> As such, timing "[...] was a means to an end. It had an instrumental character. Observations of the changing positions in the sequence of physical events in the sky or on earth were not undertaken for their own sake [as with Galileo]; they were used as indicators which told people *when* specific social activities ought to be undertaken or *hour long* these activities ought to last."<sup>23</sup>

<sup>&</sup>lt;sup>21</sup> Elias, *Time*, 114.

<sup>&</sup>lt;sup>22</sup> Ibid., 103.

<sup>&</sup>lt;sup>23</sup> Ibid.

It should be noted that accurate and long-running water clocks can be found in the Song Dynasty China, using temporal measurement to explore and predict the observable world. In 1092, Su Song constructed the twelve-meter-tall *Shui Yun Yi Xiang Tai*, or *Tower for the Water-Powered Sphere and Globe* in Kaifeng China, leading to innovations like the first hydromechanical escapement and chain drive. However, unlike Galileo's work which served as a genus for centuries of continued experiment and refinement, Sinologist Derk Bodde notes that because Song's astronomical clock was government sponsored and only utilized in isolated circles, it was not able to seed a cumulative scientific tradition as seen in Galileo. Cipolla mirrors this with the works of Archimedes and Heron which, while technologically centuries before their time, were "isolated cases and their efforts never went beyond the case of curious experimentation or limited application; [their] machines never became an essential and important element in the production system."<sup>25</sup>

The earliest known example of a mechanical clock in Europe dates to 1335 in the church of St. Mothard in Milan which would ring a bell on the hour.<sup>26</sup> Despite their formidable building and maintenance costs, the political climate and guild system which provided skilled labour and transfer of knowledge in Europe at the time enabled the building of these mechanical clocks to flourish.<sup>27</sup> Cipolla states that "in general people took great pride in their clocks and considered them essentially useful things".<sup>28</sup> This was because "most people believed that a correct knowledge of the conjunction of the heavenly bodies was essential for the success of human enterprise."<sup>29</sup> As such, these clocks encapsulated public aspirations of progress. Cipolla cites a 1481 petition to the Town Council of Lyon which reflects this sentiment whereby the citizens "sorely felt the need for a great clock whose strokes could be heard by all citizens in all parts of the town. If such a clock were to be made, more merchants would come to fairs, the citizens

- <sup>28</sup> Ibid., 41.
- <sup>29</sup> Ibid., 44.

<sup>&</sup>lt;sup>24</sup> Derk Bodde, *Chinese Thought, Society, and Science* (Honolulu: University of Hawaii Press, 1991), 362.

<sup>&</sup>lt;sup>25</sup> Cipolla, *Clocks and Culture*, 20.

<sup>&</sup>lt;sup>26</sup> Ibid., 40-41.

<sup>&</sup>lt;sup>27</sup> Ibid., 18-21.

would be very consoled, cheerful and happy and would live more orderly life, and the town would gain in decoration."<sup>30</sup>

Over centuries mechanical clocks would evolve from basic counters of duration into increasingly complicated and ornate monuments of social standing and public aspirations. These early clocks used a mechanism called a verge escapement which could lose up to 15 minutes per day and necessitated "the continual care of a 'governor' who had to 'rule, set, guide and keep it."<sup>31</sup> Despite the dazzling complexity of the automated bell sounding mechanisms, the technical consensus was "it was easier to add wheels than to find better ways to regulate the escapement."<sup>32</sup> However, accuracy was culturally not important as Cipolla notes "contemporary requirements for precision were low: thus it was generally thought unnecessary to provide clocks with a minute hand."<sup>33</sup> Over the three centuries after the clock at St. Mothard was constructed, the general accuracy of mechanical clocks did not dramatically improve.<sup>34</sup> However, a key figure in the formation of the scientific tradition would instill the requirements for more precision over the temporal.

Galileo's experiments of rolling a ball down an inclined plane led to the development of the first theories of the parabolic acceleration of an object in freefall. His methodology of carefully controlled and repeated experiment, observation and measurement needed a stable temporal foundation. There were four categories of keeping devices available to Galileo to measure the temporal: the *sundial, clepsydra, verge escapement mechanical clock* and *pulse*. However, each of these devices was insufficient for Galileo's temporal measurements.

The *verge escapement clock* as discussed earlier was not accurate enough to record the small differences in duration of the experiments. Additionally, Cipolla notes that during Galileo's lifetime, in later fifteenth and early sixteenth century, mechanical clocks were prohibitively expensive and rare for domestic use.<sup>35</sup> The *sundial* is the earliest known

- <sup>34</sup> Ibid.
- <sup>35</sup> Ibid., 49.

<sup>&</sup>lt;sup>30</sup> Cipolla, *Clocks and Culture*, 42.

<sup>&</sup>lt;sup>31</sup> Ibid., 47.

<sup>&</sup>lt;sup>32</sup> Ibid., 43-44.

<sup>&</sup>lt;sup>33</sup> Ibid., 43.

timekeeping device and certainly the least expensive. However, as discussed the solar-based systems were too imprecise for shorter durations and unpredictable to produce the stable temporal foundations required by Galileo conduct his experiments. The *Clepsydra* was Galileo's primary instrument to measure the temporal.<sup>36</sup> Galileo combined the *Clepsydra* with a balance scale which would tip when a precise amount of water has been collected. This method conflated the temporal with mass – a property for more straightforward for Galileo to measure and calculate.<sup>37</sup> This method yielded an accuracy which could rival modern clocks and was not nearly as complicated or expensive as the contemporary mechanical clocks. However, the clepsydra had one major limitation. One could only measure a single and already known duration because there was no accurate way of dividing that duration into smaller units. While this limitation was tenable in a controlled laboratory setting, many of Galileo's laboratory experiments of the parabolic acceleration of objects led to experiments in ballistics where the precise measuring of an unknown duration, such as a projectile in flight, is essential.

Elias notes that Galileo also "used in his acceleration experiments one of the simplest time-meters at people's disposal - the pulse-beat. Though not highly reliable, its pattern is normally that of a non-accelerating movement with a succession of strongly marked intervals of equal length".<sup>38</sup> The *pulse*, despite being the most imprecise of the three methods, created the most favourable temporal structure for scientific experimentation. As such it served as a blueprint to the temporal divisions generated by the yet to be invented pendulum clock.<sup>39</sup> This *succession of strongly marked intervals of equal length* enabled repeatable fine temporal resolution and the measuring of something with an unknown duration – addressing the limitations of the sundial and hourglass respectively. Additionally, Galileo's discovery of isochronism in the swing of a pendulum was the first step in enabling mechanical clocks to function with an accuracy useful for scientific experimentation. Galileo noticed that a pendulum of a fixed length will always swing for a certain duration, regardless of its weight or length of swing. However, a mechanical linkage which could harness the pendulum swing to regulate an

39 Ibid.

<sup>&</sup>lt;sup>36</sup> Elias, *Time*, 108.

<sup>&</sup>lt;sup>37</sup> Ibid.

<sup>&</sup>lt;sup>38</sup> Ibid., 119.

escapement would only be realised by Christian Huygens over a century later in the 1650's.<sup>40</sup> This development profoundly improved the accuracy of mechanical clocks. Cipolla describes an average error of 15 minutes per day in the verge escapement clocks, persisting from the mid-thirteenth century for three hundred years, to less than a second per day for temperature corrected pendulum clocks by the mid-seventeenth century, a thousand times improvement.<sup>41</sup>

By the middle of the seventeenth century in Europe, the need for highly accurate and inexpensive clocks entered into the public consciousness as the solution to the navigational problem of measuring longitude at sea. Horologist John Harrison was the first to construct a reliable marine chronometer and demonstrate the clock as an essential tool in exploration and conquest. While these marine chronometers were extremely accurate, they were also extremely expensive. However, Cipolla notes that the production capacity afforded by the industrial revolution saw a clock in the seventeenth century costing "twenty pounds", by the eighteenth century could be purchased for "twenty shilling".<sup>42</sup> The industrial revolution and simultaneous rise of the middle-class economic market saw clocks become far more accessible and like the automobile and computer, what was once a rare and expensive technological curiosity, over time and economy of scale transitioned into a socializing agent.

#### 1:2. Clocks as a Social Agent

The quintessential *tick-tock* of a clock is the product of a mechanical movement called an *escapement*. The escapement design can reflect seemingly infinite permutations but all operate on the same basic principle. A toothed wheel is driven by a constant force, traditionally a suspended weight, and wants to spin freely. Levers called *pallets* engage the wheel's teeth and prevent it from spinning. Just like a walker's legs, two levers are needed to remain in control of the escapement wheel at all times. These levers are actuated by another oscillating movement which only allows one tooth to "escape" per oscillation. As the tooth escapes, it pushes against

<sup>&</sup>lt;sup>40</sup> Cipolla, *Clocks and Culture*, 58.

<sup>&</sup>lt;sup>41</sup> Ibid., 59.

<sup>&</sup>lt;sup>42</sup> Ibid., 71.

the angle on the pallet giving it a slight nudge, ensuring the oscillations receives a steady supply of energy to keep moving. The sonic *tick* is one pallet stopping the wheel and the *tock* is the alternate pallet stopping the wheel a fraction of a turn later after the first pallet releases it. This simple mechanical movement, the regulating of a constant force by an oscillation, would serve as a nexus for the expansion of capitalism and seed contemporary culture's relationship with the temporal.<sup>43</sup>

It was the design attributes of the mechanical clock's escapement, mirroring the pulse, which interpolated early science's view of the observable world. While the smooth, linear progression of time is a design requirement of the sundial or hourglass, a staccato progression of time is the inescapable product from an escapement clock's design. This staccato oscillation enables quantization of duration as for the first time a duration had accurate subdivisions which could be counted and linked together. Of this Koepnick states that "Galileo thus helped inaugurate the modern understanding of time as something entirely calculable—a consistent and uniform structure of how we can assess physical movement across (fixed) space. On the other hand, Galileo's experiments played no small role in the emerging differentiation of the domains of physical and natural time from those of human and historical time, whereby the former was seen as well ordered, transparent, and expectable and the latter as potentially messy, mysterious, and resistant to comprehensive knowledge and enlightenment."<sup>44</sup> Elias described the social ramifications of Galileo's experiments as demonstrating the first recorded instances of a temporal technology generating lasting social and philosophical changes in society.<sup>45</sup>

The scientific system is based upon the building and connecting of truths by objective and repeatable tests. The two primary agents of this process of scientific knowledge are *isolation* and *quantification*. One must separate an object from its surroundings to identify it as a discrete unit, then measure it based on a standardized system. These standardized systems, such as unified language, physical measurement and scientific time, allow others to conduct the same tests in the same way and corroborate results. Sociologist Edgar Zisel furthered this by noting that during the formation of modern Western science in the late fifteenth century, writing was

<sup>&</sup>lt;sup>43</sup> Cipolla, *Clocks and Culture*, 80-81.

<sup>&</sup>lt;sup>44</sup> Koepnick, On Slowness, 164.

<sup>45</sup> Elias, Time, 104.

being used for the first time to document properties of the physical world found through experiment.<sup>46</sup> Accordingly, it would be understandable for early scientists to consider time as a continuation of discreet and equal units as a product of the tool used to measure time, just as the written language was contingent upon that very system. Marshall McLuhan expands upon the temporal shift written language and the alphabet necessitates:

The alphabet is a construct of fragmented bits and parts which have no semantic meaning in themselves, and which must be strung together in a line, bead-like, and in a prescribed order. Its use fostered and encouraged the habit of perceiving all environment in visual and spatial terms—particularly in terms of a space and of a time that are uniform.<sup>47</sup>

During the industrial revolution in England, the development of railroads introduced a practical need for temporal uniformity over a massive region. Despite the flawless operation of the clocks, the compression of space produced by train travel brought an unforeseen compression of time. For the first time, humans could travel fast enough to notice the small difference of seconds between high noon at different longitudes. One train leaving Town A their local noon could arrive at Town B at their respective noon. This led to an understandable confusion in train scheduling which prompted the development of time zones where all cities within a certain region adhere to a certain time, regardless of the individual city's position of the sun. The sun's classical role as the datum of timekeeping was for the first time detached and transcribed to a central authority and technology.

Another fundamental shift in time's relation to humans also came about in the industrial revolution that saw scientific time override the dominion of internal human circadian rhythms. The development of production line topologies in factories and farms which were fast becoming the primary employers of regions needed to function in unison to work efficiently. As such, every employee had to start work at the same time and align their life to this centralised, railroad time. Additionally, in a divergence from piece-based wage systems of pre-industrial manufacturing, industrial platforms adopted a time-based wage system. Jonathan Crary in 24/7 connected this as the first time that the entanglement of time and money became culturally

<sup>&</sup>lt;sup>46</sup> Edgar Zilsel, "The Sociological Roots of Science" (London: Sage Publications Limited, 2000), 944.

<sup>&</sup>lt;sup>47</sup> McLuhan, *The Medium is the Message*, 27.

reinforced.<sup>48</sup> Work starts at precisely eight o'clock and one must work for precisely eight hours to get paid. As such, time equals money – a concept ubiquitous today but not cultured in preindustrial times. The development of artificial lighting furthered this detachment of time as factories began to run through the night, inverting the traditional agricultural practice of working during daylight hours. Scientific time, for the first time in human history, became one of the primary socializing agents in the social contract and as such, woven into the daily lived experience of a population. People now align their lives to an external technology overruling internal circadian rhythms, not only in small variations between solar noon and railroad noon but in the complete inversion of traditional solar-based working schedules.

Ian Hodder describes the wedding of a technology and a culture in terms of *entanglement*.<sup>49</sup> He notes that pre-agricultural humans were entangled with the environment, like all other animals, but once the practice of farming became commonplace humans became entangled with technology. For Hodder, "since a dependence on made things became an evolutionary pathway, there has been one long movement, initially slow, but speeding up exponentially as the strands of human-thing entanglement lengthened and intensified."<sup>50</sup> Hodder's example describes how early humans moved from living in the natural cave formations of their ancestors to constructing permanent houses next to agricultural sites. These early mud houses would crack absorbing moisture from rain and require far more maintenance than caves to fix. While these houses would allow early humans to live independently from found cave formations – it also began to entangle us with technology as Hodder describes:

As we fix one thing, so we get drawn into another thing. As we fix the slumping house by building a wooden frame within it, so we need to go farther and obtain large timbers from upland areas and make axes that will cut down trees. We depend more on cattle, so we need to find a way of consuming milk; in fixing that problem by heating milk, we make pots that themselves require fuel to be fired. More stuff requires more investment by humans in more stuff.<sup>51</sup>

<sup>&</sup>lt;sup>48</sup> Crary, 24/7, 65.

<sup>&</sup>lt;sup>49</sup> Hodder, "The Entanglements of Humans and Things", 20.

<sup>&</sup>lt;sup>50</sup> Ibid., 33.

<sup>&</sup>lt;sup>51</sup> Ibid., 30.

Even with the simplest of technologies like a mud house or cooking pot, entanglement became exponential and their maintenance dominates human energy expenditure. Instead of working directly for food, the agricultural humans worked for tools that allowed them to get food. In a contemporary context, massive networks of entangled things all require maintenance to the point where maintaining these relationships consumes the vast majority of a modern human's global output. While modern clocks do not need much in the way of daily maintenance, computer systems that integrally reference them and the software which integrally reference the computer systems occupy a vast amount of a modern person's daily experience.

#### 1:4. Acceleration

In any scientific experiment, an isolated variable allows the experimenter to manipulate said variable and observe the changes that manipulation induces upon a system. Scientific time as an isolated variable is manipulated by deliberately holding it at a constant. While the length of a second has remained constant, our relationship to that second has changed. This change of value is a product of the conflation of time with economic systems and technology which leads to a perceived acceleration of time in the modern era. During the twentieth century, this was manifest in the ever-increasing speed of transportation and communication – shrinking the scale and pace of the globe with it. Koepnick describes early modernism's general excitement and positivism to acceleration as "modernity brought the thrill of motion to the sluggishness of preindustrial life. [...] In this way it not only reworked the entire sensorium, but promised a future joyfully different from the past."<sup>52</sup> The Italian Futurists of the early twentieth century championed these philosophies and Filippo Tommaso Marinetti's seminal *Futurist Manifesto* identifies the idea of speed as a libertarian force for the human condition.<sup>53</sup> For Marinetti, speed represented a new aesthetic strategy for the newly modernised world he saw around him. A way

<sup>&</sup>lt;sup>52</sup> Koepnick, On Slowness, 18.

<sup>&</sup>lt;sup>53</sup> Ibid., 23.

to break the structure and sluggishness he felt bourgeoisie society had created in order to alleviate general stagnation of the working class.<sup>54</sup>

McLuhan's concept of the *Global Village* in the late sixties moves from Marinetti's speed fetishized automobiles to electricity, where instantaneity of electronic circuits collapse the distance between space and time even further.<sup>55</sup> "Instant communication ensures that all factors of the environment and of experience co-exist in a state of active interplay."<sup>56</sup> At the same time, this acceleration was described in the electronics industry as *Moore's Law*, named after Gordon Moore, co-founder of Fairchild Semiconductor then Intel. Moore predicted that the number of components in an integrated circuit would double every two years. This trend would forecast and witness processor speed of computers increase at an exponential rate as well as other digital systems such as network speed and hard drive storage requirements required for contemporary video streaming and cloud memory systems.

The media on these digital systems are also subject to the same trends of acceleration. Koepnick notes that "before the 1960s, ASL [Average Shot Length] rates for commercial films typically ranged between 8 and 11 seconds "while modern action films such as "Skyfall (2012, dir. Sam Mendes) and World War Z (2013, dir. Marc Foster) [are] clocking in at 3.3 and 2.5 seconds respectively".<sup>57</sup> This near four times increase in shot length in two generations begs the question of what is the viewer capable of absorbing in these shrinking moments. Stiegler sketches an entangled *cinematic consciousness* where he argues that human consciousness mimics the structure of the cinema "in its very principle of joining, or montaging, disparate elements into a single temporal flux."<sup>58</sup> Koepnick fears the accelerated shot length "emancipates the viewer from any sense of meaningful continuity and causation."<sup>59</sup> Stiegler identifies technological amnesia as a primary side effect of acceleration, as with increased speed and

<sup>59</sup> Ibid., 154.

<sup>&</sup>lt;sup>54</sup> Greene, Italian Futurism, 41.

<sup>&</sup>lt;sup>55</sup> McLuhan, *The Medium is the Message*, 63.

<sup>&</sup>lt;sup>56</sup> Ibid.

<sup>&</sup>lt;sup>57</sup> Koepnick, On Slowness, 153.

<sup>&</sup>lt;sup>58</sup> Stiegler, *Technics and Time*, *3*, 15.

information the question is not *what information do we have access to* but *what information do we remember*.<sup>60</sup>

The temporal properties of a body's pulse, *strongly marked intervals of equal length*, became extended through the pendulum and escapement mechanisms and allowed duration to be isolated and quantified. Galileo's observational experiments in time helped construct a scientific tradition of dualism that saw the datum of timekeeping taken away from human perception and entangled with an unchanging scientific system. The industrial revolution saw clocks become accurate and inexpensive enough to propagate from a laboratory setting into the domestic sphere of daily lived experience. Time was stripped of its ties to location and the sun through the formation of time zones, then conflated with monetary systems in the large production line factories. In the modern era, clocks and the systems that rely on them like navigation and communication are far more accurate than their solar referent. The scientific system was becoming the primary mode of engaging with the temporal and the combination of these factors enabled scientific time to operate as an isolated and external variable – entangling humanity in its accelerating trajectory.

#### 1:4. Pressure

Koepnick identifies two competing pressures of temporal acceleration on the individual. The first is that contemporary speed is so loud and satiating that it obfuscates all timescapes outside of its singular tempo.<sup>61</sup> For Koepnick, "it erodes our patience for the intricate work of memory and durational" and in doing monopolizes our perception.<sup>62</sup> The second pressure is a product of this monopolization. Through the disproportional focusing on the over-stimulating present, we grow numb and ambivalent towards it as a means of coping.<sup>63</sup> Just like how our eyes will become overstimulated looking at a bright light – the glance away reveals a shadow of

- 62 Ibid.
- 63 Ibid.

<sup>&</sup>lt;sup>60</sup> Stiegler, *Technics and Time*, 2.

<sup>&</sup>lt;sup>61</sup> Koepnick, On Slowness, 9.

numbness and discolouration towards what was the center of our focus. This is especially concerning when this habitual numbness of speed is combined with Stiegler's concept of cinematic consciousness. It suggests a blindness to oneself and one's cultural linkage to the past. As seen earlier, even the cinema which to Stiegler accounts for our *primary act of inheritance* does not serve as a mnemonic aid when acceleration is increased.

Stiegler wrote of the necessity of technology in cultural memory as "the history of being is nothing but its inscription in technicity."<sup>64</sup> This is consolidated in his statement, "tekhne produces time," as not only do clocks produce a quantifiable duration but also books and language generate the cognition necessary to articulate this experience of duration.<sup>65</sup> As the history of Western civilization is built upon books – today that role has shifted to photographs and video. However, this "machinery of transfer" as Paul Virilio describes it exists in multiple states.<sup>66</sup> Both within a record of the past, as Barthes described, the ridged temporal structure of technology in the present, but also in the collective memory of viewers which can exist in the past, present and future. Fittingly, for Virilio "the space of sight is accordingly not Newton's space, absolute space, but Minkowskian event-space, relative space."<sup>67</sup> Minkowskian space is a conceptual state where time is not a linear constant but conflated with space. As the relative location of one's reference changes, time changes accordingly – yielding multiple simultaneous presents by product of different vantage points of the same object. This will later be explored in the Twin Paradox. A binary system such as a computer relying upon a monotemporal system cannot function by itself in multiples environments. The fact that humans can experience the multiple suggests the hybridity required for Stiegler's cinematic consciousness.

<sup>&</sup>lt;sup>64</sup> Bernard Stiegler, *Technics and Time* (Stanford: Stanford University Press, 1998), 4.

<sup>&</sup>lt;sup>65</sup> Stiegler, Technics and Time, 2, 18.

<sup>&</sup>lt;sup>66</sup> Paul Virilio, *The Vision Machine* (Bloomington: Indiana University Press, 1994), 8.

<sup>67</sup> Ibid., 62.

#### 2: Intuitive Time and the Boundaries of Science

It can be difficult to imagine another system for telling time. We are conditioned to quantize every duration as if it were an hour, minute or second and any variation in experience from that is a disruption in our subjectivity – not the scientific system. Scientific time favours a worldview that can be isolated and measured into classic logic structures such as dualism or Newtonian space and time. As demonstrated, these logic structures are detached from their referent physical world and can only be used as abstractions. For concerns like predicting chemical reactions, scientific time is remarkably successful and has generated the host of modern amenities in contemporary society. However, for other concerns, scientific time proves inadequate. Sociologist Max Weber expands on this as the scientific toolkit is not capable of answering existential questions – it is the arts that only approach but never reach knowledge in this terrain.<sup>68</sup> The difficulty to express notions such as progress, memory, or happiness in terms of scientific time echoes through all of the artists referenced in this text.

There is wide-ranging terminology to describe the different temporal states that oppose each other in dualist philosophies. Elias uses the terms *physical time* versus *social time*,<sup>69</sup> Jonathan Crary uses the terms *human time* versus *homogenous time* or *clock time*,<sup>70</sup> Paul Virilio uses *line* and *cycle* time.<sup>71</sup> Each of these terms references a culturally created division where one temporal system references empirical measurement and observation which divide duration linearly into hours, minutes and seconds, while the other temporal system uses the multiple and amorphous datum of human perception for non-linear time. For consistency in this paper I will use the terms *scientific time* and *intuitive time*, adapted from Henri Bergson's terminology.<sup>72</sup>

Bergson's terminology was chosen because of his formative role in developing the concept of *multiplicity*. This concept is central to many authors in this text including Koepnick's

<sup>&</sup>lt;sup>68</sup> Max Weber, "Science as a Vocation" In *Max Weber: Essays in Sociology*, translated by H.H. Gerth and C. Wright Mills, 524-555. (Oxford: Oxford University Press, 1918), 542.

<sup>69</sup> Elias, Time, 117.

<sup>&</sup>lt;sup>70</sup> Crary, 24/7, 7-8.

<sup>&</sup>lt;sup>71</sup> Paul Virilio, *Open Sky* (New York: Verso, 1997), 124.

<sup>&</sup>lt;sup>72</sup> Henri Bergson, An Introduction to Metaphysics (New York: G. P. Putnam's Sons, 1912), 1-9.

*manifoldness of the present*, Stiegler's *cinematic consciousness* and also Bruno Latour's *gathering* in the following chapter. While the full mechanics of *multiplicity* are outside the scope of this text, it is an attempt to negotiate and harmonize the seemingly incompatible nature of scientific and intuitive time. Despite the apparent usefulness of scientific time and the dualist divisions it creates, intuitive time is for Bergson how all beings naturally perceive the world.<sup>73</sup> For Bergson, scientific time is an abstraction, a relative knowledge of something translated through symbols or words which "will always remain imperfect in comparison with the object."<sup>74</sup> A minute is an arbitrary division of duration which is completely dependant on a particular frame of reference and gravitational force. It also depends on time's conflation with space, a convenient assumption for the scientific tradition but not an intrinsic quality. A key element for Bergson's theory is that duration as an intuitive sense is inherently inexpressible.<sup>75</sup> Thus the challenge, how does one talk about the inexpressible? One can approach by proxy and metaphor. The artists mentioned in this chapter and the next all approach this issue and describe how multiple "conscious states are organized into a whole, [to] permeate one another, [and] gradually gain a richer content."<sup>76</sup>

It should be noted that many of the concepts of intuitive time, interconnectivity and multiplicity throughout this paper are regarded as something other-than-the-norm in Western culture, are actually a baseline in non-Western cultures. Vanessa Watts in *Indigenous place-thought & agency amongst humans and non-humans* refers to what she calls *Indigenous Place-Thought* as the primary model for the foundation of knowledge in many Indigenous cultures.<sup>77</sup> For Watts, "*Place-Thought* is based upon the premise that land is alive and thinking and that humans and non-humans derive agency through the extensions of these thoughts."<sup>78</sup> This conceptual platform does not make dualist divisions where humans and nature are regarded as

<sup>&</sup>lt;sup>73</sup> Bergson, An Introduction to Metaphysics, 4-5.

<sup>&</sup>lt;sup>74</sup> Ibid., 5.

<sup>&</sup>lt;sup>75</sup> Henri Bergson, *The Creative Mind: An Introduction to Metaphysics* (New York: Philosophical Library, 1946), 165-168.

<sup>&</sup>lt;sup>76</sup> Henri Bergson, *Time and Free Will: An Essay on the Immediate Data of Consciousness* (London: George Allen & Company, Ltd, 1913), 122.

<sup>&</sup>lt;sup>77</sup> Watts, "Indigenous place-thought & agency amongst humans and non-humans", 20-34.

<sup>&</sup>lt;sup>78</sup> Ibid., 21.

discreet and incommunicable units. Watts furthers this by stating an inherent responsibility required to maintain this continuum, "[i]t follows that if, as Indigenous peoples, we are extensions of the very land we walk upon, than we have an obligation to maintain communication with it."79 The Fuselage video in the Slower Than Time Itself exhibition documents an illuminated figure's attempt to investigate its relationship with the land. However, the glowing figure appears so estranged from the landscape their presence alone acts as a disruption. Additionally, Watts writes that "the concept of time for us was never linear" and the utilization of what Bergson called intuitive time was at center of Anishinaabe and Haudenosaunee peoples understanding for millennia.<sup>80</sup> The *Fuselage* video confronts the difficulty of describing atemporality in a time based medium by utilizing the tenants of Slow *Cinema* which will be expanded upon in the third chapter. The reason for this paper's focus on primarily Western philosophies is because they directly speak to how technology interpolates our relation to the landscape – and concepts like Stiegler's *cinematic consciousness* gives technology the same degree of agency that Indigenous peoples give to the land. McLuhan's statement from *Medium is the Message* echoes this interconnectivity and communication but with technology: "the wheel is an extension of the foot, the book is an extension of the eye, clothing an extension of the skin, electrical circuits an extension of the central nervous system."81

To illustrate the construct of scientific time Gilles Deleuze, a scholar of Bergson, compares it to the structure of cinema. In cinema a duration is comprised of a linear sequence of still images all strung together. The process of isolating and counting, implies causation as one image leads to the next, then the next, which is an artificial construct yet often misinterpreted as the idea of progress.<sup>82</sup> Christian Marclay's twenty-four hour projection *The Clock* (2010) explores the subjective causality of sequential time. The film consists of a collection of disparate clips from seventy years of film archive, each scene showing a clock corresponding to the time of day the viewer is watching – in a way synchronising the past to the present and future. The process of compiling and linearizing thousands of non-sequential clips connects the non-

<sup>&</sup>lt;sup>79</sup> Watts, "Indigenous place-thought & agency amongst humans and non-humans", 23.

<sup>&</sup>lt;sup>80</sup> Ibid., 32.

<sup>&</sup>lt;sup>81</sup> McLuhan, The Medium is the Message, 21-25.

<sup>&</sup>lt;sup>82</sup> Gilles Deleuze, and Charles J. Stivale. "Image-Movement and Its Three Varieties: Second Commentary about Bergson" (Madison: University of Wisconsin Press, 1984), 82-83.

temporal elements into a proto-narrative. This event led to the next and so on. This action is a product of cultural conditioning and Stiegler's cinematic consciousness, indicative of how the habituation of using a tool implores our thought patterns.

Deleuze regards intuitive time as a complete inversion of our cultured relationship to time. Instead of being an objective fact that can be measured, time is entirely the opposite. Deleuze states that "the only subjectivity is time, non-chronological time grasped in its foundation, and it is we who are internal to time, not the other way round. That we are in time looks commonplace yet it is the highest paradox. Time is not the interior in us but just the opposite, the interiority in which we are, in which we move, live and change."83 The time that we perceive as humans can be remarkably different from measured scientific time. Despite the ubiquity of scientific time in Western culture, Bergson uses the example of the timescape of memory to articulate the difference between scientific time and intuitive time.<sup>84</sup> Unlike the linear and sequential progression of movie stills, memory can move backwards and forwards, pull and compress, and all manner of permutations far more complicated than being analogous to the fast forward/rewind controls of a movie. There are examples of cinema that strive to portray the time blending of memory, such as Hiroshima Mon Amour (1960) or Last Year at the Marienbad (1961). However, the film itself cannot evolve over time to the same degree as an oral story told from memory or a viewer's memory of these said films. As such, a film itself can never become autonomous in intuitive time, it is always tethered to its scientific referent.

Sleep is one of the last remaining linkage to the embedded celestial oscillations the industrial revolution began to erode. Like memory, dreams offer a perception of duration completely detached from scientific time. As such Crary notes that the value of sleep is often under attack – as "[s]leep poses the idea of a human need and interval of time that cannot be colonized and harnessed to a massive engine of profitability."<sup>85</sup> This nightly period of intuitive time and regeneration is slowly being subsumed by scientific time in the quest for greater productivity. In North American society, sleep has decreased "from ten hours in the early

<sup>&</sup>lt;sup>83</sup> Gilles Deleuze, Cinema 2: The Time Image (London: Athlone, 1989), 82.

<sup>&</sup>lt;sup>84</sup> Bergson, *The Creative Mind*, 164 -165.

<sup>&</sup>lt;sup>85</sup> Crary, 24/7, 10-11.

twentieth century" to "approximately six and a half hours a night" at the present.<sup>86</sup> Crary notes that sleep deprivation as a response to the pressures of capitalism, manifest through the acceleration of time, induces a "state of helplessness and compliance."<sup>87</sup> This state generates "a time that no longer passes, beyond clock time"<sup>88</sup> such that "nothing is in an actual state of rest."<sup>89</sup> While this state of atemporality of this time is reminiscent of intuitive time, it represents a mental state is closer to subservient than intuitive. As such Crary notes that the experience of time in dreams and sleep represents an "uncompromising interruption of the theft of time from us by capitalism."<sup>90</sup>

Another upset to scientific time Bergson referenced is the science fiction inspired *Twin Paradox.* Unlike the previous examples of subjective time this example could be measured objectively. It posits that if twins are separated, one lives a normal life on earth and the other boards a spacecraft that will travel close to the speed of light. According to Einstein's *Theory of General Relativity*, the closer one approaches the speed of light, the more time slows down. While the clock on the rocket ship would record a trip length of one year, the clocks on earth would record a much longer duration, perhaps one hundred years passing until the twin's return. This paradox would create two completely valid perceptions of time that would coexist and also contradict each other. The twin paradox suggests the possibility of two, and ultimately infinite scientific times, choosing which of the equally valid times becomes a challenge that Bergson uses intuitive time to alleviate. There are infinite variations of time because instead of time being like stills in a movie, a collection of discrete units, it is like an ocean. Everything blends with everything else and there is no direction of preference.

All of the aforementioned examples of memory, dreams and indigenous belief systems all resist measurement by scientific time. This posits the question of perceived value: because intuitive time cannot be objectively measured is it inherently more difficult to value? Tatsuo Miyajima's artistic practice focuses on the power of numbers to reveal and conceal meaning. His

- 88 Ibid., 8.
- <sup>89</sup> Ibid., 13.
- <sup>90</sup> Ibid., 10.

<sup>86</sup> Crary, 24/7, 11.

<sup>&</sup>lt;sup>87</sup> Ibid., 7.

signature material is the digital numerical counter which he employs in near infinite permutations. By isolating these counters from their traditional context and referent as in *Sea of Time (2016)*, or using clocks that produce numbers so unwieldy large it is impossible to comprehend their value such as *Clock for 300 Thousand Years (1987)*, Miyajima simultaneously rewards the scientific impulse to quantify while undermining the potential meaning these numbers could hold.



Tatsuo Miyajima, *Sea of Time-TOHOKU, 2017*, Site specific installation at Ishinomaki City, Japan, Waterproof LED, electric wire, IC, water.



Tatsuo Miyajima, *Clock for 300 Thousand Years*, 1987, Light Emitting Diode, IC, electric wire, line tape, etc. 173 x 630 x 5 cm

Miyajima has replaced meaning with a doctrine of three rules which function like a bridge from the mathematics, especially Quantum Mechanics, spiritual teachings in Buddhism and is also reminiscent of Bergson's multiplicity. His rules are as follows: <sup>91</sup>

- 1) Everything changes
- 2) Everything lasts forever
- 3) Everything is connected

The gaps between scientific measurement and affective perception become wider as one attempts to quantify something less tangible, such as happiness, progress, or success. For this reason, I use proto numerical counting systems in the sculptures in *Slower than Time Itself* to deconstruct the impulse to quantify. The output is never a discreet number but like intuitive time, a continual and amorphous stream of information. There is an inherent subjectivity to the output. As such, when responding to subjective states these clocks both alter the passage of time and simultaneously suggest and deny our ability to quantify that duration of time.

<sup>&</sup>lt;sup>91</sup> Michael Auping, Tatsuo Miyajima: Big Time (Fort Worth: Modern Art Museum of Fort Worth, 1996), 17.

The clock is a classic example of the Newtonian mechanical system where there is absolute linearity. It is built upon the idea of the absolute predictability and great engineering lengths are taken to mitigate the external forces of gravity, friction, heat, etc. Henri Poincaré was the first to suggest that Newtonian physics is shortsighted because it fails to account for chaos as an integral component which dictates the interaction of particles. Chaos Theory demonstrates for instance why it is impossible to predict the weather in long-range forecasts. While individual components such as water droplets can be isolated and their behaviour predicted with relative accuracy, when the particle is reintroduced into the network, non-linearity takes over and the interaction of countless variables are exponentially difficult to predict. Exponentially more powerful computers can only yield incrementally more accurate results.

Artist Jean-Pierre Gauthier explores the potential for meaning and knowledge buried within the chaos of his mechanical installations. In works such as *Battements et Papillons* (2006), the linear motion of the electrical motors and actuators that drives the sculptures is articulated through a system of mechanical linkages that induces disturbances and chaos into the system.



Jean-Pierre Gauthier, *Battements et papillons*, 2006, Interactive sound installation, Piano, bench, aluminum tape, motion detectors, microcontrollers, solenoids, relays, metal tension cables, motor and various objects, 162 x 143 x 214 cm.

As the long and delicate metal linkages are powered, their indeterminate bending and oscillations generate noise and chaos, the resultant output is irregular, unpredictable and seemingly organic.

Gauthier has created a hybrid life – the repurposed industrial objects are too whimsical and poetic to be machine yet too disembodied and fractured to be organic. Gauthier states that "chaos is [a] prime material" and it facilitates the apparent autonomy and agency the sculptures display in the way their sound, motion and marks colonise the gallery space.<sup>92</sup> The sculptures in *Slower Than Time Itself* parallel the works of Miyajima's numerical counters and Gauthier's installations, while movements are Newtonian in origin they syncopate to produce an environment of unpredictable and amorphous flux. The aesthetics of removing the protective case, traditionally covering technology, to expose the underlying mechanisms is an aesthetic both Gauthier and myself utilise to peer into the black box of the technological paradigm. They encourage one to search for multiplicity, poetry and the intuitive found within the speed and oscillations of a linear mechanism.

#### 3. Slowness

The pursuit of acceleration of contemporary life has enabled the automobile and speed centric ambitions to be cast into concrete, the resulting highway systems condition a population to perceive their landscape at highway speed. Travelling at one hundred kilometers per hour, space and time become compressed, resulting in distortions and omissions in perception. Built around these highways are the economics of consumer desire – gigantic signs to catch motorists attention and appeal to their emotional response to memory. Instead of building a society at the scale of the foot-propelled human, modern infrastructure is built around scale required by an automotive propelled human to safely engage their surroundings at one hundred kilometers per hour. The absurdity of scale felt being a pedestrian, at walking pace in any North American development created after this technologically focused shift is profound. James Kunstler's *The Geography of Nowhere* gave a searing analysis of how the modern North American landscape has been transformed and ruined by the shift of scale from humans to the automobile.<sup>93</sup> Modern cities are still built with automobile-centric infrastructure as a default aesthetic and an

<sup>&</sup>lt;sup>92</sup> Jean-Pierre Gauthier, Jean-Pierre Gauthier (Montreal: Musée d'art Contemporain de Montréal, 2007), 103.

<sup>&</sup>lt;sup>93</sup> James Howard Kunstler, *The Geography of Nowhere: The Rise and Decline of America's Man-Made Landscape* (New York: Simon & Schuster, 1994), 8.

understanding of this aesthetic is crucial to understanding how speed and technology mediate our relationship with the landscape.

The automotive perception of space and time directly parallels the physical limitations of cinema where the forward gaze is trained on a strict 24 frames per second tempo.<sup>94</sup> The automobile, like cinema, is limited to driving on a strict path, at a strict speed, in a strict direction, and all senses are mediated through the automobile, theater respectively. In contrast, walking facilitates a much more amorphous locomotion through space – the closest comparison to Bergson's *multiplicity* in physical perception. All spatiotemporal parameters are adjustable and the body's senses work as they were evolutionarily adapted to. Walking and driving both move through space but it is the walking tempo that is often regarded as more digestible. Both the automobile-like fixed trajectory of video and amorphous perception of walking are important temporal structures in understanding our relationship to the world around us as they bookend two culturally entrenched modes of seeing.

#### 3:1. Walking

Walking is one means to engage an aesthetic slowness Koepnick referred to and a common theme of landscape interaction in *Fuselage*. A pervasive tactic in nineteenth-century writing, the strolling paced romantic movement was in large part a reaction and rebellion towards the modern accelerated cadence.<sup>95</sup> Walter Benjamin famously quoted "[i]n 1839 it was considered elegant to take a tortoise out walking. This gives us an idea of the tempo of flanerie in the arcades".<sup>96</sup> Koepnick identified two varieties of walking – the difference between a romantic and a modernist artist taking a stroll. Koepnick cites Benjamin who walked to deconstruct

<sup>&</sup>lt;sup>94</sup> It should be noted that I will use the temporal structure of frames in cinema as a template for the temporal structure of video. While the latter is technically made of scanning horizontal bands of analogue information, the 30 times per second refresh rate of the video lines in addition to new technologies such as pixels and their refresh rate generate a temporal construction similar enough to film cinema to not necessitate a different temporal category.

<sup>&</sup>lt;sup>95</sup> Koepnick, On Slowness, 219.

<sup>&</sup>lt;sup>96</sup> Walter Benjamin, The Arcades Project (Cambridge: Harvard University Press, 2002), 422.

bourgeoisie modernism, "I walk therefore I no longer am."<sup>97</sup> In contrast, Jean-Jacques Rousseau posited a stance where "the human sensorium as a reliable compass for the relationships of I walk, therefore I think, therefore I am."<sup>98</sup> Walking enables one to access multiples perspective hidden within the present timescape – be it the romantic escapist trajectories of Benjamin or the modernist self-affirming strategies of Rousseau.

Janet Cardiff's *Walks* (1991-present) series employs the deliberate slowing and meandering of a walk as a gateway to multiplicity. To efficiently walk with a destination in mind one usually adopts a fixed and unyielding cadence, not unlike scientific time, but to meander like a flanerie is to experience a continuous flux of rhythms. Utilising the inherent duality of a headset audio tour guide found in museums, Cardiff employs the mixture of walking and temporal objects to modulate the perceiver's internal tempo and thoughts. The following are curator Daniela Zyman's words describing her experience of the Walk series from Cardiff's *The Walk Book:* 

The narration in Cardiff's walks, softly spoken into our ears, deals with the drifting effects of time. They help us - with uncanny success - to visualize dreams as a precursor to reality, or even an integral part of it. Equipped with headsets, walking around and following Cardiff's words and stories, we sense that past, present and future collapse into a dense, expanding field of possibilities.<sup>99</sup>

This experience is exemplary of aesthetic slowness to which Koepnick states of Cardiff's *Walks* series, "make us experience sound as a membrane decelerating our itineraries while connecting (and dislocating) body and environment, representation and perception, motion and affect."<sup>100</sup> The affect the *Walks* series produces has been likened with experiencing Proust's involuntary memory where "things that were once heard or once seen coincide with present experiences."<sup>101</sup> McLuhan writes of the power and primacy of sound as "until writing was invented, man lived in acoustic space: boundless, directionless, horizonless, in the dark of the mind, in the world of emotion, by primordial intuition, by terror. Speech is a social chart of this bog. The goose quill

<sup>97</sup> Koepnick, On Slowness, 219.

<sup>98</sup> Ibid.

<sup>&</sup>lt;sup>99</sup> Mirjam Schaub, Janet Cardiff: The Walk Book (Vienna: Thyssen-Bornemisza Art Contemporary, 2015), 11-12.

<sup>&</sup>lt;sup>100</sup> Koepnick, On Slowness, 223.

<sup>&</sup>lt;sup>101</sup> Schaub, Janet Cardiff, 17.

put an end to talk. [...] It was the basic metaphor with which the cycle of civilization began".<sup>102</sup> The use of technology to Cardiff is far beyond a document of experience – through it she explores the compressive forces it exerts upon experiential space as "text, voice book and CD all compete for the 'truth' of this loss".<sup>103</sup>

Francis Alys's works employ walking as a conduit for political discourse. Curator Cuauhtémoc Medina identifies walking as "an exercise equivalent to thinking, for Alys walking is the center of a personal discipline that displaces and orders his whole life."<sup>104</sup> This can be seen in Alys's As Long As I Am Walking (1992) where the artist writes a list reminiscent of an Alcoholic Anonymous dictum "as long as I am not walking, I'm not...". A notable performance work built around walking is The Collector (1990-1992) where the artist pulls a magnetic toy dog on wheels behind him as it attracts bits of metal through the historic center of Mexico City. The Collector and its metalized second skin appear to be a comical inversion of Boccioni's futurist metal armored fuselage from his Unique Forms of Continuity in Space. Instead of representing speed and precision its metal represents slowness and detritus – the developing world's aftermath of futurisms determinist race to modernity. Rather than being self-propelled of spectacular technical means, The Collector is towed in crude, pre-industrial ox cart fashion. In the same line, Crary states that "modernity, contrary its popular connotations, is not the world in a sweepingly transformed state."<sup>105</sup> Rather, it is a mosaic of "hybrid and dissonant experience of living intermittently within modernized spaces and speeds, and yet simultaneously inhabiting the remnants of pre-capitalist life-worlds, whether social or natural."<sup>106</sup> Medina explores Alys's premodern transmission of knowledge in these hybrid societies:

This action presents the street animal or urban parasite as an anonymous hero of resistance to modernization. It was also the beginning of a whole methodology, that of

<sup>&</sup>lt;sup>102</sup> McLuhan, *The Medium is the Message*, 29.

<sup>&</sup>lt;sup>103</sup> Schaub, Janet Cardiff, 27.

<sup>&</sup>lt;sup>104</sup> Francis Alys and Cuauhtémoc Medina, *Walking Distance from the Studio* (Mexico City: Antiguo Colegio de San Ildefonso, 2006), 22.

<sup>&</sup>lt;sup>105</sup> Crary, 24/7, 65.

<sup>&</sup>lt;sup>106</sup> Ibid., 66.

inserting subtle myths and spreading rumors in the city through walks designed as instruments of artistic production.<sup>107</sup>

The word-of-mouth spreading of rumours and myth-making is reminiscent of McLuhan and Cardiff's work with the mutable qualities of the aural as the original vehicle for knowledge transmission, before being standardised and canonised by visual means such as writing. This mode of transmission is closely aligned with intuitive time where myths progress and meander to evolve into both multiple and simultaneous messages.

Alys's sculptural and video works often challenge the implementation of a scientific determination of progress through a critique of modernization projects in developing nations. Works such as *Paradox of Praxis* (1997) or *When Faith Moves Mountains* (2002) demonstrate the difficulty of video or even one person's perception to experience a Gestalt view of scale, landscape, history or the time differential between the communication of an idea and its manifestation. They explore the difference of perception between that which is said and that which is felt – from pushing a block of ice around the sweltering city for hours until it finally melts in *Paradox of Praxis*, to rallying hundreds of volunteers together in a Sisyphean attempt to relocate an entire mountain as in *When Faith Moves Mountains*. Building from the mantra, "doing something leads to nothing",<sup>108</sup> Alys addresses the fear that one can work their whole life and still have nothing. While these actions may be perceived as nothing within the lifespan of a person, mountains are continually moving in geological time. Human perception is not capable of experiencing the duration required to enact noticeable change – despite one's determination. As such, Alys explores the upper limits of the temporal which is comprehensible to an individual.

On the other side of the durational continuum, *Tornado* (2000-2010) seeks to understand humanity by finding a moment of speed faster than humans can endure. In this video series, Alys chases small tornados and films the experience of entering these columns in and attempting to stand within the relative clarity of the eye for as long as possible. Surrounded by a cacophony of speed and movement the enveloping space is a place for exploration, perhaps of the churning yet stagnant violent conflicts that scour the land. By entering the tornado: "[I]n their transitory,

<sup>&</sup>lt;sup>107</sup> Alys, Walking Distance from the Studio, 18.

<sup>&</sup>lt;sup>108</sup> Ibid., 60.

precarious, incomplete nature, which transcends any obvious meaning, these works are metaphors, allegories, parables on the role of art as a catalyst for the alternative realities and simple possibilities"<sup>109</sup>. This experience is reminiscent of Paul Virilio's concept of *grey ecology* which describes the disorientation produced by accelerated speed and violence to which Virilio quotes author Paul Morand as "speed destroys colour: when a gyroscope is spinning fast everything goes grey".<sup>110</sup> Alys says this of his experience in *Tornado*: "I read somewhere, I don't know where, that concepts are timeless. Open, thus lasting, continuous. That they can't be told, that they are only actable. I say: how does one narrate a concept that can only be enacted in time?"<sup>111</sup> This sentiment is precisely the paradox Bergson's *multiplicity* attempts to negotiate – how does one describe atemporality within a temporal structure? The tornado is simultaneously fast and also slow, enveloping but also provides space for distance and reflection.

#### 3:2. Slow-Cinema

There is a genre of cinema that focuses on resisting and eroding the influence of the mediums traditional 24 frames per second projection requirement for film or 29.97 frames per second for video. *Slow-Cinema* focuses on duration as a primary material. Film theorist Ira Jaffe recognises "the time image as the thinking image" – the spacious and introspective counterpoint to the frenetic, high energy style by Blockbuster style cinema."<sup>112</sup> Blockbuster style cinema tends to overwhelm and sanitises the space for thought. This is reminiscent of Koepnick's identification of the dual pressures speed places on the individual. Fast action sequences, while thrilling, engage tunnel vision which numbs and blinds the viewer to everything outside the frame. In contrast, slow-cinema uses a different set of tactics in addition to the obvious slowness implied in its name. The camera is often still or slowly gliding with wide angle scenes as opposed to the close crops and fast cuts. A sense of distance and immensity of space and scale is

<sup>&</sup>lt;sup>109</sup> Francis Alys, *REEL-UNREEL*, Edited by Andrea Viliani. (Napoli: Museo Madre, 2014), 9.

<sup>&</sup>lt;sup>110</sup> Virilio, Open Sky, 59.

<sup>&</sup>lt;sup>111</sup> Francis Alÿs and Cuauhtémoc Medina, Michael Taussig. *A Story of Negotiation*, Edited by Cuauhtémoc Medina. (Mexico City: Instituto Nacional de Bellas Artes y Literatura Reforma y Campo Marte, 2015), 150.

<sup>&</sup>lt;sup>112</sup> Ira Jaffe, *Slow Movies: Countering the Cinema of Action* (New York: Wallflower Press, 2014), 4.

established. The characters often mirror the scale, being small in the wide frame. They are both physically small and emotionally small, utilizing a flat, affectless emotional range and their tendency to observe rather than act in the scenes. In these scenes, the plot departs from chronological time and gravitates towards stillness, void, space and time, death, minimalism, and unresolved elements. The long moments of pause and space in slow cinema allow one's gaze and mind to wander the scene – akin to strolling on a walk: "The time of waiting, of coming death, of death that is going to come, the cinema as made into one of its principal domains."<sup>113</sup> Slow-cinema "thus bring to the fore cheerless aspects of existence that are likely to worsen if ignored, but drape them in stillness, blankness, emptiness and silence."<sup>114</sup>

A formative figure in using duration as a technique for introspection is Chantal Akerman. Anne Moss writes that Akerman utilizes deliberate "long duration shots allowing for maximum engagement with reality not 'as it is', but as it interacts with the camera."<sup>115</sup> This is exemplary in *La Chambre* (1972) where the slowly rotating camera in Akerman's apartment "intentionally flaunts the 180 degree rule" where a camera pan practically never turns past 180-degrees to show what is behind the lens.<sup>116</sup> As such the camera "seems to occupy an impossibly omniscient point of view" allowing questions of who is looking and why to infiltrate the sense of passive viewership.<sup>117</sup> *Fuselage* employs a similar tactic of long durational shots and an observational gaze. The pulsing advertisements, illuminated buildings and light rolling off objects are just as animate as the illuminated figure. We are watching the illuminated figure watching other lights and figures with no apparent hierarchy. The attempt to communicate can be just as strange and awkward for the illuminated figure as it is for the viewer. The figure is searching for the same meaning, observing in the same way as the audience, wondering through a void that never gets resolved.

<sup>&</sup>lt;sup>113</sup> Sylviane Agacinski, *Time Passing: Modernity and Nostalgia* (New York: Columbia University Press, 2003), 96.

<sup>&</sup>lt;sup>114</sup> Jaffe, *Slow Movies*, 9.

<sup>&</sup>lt;sup>115</sup> Moss, Anne. 2016. "A Woman with a Movie Camera: Chantal Akerman's Essay Films" In *The Essay Film: Dialogue, Politics, Utopia*, by Papazian Elizabeth and Caroline Eades, 167-191. New York: Columbia University Press, 2016), 172.

<sup>&</sup>lt;sup>116</sup> Ibid., 174.

Werner Herzog's documentary *Cave of Forgotten Dreams* (2010) uses the same slow cinema techniques but in the murky and nocturnal world of the Chauvet Cave in Southern France. Herzog was given rare access to film Paleolithic paintings which were perfectly preserved and undiscovered until 1994. Koepnick states that the plodding visual exploration of ancient cave paintings in Southern France "embodies a temporality of beholding that repudiates the restless rhythms of today's visual culture."<sup>118</sup> These paintings are 32,000 years old yet appear to be of contemporary minds, not only in their accuracy but also the possibility that the painters duplicated legs and horns of animals in what appears to be a proto-cinematic strategy to depict motion through stillness. Additionally, Herzog narrates that "for these Paleolithic painters, the play of light and shadows from their torches could possibly have looked something like this [approximates with a flashlight] for them the animals perhaps appeared moving, living."<sup>119</sup> This act of modulating the landscape with light was a central focus in *Fuselage*, which is only possible through technological means, be it modern LED light panels or burning torches.

Both Herzog and Akerman are not a romantic return to the past ways of storytelling but a unique and contemporary reaction to the modern tempo. The allargando tempo offers a sympathetic platform for *Slower Than Time Itself* sculpture's temporal soundscapes and parallels some of the thematic and formal concerns such as a departure from chronological time, the refusal of any steadfast narrative purpose, confrontation with mortality, and stillness. It also actively engages in the struggle of depicting atemporality in a time-based setting. They temporarily inhabit what Jaffe describes as a "spatiotemporal lacuna" where time is safe to deviate from the scientific rigidity and into something more sympathetic to the human condition.<sup>120</sup>

<sup>&</sup>lt;sup>118</sup> Koepnick, On Slowness, 120.

<sup>&</sup>lt;sup>119</sup> Werner Herzog, *Cave of Forgotten Dreams* (Munich: Werner Herzog Filmproduktion, 2010), 14:04 – 14:23.

<sup>&</sup>lt;sup>120</sup> Jaffe, *Slow Movies*, 4.

#### 3:3. Wood, Stone and Anachronism

Both the construction techniques and materials employed in *Slower Than Time Itself* suggest a dislocation of time where something can be both contemporary and anachronistic. *Fuselage* juxtaposes the illuminated signs and armoured suit of light with the wondering the landscape to find oneself. The sculptural component's extensive use of wood and stone are paired with occasional disruptions of plastic and electricity to suggest the same discontinuity with time.

Giorgio Agamben explores these temporal distinctions when speaking about contemporariness as "a singular relationship with one's own time, which adheres to it and at the same time, keeps a distance from it. More precisely, it is that relationship with time that adheres to it through a disjunction and an anachronism."<sup>121</sup> Bruno Latour's comments mirror this when he wrote about the contradictory and piecemeal nature of the scientific system, proposing a move "not away but toward the gathering".<sup>122</sup> A *gathering* for Latour is a combination of all properties of a thing. To articulate this Latour gives an example of the semi-precious mineral Dolomite. Dolomite has scientific properties both chemical and geological but also affective properties generated by Dolomite's iridescent surface, in addition to historic properties of that iridescent affect induced upon past and present peoples, all of which merge without hierarchy to form a *gathering*.<sup>123</sup> Latour states that these gatherings require an open space to network – pulling from disparate fields as the gathering dictates. "A gathering, that is, a thing, an issue, inside a Thing, an arena, can be very sturdy, too, on the condition that the number of its participants, its ingredients, non-humans as well as humans, not be limited in advance."<sup>124</sup> While there is different terminology at use, Latour's gathering parallels Agamben's anachronism, what Koepnick has identified as the manifoldness and Bergson's multiplicity of an object. A point of view or philosophical grounding can never be one monolithic thing, it is only alive when it is a

<sup>&</sup>lt;sup>121</sup> Giorgio Agamben, *What is an Apparatus?* Translated by David Kishik and Stefan Pedatella. (Stanford: Standord University Press, 2009), 41.

<sup>&</sup>lt;sup>122</sup> Bruno Latour, "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern" *Critical Inquiry* 30 (Winter, 2000), 246.

<sup>&</sup>lt;sup>123</sup> Latour, Why Has Critique Run out of Steam, 234.

<sup>&</sup>lt;sup>124</sup> Ibid., 246.

gathering. This is in step with Koepnick's aesthetic slowness that fosters the coexistence and non-hierarchical relationship between multiple modes of time.

One aspect I have found generative of Latour's Dolomite example is using materials as an access point to the concept of *deep time*, referencing the timescape of the geological, measured in millions of years as a base unit. The emergence of the concept of *deep time* in the nineteenth century, a simultaneous romantic and enlightened mindset - saw the sublime hidden in the past of long-lost historical transformations. "Once limited to religious dogma to an existence to a few thousand years only, the earth's time was radically extended, geology and mineralogy serving as powerful telescopes into the remote past and as measuring sticks to access the gradual formation of the present."<sup>125</sup> However, this formation of the present is built upon inherent limitations. It is near impossible to have a working grasp of a million in one's mind, as witnessed in Miyajima's sculptures, so whilst abstract numbers can rationalize deep time, the experience of looking at the stars or geological formations often induces an emotive response of humbling immensity which is often more significant than the quantification. Stiegler mirrors this in saying "numberation [sic] is a loss of original meaning and sight."<sup>126</sup> Our grasp of time is an insignificant flash in the unquantifiable immensity of our surroundings. Deep time is a bottomless well. Virilio wrote of deep time as "a hidden perceptive that this is to be found everywhere beneath our feet cropping up, erupting here and there, through certain tectonic shifts, sometimes revealing above ground the mass of a time without memory".<sup>127</sup>

The use of suspended stones in the *Slower Than Time Itself* sculptural component employs a dual role. One is simply that of a suspended weight of energy potential which is sufficient enough to be incrementally released to power the clock mechanism over the course of a day. Secondly, the suspended stones are used as a way to access the well of deep time or Virilio's *time without memory*. Their apparent immobility is destabilized by their descent in the mechanism, too slow to be witnessed directly by human cadence, but obviously linked to and powering the visible and audible mechanics. The stone's apparent permanence, suspended in the air, is beyond a person's ability to comprehend without scientific extensions.

<sup>&</sup>lt;sup>125</sup> Koepnick, On Slowness, 86.

<sup>&</sup>lt;sup>126</sup> Stiegler, Technics and Time, 3.

<sup>&</sup>lt;sup>127</sup> Virilio, Open Sky, 122.

The wooden constructions supporting the stones and mechanical components of the clocks were chosen as another way to reference deep time, but in this instance *time with memory*. The deliberate use of traditional *wood-to-wood* joinery in lieu of modern mechanical fasteners such as screws references a material language of human's entanglement with wood which dates to prehistoric times. Although mechanical fasteners are faster and simpler, interlocking joinery is more durable and aesthetically elegant. Additionally, while the composition of modern materials changes frequently as new technologies yield new improvements, wood as a material is unchanged since its first usage by humans in prehistoric times. Accordingly, many of the interlocking joinery designs are of prehistoric in origins yet just as relevant today, even compared to modern methods. Like the paintings in Herzog's *Cave of Forgotten Dreams*, the wood facilitates access point to the liminal zone between a time with and a time without memory.

Additionally, wood is porous and responds to changes in the environment at a similar pace to human skin, expanding and contracting with humidity, weathering and wrinkling over seasons. While metal and plastics also change during exposure to the environment, their transformation is on a longer scale and of different properties to the skin. Wood was also chosen because of its archival properties where the growth rings record and display the passage of time between seasons, a division insignificant to stone but markedly effecting wood and skin alike. Wood was chosen for *Slower Than Time Itself* because of its durational similarities to the presentness of skin and generating an access point to a pre-historic material language. This parallels Koepnick's sentiment of Agamben's critique of contemporariness: "to be at once timely and untimely."<sup>128</sup> Far from anachronistic, wood and stone and are aesthetically slow, both infinite and finite. Touching fifty years of a tree's growth on a given board connects us to thousands of years of entanglement with materials and technology.

<sup>&</sup>lt;sup>128</sup> Koepnick, On Slowness, 5.

#### Conclusion

Is it possible to use a clock to escape time itself? Galileo and the scientific system in part developed from his research has created a stable and linear temporal system of *strongly marked intervals of equal length* for observing and measuring which has been so successful in facilitating the myriad of modern conveniences that it is easy to forget that scientific time is only one time among infinite. Dualist philosophies, underlying the paradigm of scientific time, which subsequently substantiates capitalism, has become what is arguably the primary culturalizing influence on contemporary life. Scientific time is a self-referential and isolated variable which the upholding of this paradigm locks the discourse into a dichotomous stalemate where humans and nature are incompatible. The works in *Slower Than Time Itself* build upon the aforementioned artists to sidestep this stalemate and explore a blending of scientific time and intuitive time. They negotiate the idea that Bergson's multiplicity as something inexpressible which can which can only be approached tangentially through metaphor. Koepnick's *aesthetic slowness* mirrors this approach which allows one to actively engage in multiple tempos without prioritizing the timescapes sympathetic to human cadence.<sup>129</sup>

For Stiegler, Western culture is inseparable from the tools we use to record and understand it, be it books, clocks or cinema. What other timescapes and ways of knowing are lost when only one measure for duration is used? While this question is unanswerable, Watt's writing about intuitive time in Indigenous societies points to where understanding might be found. The proliferation of clocks and their integration into daily lived experience engenders the monotemporal landscape of scientific time which entangles much of our daily lived experience. The noted affective acceleration of scientific time when conflated with economic systems generates a host of psychological pressures on the individual, most notable is an amnesia of the past, present and future.

Gained perception is not found through a shunning of speed or technology, as McLuhan put it "the attempt to do a job in a new environment with the tools of the old."<sup>130</sup> Rather it is

<sup>&</sup>lt;sup>129</sup> Koepnick, On Slowness, 10.

<sup>&</sup>lt;sup>130</sup> McLuhan, *The Medium is the Message*, 52.

achieved through, as Koepnick described, an embracement of contemporary speed to afford greater clarity of the present.<sup>131</sup> The value of the pulse beat in scientific time continues to exist, but always in the shadow of the pendulum. The impulse to arrange the world according to scientific structures implores us to isolate and quantify our surroundings – abolishing the networks, connections and continuums that generate meaning for non-Western cultures. As Latour would put it, a full understanding of something requires a move not towards discrete and quantifiable truths but *towards a gathering* of seemingly dissimilar elements. Is it possible to measure time without numbers and use science to describe intuitive duration?

<sup>&</sup>lt;sup>131</sup> Koepnick, On Slowness, 9.

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# Documentation of Art Practice

#### All artworks and photographs by Matthew Trueman



Fuselage. 2018. Video, 9:33.

In this work, I collaborated the cinematography roles with Matthew Dupont and Eeva Siivonen. I experimented with using the light suit as a performance piece at Museum London for Nuit Blanche 2017 but it could not transition past a glorified Halloween costume. One interesting discovery was everyone approached the illuminated figure with their illuminated phones as the first point of contact. Despite being made of LED strips, which our eye can easily see, the camera will overexpose the divisions and yield a fully illuminated figure.



*Aperture.* 2017. Wood, reclaimed furniture parts, furnace blower motor with wooden impeller, polycarbonate, LED lights, ventilation tubing, polyethylene particles. Dimensions approximately 4' x 4' x 5'. Dimensions change with tube positions.

Built from a failed do-it-yourself woodworking dust collector, this piece is designed to work as a metaphorical gear reduction. As the hundreds of particles pass through the closed loop system, the turbulence at the aperture causes one particle to be ejected and land on the floor. At that point, the gathering particles on the floor enter into a slower closed loop system propelled by the viewer and ventilation systems in the room. Eventually, the fallen particles will leave the room via the door, a second aperture, and turn the next environment into the third stage of the gear reduction.



*Horizon in Relief.* 2018. Wood, plexiglass, vinyl, electric motor, projector (not shown in photograph), video (2-hour duration), rope.

The final installation will replace the suspended light in this image with a suspended projector. The projector will display a slow colour transition through the orb, reminiscent of William James Turrell's colour works with modulating colour. The suspended disks have two layers of triangles that slowly rotated against each other. Their interference pattern generates a series of pulsing hexagons which is projected as a shadow on the colour modulation video. Because of the wood to wood contact in the hoops, the linear motion of the electric motor is disrupted and the resultant movement is irregular and seemingly organic.



*Instrument for Inquiry into the Melody of the Landscape*. 2018. Wood, rope, plastic and aluminum containers, guitar strings, Teflon bushings, brass, electric motor, stone. Dimensions: (varies with each installation). Installation in photograph 25' by 8'

The rope connects all the wheeled sonic instruments together and as it runs through the loop the various noises syncopate in and out of each other. The motor is geared down to spin at roughly 90 seconds per revolution. The resultant movement is slow enough not to notice at first glance, making the various clicks, plucks, scrapes and rattle sounds appear to originate of their own agency, like the calls of insects in a forest. Because of the slow speed of the mechanism and a dozen different diameter wheels blending in and out of alignment it is unlikely one will hear the same melody twice, even after months of listening. Plus, each location will dictate a different strategy of architectural intervention, making the appearance and sonic output site specific. Like John Cage's 4'33" it also welcomes the pre-existing environmental sounds into the composition.



*Escapement* (Series): *Deadbeat* (left), *Pin Wheel* (right). 2018. Wood, stone, rope, brass and steel rod, bearings, Teflon. Dimensions: Each piece is roughly 6' tall.

The images above show two sculptures in an ongoing series which are generated from the seemingly endless design variations of the escapement mechanism. This series will also include an example of a verge escapement which is not complete at the time of writing this. The suspended weight of the stone drives the mechanism and will last for roughly eight hours. While these sculptures have all the basic components of a mechanical clock I deliberately omitted hands such that these sculptures can isolate duration but do not count it. Installed the same room the different tempos, all of which generally slower than one second, blend in and out of each other through syncopated rhythms. Each escapement mechanism has its own sonic signature, like an instrument. This is reminiscent of the works of composer Grygory Ligeti's *Poème Symphonique For 100 Metronomes* but with more focus and on the variety of the physical mechanism which regulate scientific time.



*Horizon*. 2018. Wood, wheels, Fresnel lens from salvaged rear projection television, LEDs, Arduino. Dimensions: 3' x 4' x 3'.

This sculpture uses the Arduino coding from a modified LED fire simulator. The optics of the Fresnel lens generate the curved rays of light emanating to the center. While the output ticks slowly like a clock the visual data is seemingly ordered but also chaotic. The fire simulator uses the unpredictable interaction of four waveforms, yielding a seemingly organic output from mathematic functions. The aesthetic is reminiscent of early radar systems which allow one to extend their eyes through technology far into space.

# CURRICULUM VITAE

#### Education

- 2018 Masters of Fine Art (candidate), Western University, London, Ontario.
- 2010 Honors Double Major, Visual Art and Psychology, Western University, London, Ontario.
- 2005 Mechanical Engineering, Fanshawe College, London, Ontario.

#### Exhibitions

- 2018 (upcoming) Plus Art Fair. Group Show. Gladstone Hotel, Toronto, Ontario.
- 2018 **Slower Than Time Itself.** Solo Show. Artlab Gallery, Western University, London, Ontario.
- 2018 My Planet and Me. Group Show. Aeolian Hall, London, Ontario.
- 2017 Nuit Blanche. Group Show. Museum London, London, Ontario.
- 2017 **Sleight of Hands.** Group Show. Artlab Gallery, Western University, London, Ontario.
- 2017 You Can't Steal a Gift. Group Show. Satellite Project Space, London, Ontario.
- 2016 Keepers. Group Show. Forest City Gallery, London, Ontario.
- 2016 Blank Canvas. Group Show. Museum London, London, Ontario.
- 2016 Dirt. Solo Show. Westland Gallery, London, Ontario.
- 2016 **Environmentally Responsible Print Practice**. Group Show. McMaster University, Hamilton, Ontario.
- 2015 Annual Juried Exhibition. Group Show. Thames Art Gallery, Chatham, Ontario.
- 2015 So Long South Street. Solo Show. DNA Artspace, London, Ontario.
- 2014 Temporary Structures. Group Show. Westland Gallery, London, Ontario.

#### **Publications**

- 2017 So Long South Street, Huron and Erie Press, London, Ontario.
- 2016 ShiftEERP: Environmentally Responsible Print Practice Catalogue, McMaster Museum of Art, Hamilton, Ontario.

#### Awards

- 2016 Dean's Entrance Scholarship, Western University. London, Ontario.
- 2010 Dean's Honour Roll, Western University, London, Ontario.

#### Work Experience, Workshops, Talks and Residencies

- 2018 (upcoming) **General Residency Program**, I-Park Foundation, Inc., East Haddam, Connecticut.
- 2018 **Potato Power: Earth Hour Workshop**, Museum London, London, Ontario.
- 2018 **Graduate Teaching Assistant**, Introduction to Visual Arts, Western University, London, Ontario.

- 2017 Artist Talk, Westland Gallery, London, Ontario.
- 2017 **Graduate Teaching Assistant**, Introduction to Visual Arts and Introduction to Printmaking, Western University, London, Ontario.
- 2015- **Preparator**, Satellite Project Space, London, Ontario.
- 2017 Steering Committee, Print London Artist Collective, London, Ontario.
- 2015 **Print London Artist in Residence**, Satellite Project Space, London, Ontario.
- 2015 Painting and Print Making Instructor, Museum London, London, Ontario.
- 2014- Preparator, Museum London, London, Ontario.