

TEMPORAL SOVEREIGNTY IN MODERN INTERNATIONAL POLITICS

The contemporaneous rise of Western standard time with territorial sovereignty,  
and the significance of this relationship to sovereignty  
in modern International Relations

By

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## ABSTRACT

This thesis explores the relationship that the rise to hegemony of a Western standardised measurement of time has with the contemporaneous rise of the Western concept of territorial sovereignty. How does this relationship continue to shape debates over sovereignty in modern international politics both between states and within them, and is the concept of ‘temporal sovereignty’ an underappreciated topic in the field of International Relations? First, it explains how the standardised measurement of time has evolved throughout history and the factors that helped to facilitate moves towards a measurement of time based on precision and coordination of human activities. Second, it examines the link between territorial sovereignty and the standardisation of the measurement of time focussing on the imperatives of standardisation and the role states have in this process. Third, it describes the international time system as it exists today to understand what are the ‘rules’ and to what extent states conform to them. Finally, it discusses the concept of ‘temporal sovereignty’ and how states can and do use the standardisation of time to affect, influence, or control resources and people in three particular case studies: Canada, the Russian Federation, and the People’s Republic of China.

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## LIST OF FIGURES

Figure 1: Time zones of Russia (as at October 2011).....	53
Figure 2: Time zones of Europe (as at October 2011).....	55
Figure 3: Time zones of Canada (as at October 2011).....	59
Figure 4: Time zones of the United States of America (as at October 2011).....	60
Figure 5: Time zones of Central and South America (as at October 2011).....	63
Figure 6: Time zones of Africa and the Middle East (as at October 2011).....	66
Figure 7: Time zones of Asia (as at October 2011) .....	67
Figure 8: Time zones of Australia and the Western Pacific (as at October 2011).....	69
Figure 9: The International Dateline (as at October 2011).....	73
Figure 10: The International Dateline prior to 1844.....	75
Figure 11: Changes to the International Dateline 1884-1921.....	76

## TABLE OF CONTENTS

ABSTRACT .....	ii
ACKNOWLEDGEMENTS.....	iii
LIST OF FIGURES .....	iv
TABLE OF CONTENTS .....	v
INTRODUCTION: IS MEASURING TIME POLITICAL?.....	1
CHAPTER 1: WESTERN STANDARD TIME.....	6
The Great Time Divergence: Why Europe? .....	6
Temporal structuring of city life in late medieval Europe .....	11
How Western standard time left Europe .....	15
The Industrial Revolution: The commoditisation of time.....	17
The Industrial Revolution: The personalisation of time .....	20
The Industrial Revolution: The development of the standard ‘working week’ .....	22
The French Revolution: The re-education of society using time.....	24
Globalisation: Making the world smaller .....	28
Globalisation: Western standard time goes global.....	32
Western standard time: a global hegemon? .....	35
CHAPTER 2: TERRITORIAL SOVEREIGNTY .....	37
What is territorial sovereignty?.....	37
The Western origins of territorial sovereignty .....	40
Why states standardise .....	43
The economic benefits of standardising time .....	47
Will territorial sovereignty continue to matter for measuring time? .....	49
CHAPTER 3: THE INTERNATIONAL TIME ZONE SYSTEM.....	52
Time zones of Russia .....	53
Time zones of Europe .....	54
Time zones of Canada.....	58

Time zones of the United States .....	59
Time zones of Central and South America .....	63
Time zones of Africa and the Middle East .....	65
Time zones of Asia .....	67
Time zones of Australia and the Western Pacific .....	69
The International Dateline .....	72
Can time zones be a form of political resistance?.....	76
 CHAPTER 4: TEMPORAL SOVEREIGNTY .....	78
The fine balancing act that time standardisation creates .....	80
 Canada: Temporal sovereignty and regional identities.....	83
The historic basis of regional Canadian identities.....	84
How time standardisation empowers provincial state interests .....	88
 Russia: Temporal sovereignty and economic nationalisation.....	91
The economic importance of the Siberian far-east.....	92
How time standardisation empowers national interests .....	97
 China: Temporal sovereignty and imperial control .....	99
Post-Communist Revolution consolidation and state-building.....	100
How time standardisation empowers imperial interests.....	104
 CONCLUSION: THE POLITICS OF MEASURING TIME.....	107
 BIBLIOGRAPHY .....	110

## INTRODUCTION: IS MEASURING TIME POLITICAL?

It is a question that has seldom been asked in politics, but if we pause to consider whether we truly know what the time *really* is at any given moment we begin to wonder: who is measuring time for us? We unthinkingly rely on time-measuring devices to keep us informed: wall clocks, wristwatches now even our mobile phones. But can they be trusted? Do they need to be trusted? Isn't the measurement of time today relatively uncontroversial? An objective fact governed by some scientific principles? A fact that is ultimately apolitical in nature?

A closer inspection of the issue reveals a surprising truth, that in spite of its centrality to twenty-first century life, the political nature of the way time is measured has had comparatively little consideration within the field of Political Science. Studying the measurement, standardisation, and regulation of time in modern society has instead been left to sociologists, historians, and economists. But the measurement and standardisation of time does have a political dimension worth examining within Political Science: The rise of Western standard time is contemporaneous with the rise of territorial sovereignty, and the relationship between the two concepts has resulted in the modern sovereign state taking responsibility for the standardisation of the measurement of time.

Time zones while being a means of practical human interactions necessitated by global interaction are also symbolic markers of the extent and limits of the sovereignty of modern states based upon the concept of territoriality. Because the modern state bases its claim of sovereignty on its ability to control physical geographic space, the measurement of time has also been infused with a sovereignty component which impacts the design of the international time zone system both between and within states.

At present, the body of literature on territorial sovereignty has had little “space for time”<sup>1</sup> despite territorial sovereignty being a major part of Political Science and International Relations. Territorial sovereignty - also referred to as territoriality - is seen as a defining feature of modern international relations, the standardised measurement of time as related to this concept has been relatively neglected in comparison. Yet, the way time is measured, standardised, and regulated can often reveal something about the theoretical and practical nature of territorial sovereignty of particular states and this has implications for the actions of states both domestically and within the international environment.

These symbols are important. They can easily convey messages of power, status, and identity. Even time-measuring devices that are intrinsically useful can still bear emotional and ideological weight.<sup>2</sup> For example, the wristwatch is both useful in telling its user the current time but also is a symbol of a “time-consciousness” and of an industrial society dominated and organised by the precise measurement of time. So what is the time, really? Why do we put so much trust into a tiny machine strapped to our wrists? Does anybody really know who ‘governs’ the measurement of time in the modern world?

I argue that the answer to these questions lay in looking at the relationship between the standardised measurement of time and territorial sovereignty. Part of this relationship is the role that one of the most powerful organisers of human society plays in standardising and regulating the measurement of time: the modern sovereign state. Why it took on this role, and what does the standard measurement of time in a particular society tell us, if anything, about the politics of that society. Because the standardised measurement of time is related to territorial sovereignty through its construction by the state, the design of the international time zone system is not just a rational and scientific means to better coordinate human activities but is also a means of claiming sovereignty, upholding territorial integrity, and increasing the power of the modern state over the people within its borders.

Before delving into this subject further, it might be helpful to first explain what ‘time’ means in the context of this thesis. The standardised measurement of time refers to the ‘measuring’ of time with *precision* and for the *coordination* of human

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<sup>1</sup> Andrew R. Hom. “Hegemonic metronome: the ascendancy of Western Standard time.” *Review of International Studies*, 36, (2010): 1146.

<sup>2</sup> Douglas Freake. “The Semiotics of Wristwatches.” *Time & Society*, 4, (1995): 68.



activities. It is a temporal ordering which is “linear” and a “progression of rational, consistent, infinitely divisible units measured by an engineered timepiece”.<sup>3</sup> Time has always been measured and used for organisational purposes but it is the drive for greater precision and coordination, particularly during the Middle Ages in Western Europe, that allowed for the development of a ‘time-discipline’ in European society, that would eventually spread across the entire world.<sup>4</sup> This thesis is not about the nature or structure of time, which is a subject for physicists, rather this thesis is about how human societies have measured and standardised time, and used it to organise complex social systems such as the economy, politics, and social institutions.

Internationally the measurement of time is a highly complex and socially constructed system regulated and standardised entirely at the state level. The international time zone system is a matter of convention for there are no intergovernmental organisations or international treaties that set out how a state must regulate or use time either internally or externally. Yet, human beings are able to successfully organise their activities globally with a high degree of precision and coordination. For example, time zones, arguably the most important feature of the international time system, have no rules *per se*, rather there are practical conventions which apply in order to build some sort of workable system. This leads to a more precise question for International Relations and hence for this thesis: To what extent do political considerations, in particular considerations related to sovereignty, influence the standardisation of the measurement of time both within and between modern sovereign states?

Jonathan Betts of the Royal Observatory in Greenwich, London, the home of the Prime Meridian of the international time zone system, stated that: “It is an ultimate statement of power to show your people that you have control over nature in this way”.<sup>5</sup> Betts was referring to the recent decision by the Kremlin to restructure time zones in Russia to bring the Russian people of the Far East ‘temporally’ closer to Moscow in the west but with seemingly little consideration of how this might impact these people’s ability to coordinate time with their immediate international neighbour, China, who likewise have their own time zone eccentricities. In the

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<sup>3</sup> Hom, “Hegemonic metronome: the ascendancy of Western Standard time,” 1146.

<sup>4</sup> Gerhard Dohrn-van Rossum. *History of the Hour – Clocks and Modern Temporal Orders*. (Chicago: Translated by Thomas Dunlap, The University of Chicago Press, 1996): 1.

<sup>5</sup> Penny Spiller. “Changing Times in Russia.” *BBC News Online*, November 13, 2009. Retrieved November 7, 2011 from <http://news.bbc.co.uk/2/hi/europe/8357630.stm>

current international time zone system two people can be standing right next to each other geographically but be temporally hours apart in the same way two people can be standing right next to each other yet be in two different countries. This situation is more common than you might think and can have some implications for issues such as national identity and economic efficiency.

To address these questions, first, I will explain the ways in which the standardised measurement of time has evolved throughout history. What factors helped to facilitate moves towards a measurement of time that is based on precision and coordination of human activities? It will do this by providing a history of the rise of 'Western standard time' by explaining the 'Great Time Divergence,' when the West overtook all other civilisations to become the centre for a new way of measuring and standardising time. It will then show how this new 'time discipline' helped facilitate changes to late medieval European urban life in economics, ideology, transportation, and communication that would eventually spread across all societies on earth.

Second, it will examine the link between the rise of territorial sovereignty and the standardisation of the measurement of time focussing on the imperatives of standardisation and the role states have in this process. How did the development of the Westphalian conception of sovereignty aid in the incorporation of the measurement of time into the ambit of the modern sovereign states' jurisdiction? This will be done by looking at the contemporary literature on territorial sovereignty to provide a definition, then tracing the history of geographic territory as the basis of sovereign legitimacy, explaining how standardisation is an essential part of accumulating power in a monopoly actor, before discussing the relevancy of territorial sovereignty in the contemporary world.

Third, it will describe the international time system as it exists today to understand its socially constructed nature. What are the 'rules' of the time zone system and to what extent do states conform to them? It will do this by explaining nineteenth century efforts to create 'world time' and the ways in which the modern sovereign state continues to obstruct this idea. How do issues of sovereignty in the international system affect the design of the time zone system?

Finally, it will discuss the concept of 'temporal sovereignty' and how states can and do use the standardisation of time to affect, influence, or control resources and

people in three particular case studies: Canada, the Russian Federation, and the People's Republic of China. The spectre of separatism haunts all three of these states and in all, time zones have become symbolic representations of the struggle for territorial integrity in an international system that recognises geographic space as the only basis of sovereign legitimacy. I seek to promote the idea that a kind of 'temporal sovereignty' is as important as its territorial counterpart in modern international politics.

## CHAPTER 1: WESTERN STANDARD TIME

Nearly all human life being ordered by precise mechanical measurements of time is a feature of modernity so natural to us now that it might seem like life was always ordered this way. Even by the end of the Middle Ages, German philosophers wrote of the *Zeitordnung* or ‘ordering of time’ which governed nearly every aspect of life in the urban areas of Western Europe. But in the long history of human civilisation, the drive for precise and coordinated standard measurements of time is relatively recent and isolated to one particular culture. Prior to the historical process of modernity that began in Europe, the measurement of time was less precise and its standardisation remained a matter for local communities rather than national governments. The ways to measure time and the standards of time were as diverse and multiple as languages. Beginning in Western Europe, the process by which a single conception of how to measure time was developed and began to be spread to other societies eventually becoming the only way to temporally order life by the beginning of the twentieth century through to the present day.

This chapter will chronicle the rise of ‘Western standard time,’ from the monasteries of Western Europe to a position of unchallenged global dominance becoming in one scholar’s words “modernity’s most global hegemon”.<sup>6</sup> By doing so this chapter will show why Western standard time has a political dimension to it that once coupled with territorial sovereignty, allows for standards of time to become part of debates over sovereignty, territorial integrity, and separatist movements in modern international politics.

### *The Great Time Divergence: Why Europe?*

Prior to the Middle Ages, the way time was measured in Europe was largely based on monitoring natural phenomena such as the movement of the sun or the position of certain constellations in the night sky. This required only very primitive time-

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<sup>6</sup> Hom, “Hegemonic metronome: the ascendancy of Western Standard time,” 1148.

measuring technology which also had the side effect of making the standardisation of the measurement of time over wide geographic areas difficult because natural phenomena can be observed differently in multiple geographic locations. Poor communication technology also compounded the problem of early standardisation. But the need for standardisation was considered unnecessary as both travel and human interaction over long distances was no faster than a horse's gallop. The absence of a precise and coordinated standard measurement posed no practical problem to early medieval life in Europe or anywhere else in the world for that matter. The populations and economies of the world were predominantly agrarian, meaning the most important time measurements were the passing of the seasons which took months to occur. Nevertheless, some institutions did begin a process of time measurement standardisation which would set Europe on course towards an ordering of time different from the rest of the world.

The Roman Catholic Church was the most influential time measurement standardising institution of early medieval Europe. The Church had inherited the time standards of its predecessor, the Roman Empire, and structured their liturgy of prayer around them. The monastic day was divided into twelve 'hora', the modern day hour, and was followed by the monastic night which was also divided into twelve periods of equal length.<sup>7</sup> Daily prayer which occurred at fixed intervals of time in three equal lengths. Because monastic life required important activities to occur daily rather than within longer periods, reliance on the movement of the sun or the stars, or the passing of the seasons was insufficient to measuring and then maintaining a precise and coordinated standard of time.

Because of this self-imposed need for punctual daily scheduling, the medieval monks began to build on the horological technology they inherited from Greco-Roman Antiquity to create clocks that could for fill their needs. Types of time-measuring equipment during antiquity were of course dominated by the measurement of the movement of the sun. The sundial, a device that merely monitored the movement of the sun was entirely useless at night-time or when the sun's rays were obstructed. They were common throughout the Roman Empire and by the third century B.C., by using sundials it was possible to standardise time to calculate latitudinal positions on the globe, something that would only be put into practical use once transportation

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<sup>7</sup> Rossum. *History of the Hour – Clocks and Modern Temporal Orders*, 30-2.

technology improved centuries later.<sup>8</sup> This technology was inadequate for their needs of the medieval monks, so monasteries began to invent better time-measuring devices.<sup>9</sup> Time-measuring had to be freed from its reliance on natural phenomena in order to create reliable and consistent standard measurements. This was first made possible with the use of a clepsydra, or water clock, which could provide consistent time measurements during the day and night so long as the machine was adequately maintained and continually monitored. The problem of constant monitoring was then partially overcome with the development of the wheel clock that required less frequent maintenance and was almost certainly developed by monks in early medieval Europe.<sup>10</sup>

The desire to order the activities of the day according to a precise daily schedule meant the monastic time standard would set the monks apart from the rest of European society. It would intentionally divide the monastic world from the outside world. Monasteries using the wheel clock then began to construct bell towers and would peel the bells at regular intervals based on the readings of their time-measuring devices to signal to the monks, and also the local clergy or pious laity outside the monastery walls, what the hour was, precipitating particular types of behaviour, for example eating, praying, or sleeping.<sup>11</sup> The sound of the bells throughout the towns and near-by countryside spread a cultural consciousness of the monastic hours far beyond the intended audience.<sup>12</sup> In effect, the bell ringing became a public good and allowed urban workers to order their own work according to daily schedules. Efforts by the monks to live according to their own standard of time ironically saw the emergence of similar uses of standardised time measurement in the rest of European society. The monks standardised the measurement of time in order to structure their daily religious life, but the consequences permeated throughout other parts of society that could use the various signals that the

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<sup>8</sup> Rossum. *History of the Hour – Clocks and Modern Temporal Orders*, 20-1.

<sup>9</sup> By the nineteenth century, the sundial was an endangered species of Antiquity and had been surpassed definitively by the mechanised clock according to A. J. Turner, *Of Time and Measurement*. (Aldershot: Variorum, 1993): 309.

<sup>10</sup> Rossum. *History of the Hour – Clocks and Modern Temporal Orders*, 47.

<sup>11</sup> Ibid., 31-2; There is in fact no word for “clock” as a time-measuring instrument instead the word “clock” comes from the Old French word “clocke” which means “bell”, even the German word “glocke” means “bell”; David Christianson. *Timepieces: Masterpieces of Chronometry*. (Buffalo, New York: Firefly Books, 2002): 25.

<sup>12</sup> Jo Ellen Barnett. *Times Pendulum: The Quest to Capture Time – From Sundials to the Atomic Clock*, (New York: Plenum Trade, 1998): 49.

monasteries made available to structure their own life with precision and coordination.

If we looking at the development of clock technology in other cultures and compare it to Europe before the Middle Ages, the centre of advanced time-measuring technologies was further eastward. In fact, the history of these advancements in clock technologies can provide a fairly accurate indication of the centre of power in the world or at least what nation was the most technologically advanced civilisation at any given period of history. The nation with the most advanced time-measuring technology also tended to be the most powerful nation in the world at the same time.

Before the Roman Catholic Church began to develop a monastic time standard in Europe, the great clock makers were the Chinese who had already developed an accurate astrological clock, accurately measuring the movement of constellations and planets, 400 years before one was developed in Europe during the Renaissance.<sup>13</sup> China being the centre of advanced clock technology prior to the Middle Ages is actually unsurprising. China was miles ahead of other civilisations in terms of its scientific advancement in other fields. While Europe ‘stumbled around in the dark’ after the sacking of Rome in the fifth century, China had developed not only the most advanced clocks but other technologies like paper, gunpowder, the compass, forensic science, the automated door, porcelain, and even the fork. But by the end of the medieval period, Western Europe had firmly established itself as the new centre of advance clock making, a position it would retain for five centuries.

What has been thought to explain this great divergence in time-measuring technologies between the Chinese and Europeans during the Middle Ages is the respective cultures of each civilisation. As a Confucian culture, the Chinese held the measurement of time in much the same regard as their European counterparts did prior to the Middle Ages. The seasons were the most important temporal rhythm and the annual calendar more important than the hourly clock. It was the Chinese mandarin astronomers at the Imperial Court that drove the improvements in clock technology in China to predict movements in the heavens in an effort to predict the future, not in an effort to better schedule their daily lives. As horologist David Christianson notes that in medieval China “...the mechanical clock – a logical successor to the highly mechanized and complicated Chinese astronomical water

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<sup>13</sup> Christianson. *Timepieces: Masterpieces of Chronometry*, 16.

clock – did not materialize”.<sup>14</sup> The Chinese had no self-imposed need for a daily schedule that the Christian European monks had. Hereafter clock technology in Europe and in China would diverge significantly allowing Europe to reap the benefits of standardised time measurement earlier, in a historical sense, than China did.

Clock technology advancements remained stagnant in China through the Middle Ages becoming part of the long relative decline of Chinese scientific advancements that some scholars attribute to the stifling influence of new ‘Confucian text only’ imperial examinations taken by the mandarin class. Chinese culture shunned the precise mechanical measurement of time while in Europe, culture would embrace it for in China it was simply not important to know what time it was at any given moment. While with its basis in Christianity, European culture created a need to know what the precise measurement of time was at any given moment. The regimented and artificial daily routine Christian monks imposed upon themselves dictated in what method they were to glorify God. This artificial daily routine created by religious monks simply did not exist in Chinese society until the arrival of the Jesuits to China in the eighteenth century.<sup>15</sup>

Closer to Europe, the understanding of measuring time as a means to worship a higher power was a concept which the Islamic empires of the eighth century had sympathy for and it is likely that it was from them that Europe received some very early time-measuring technology. The Islamic peoples also had a similar way of structuring daily life for worship but for them the intervals were not of equal length, because they used the position of the sun in the sky as a reference point.<sup>16</sup> Precision was not as important. And this continued reliance on natural phenomena, using the sun and moon, was prescribed into Islamic law and continues until this day. Judaism too had imposed on itself a demand for three acts of prayer per day that required some sense of daily time-consciousness. But again, precision was not self-imposed by Jewish culture.

What made the European divergence in time-measuring technology different was its cultural attitude towards measuring time precisely and with the objective of coordination of activities. With Christianity, in order to pray at precise times coupled

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<sup>14</sup> Christianson. *Timepieces: Masterpieces of Chronometry*, 16.

<sup>15</sup> Catherine Pagani. “Eastern Magnificence & European Ingenuity.” *Clocks of Late Imperial China*. (Ann Arbor: The University of Michigan Press, 2004): 65.

<sup>16</sup> Rossum, *History of the Hour – Clocks and Modern Temporal Orders*, 30.



with a desire to perform this worship as a group activity, required coordination, it drove the creation of a unique type of daily time consciousness: time discipline. It was deemed not acceptable to simply pray at a set number of times per day, it was essential to pray at specific times of the day, punctually.<sup>17</sup> And so advancements in clock technology that emphasised measuring time precisely and for coordinating human activity occurred in medieval Europe rather than in other civilisations because of the influence of Europe's Christian culture. A culture that demanded monks observe a daily prayer rhythm that was punctual. This unique time discipline helped to transform medieval European society and helped lay the organisational foundations that would eventually help to transform the entire world.

### *Temporal structuring of city life in late medieval Europe*

During the late medieval period, nine out of ten Europeans still lived on the land making knowledge of precise hours unnecessary. Europeans were still primarily on agrarian rhythms until the Industrial Revolution. The clock itself did not create an interest in more precise time measurement throughout all European society; it was an interest in measuring time more precisely for religious purposes that helped spur advances in clock technology. In secular society, the technology available for measuring time only contributed to the adoption of the concept of standardised time measurement as a social construction indirectly and unintentionally.<sup>18</sup>

Where improved and more accurate time measurement began to impact the routines and activities of daily secular life was in the Italian city states where "merchant time" began to order the life of the urban European.<sup>19</sup> The Italians then produced three important advances in time measurement technology during the late Middle Ages: First, the tower clock, which allowed non-religious groups of society to standardise their time. Second the house clock, which brought time measurement into family life and daily routine. And finally, the automated bells which dramatically lowered the cost of maintaining a time-measuring device. In Italian

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<sup>17</sup> Christianson. *Timepieces: Masterpieces of Chronometry*, 19.

<sup>18</sup> Richard Biernacki. "Time Cents: The Monetization of the Workday." *In NowHere – Space, Time and Modernity*, by Roger Friedland and Deirdre Boden. (Berkeley: University of California Press, 1994), 62.

<sup>19</sup> Landes, *Revolutions in Time: Clocks and the Making of the Modern World*, 58.

cities, life ordered by time discipline was influencing a new era of art, learning, and science.<sup>20</sup>

Major advances in clock technology by urban dwellers along with the decline of the Catholic Church as the prime standardiser of time measurement saw the rise of the European ruler as an important force in the standardisation of measuring time, as they sought to take advantage of the benefits a society could receive through precise and coordinated time measurement. Technology continued to improve as wealthy European princes brought clockmakers into their courts. Under this patronage, the clockmaker had more time to experiment and further develop his craft.<sup>21</sup>

The measurement of time in a late medieval city in Europe was usually done by a public clock specifically constructed and maintained for the use of anyone, not just the monks. Increased commerce, the rise of towns, and the bureaucracy that accompanied them, all meant the public clock slowly began to dominate the daily routines of life in the thickly settled urban areas.<sup>22</sup> The importance of the public clock to helping to standardise the measurement of time in medieval Europe become apparent when clocks became communally financed in their construction and on-going maintenance, and the time signal they emitted became relevant to civic statutes and legal documents.<sup>23</sup> The public clock helped to transfer control over some aspects of life from the Church to secular authorities. Public clocks were expensive and complex to construct plus constituted an on-going expense of paying someone to adjust, lubricate, and repair the machine.<sup>24</sup> They were so expensive that the only institutions that could reasonably afford them were the Church and the public corporate bodies like the Italian communes as they were the ones benefiting financially from the increased revenues of a rising population and increased trade as a result of the end of the Black Death.<sup>25</sup>

Early on there were tensions between church time and an urban merchant time. Now that observance of time discipline affected the lives of lay people as well as the religious, the question of who should get to regulate the standardisation of time began to arise. It has been argued that the challenging of ecclesiastical authority over

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<sup>20</sup> Christianson. *Timepieces: Masterpieces of Chronometry*, 27.

<sup>21</sup> Christianson. *Timepieces: Masterpieces of Chronometry*, 31-5.

<sup>22</sup> David Landes. *Revolutions in Time: Clocks and the Making of the Modern World*. (Cambridge, Massachusetts: The Belknap Press of Harvard University Press, 1983): 58.

<sup>23</sup> Rossum, *History of the Hour – Clocks and Modern Temporal Orders*, 129.

<sup>24</sup> Christianson, *Timepieces: Masterpieces of Chronometry*, 27.

<sup>25</sup> Landes. *Revolutions in Time: Clocks and the Making of the Modern World*, 70-1.

the standard measurement of time by the growing commercial class in the urban areas of Europe has roots in the rise of Protestantism's challenging of the Catholic Church's authority in other spheres of European life.<sup>26</sup> The urbanites wanted to 'track' and 'use' time rather than simply 'receive' or 'perceive' it like their rural counterparts. The Catholic Church argued that the role of standardising and measuring time belonged to God and his emissaries on earth and should not be the object of lucre.<sup>27</sup> Yet the urban merchants began to utilise their standardised measurement of time with greater mathematical precision to calculate things such as interest rates on financial loans based on the belief that time itself had a monetary value. Merchant time became associated with usury and was therefore a mortal sin in the eyes of the Catholic Church not to mention a direct challenge to their role as the sole standardisers of time measurement in Europe. Measuring time themselves became a symbol of the urban Protestant's challenge to the Catholic Church's authority.<sup>28</sup> The Church tried to maintain the function of measuring time for as long as possible. But what had started as a way to glorify God was fast becoming important to other aspects of secular urban life as well. Soon local rulers were in co-operation with the Church for the construction and maintenance of local public clocks but before long the Church had been completely displaced in rich urban areas as the sole source of accurate time measurement.<sup>29</sup> The Church would continue to play a major role in time standardisation in particular locales. For example, in the French town of Troyes, the cathedral, as the bishop's church, had the right to ring its bells first to signal the time intervals of the canonical hours. The bells were the only time-keepers for this town but municipal governments in other towns were also setting up their own clocks.<sup>30</sup>

A public clock became a symbol of urban modernisation and a sign of a city's openness to innovation and wealth. Soon clocks were not just for the use of the Church but considered by lords and princes as prestigious displays of their own power and this created conditions for greater competition in time-measuring technology.<sup>31</sup> Advanced clock technology once again shifted from Catholic southern

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<sup>26</sup> Hom, "Hegemonic metronome: the ascendancy of Western Standard time," 1155.

<sup>27</sup> Jacques Le Goff. *Time, Work, and Culture in the Middle Ages*. (Chicago: Translated by Arthur Goldhammer, The University of Chicago Press, 1977): 30-1.

<sup>28</sup> Hom, "Hegemonic metronome: the ascendancy of Western Standard time," 1156.

<sup>29</sup> Rossum, *History of the Hour – Clocks and Modern Temporal Orders*, 144.

<sup>30</sup> Joseph Gies and Frances Gies. *Life in a Medieval City*. (London: Arthur Baker Ltd, 1969): 46.

<sup>31</sup> Rossum, *History of the Hour – Clocks and Modern Temporal Orders*, 140-1.

Europe to a new culture, by the late medieval period it was the Protestant German states of central Europe who were considered the great clock-makers and who were the first to internalise into their culture the revolutionary impact time had on the structure of their society. By the end of the fourteenth century, German cities had been subjected to the *Zeitordnung*. German urban life was governed by time-ordering rules and the everyday question: “What is the time?” started to be heard in the popular vernacular more often.<sup>32</sup> Working life in the cities started to be regulated by statute and regulated by time signals given by the local public clock. In some jurisdictions weavers, armourers and purse-makers could not begin their craft before five o’clock in the morning, their work considered noisy and a fire hazard. Coppersmiths and needle-makers had to cease work by eight o’clock at night for similar reasons, and blacksmiths could only work between eight in the morning and five at night.<sup>33</sup> Soon *Zeitordnung* had spread to local government, the urban markets, schools, and preaching. In terms of standardised time measurement, urban areas constituted highly regulated and structured environments in which people now lived. The rural areas were increasingly becoming the only places where time was not measured so intensely, although for some of the peasantry still close to monasteries or churches, the ringing of their bells was a way for them to know when their work day begun or ended with some degree of certainty.<sup>34</sup> By the late Middle Ages, regular bell ringing based on precise time measurements had become such a natural part of European life that many falsely believed its origins were placed far back in history despite their actual recent occurrence.<sup>35</sup>

The transformation of the temporal order of life, which marked the end of medieval period, was not a deliberate process but rather “a largely anonymous process that began with many small steps in various and mutually independent spheres of urban life”.<sup>36</sup> The Europeans of that period did not know they were being subjected to a time discipline nor did they know the consequences it would have on their civilisation. This developing Western standard of time as the great regulator of daily life was becoming part of the human experience in Europe and would soon be a key part of a great revolutionary force known as Modernity.

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<sup>32</sup> Rossum, *History of the Hour – Clocks and Modern Temporal Orders*, 233.

<sup>33</sup> *Ibid.*, 235.

<sup>34</sup> Anthony Aveni. *Empires of Time – Calendars, Clocks, and Cultures*. (New York City: Basic Books, Inc., Publishers, 1989): 93.

<sup>35</sup> Rossum, *History of the Hour – Clocks and Modern Temporal Orders*, 40.

<sup>36</sup> *Ibid.*, 271.

### *How Western standard time left Europe*

From the European experience of clock technology and the standardisation of time measurement, Andrew R. Hom argues that the rise of another concept - territorial sovereignty – together with the rise of time discipline or what he calls ‘Western standard time’ are connected and that the concept of territoriality and the drive to standardise a precise and coordinated measurement of time “buttressed the edifice of political modernity” as it spread across the globe.<sup>37</sup> Its production began in medieval Europe and would be further refined during the Enlightenment. Once established, Western standard time was then transplanted to other civilisations.

The “modernisation” of non-European society came to be associated with the imposition of Western standard time, an imposition and transplantation made possible by other technological advances which were themselves dependent on modern time-measuring devices. For example, improvements to navigation, long distance travel, and improved communication technology all benefited from better coordination produced by more precise measuring of time. Hom concludes that Western standard time constitutes “modernity’s most global hegemon” having achieved an almost unquestioned position as the only way to measure time across diverse cultures.<sup>38</sup> He argues that Western standard time is both a manufacturer and a product of Modernity.

The term Modernity refers to the multitude of modes of life or organisations which emerged in Europe from about the seventeenth century onwards and which subsequently become more or less worldwide in influence.<sup>39</sup> The modernisation process took centuries to ‘complete’.<sup>40</sup> Studying the processes of Modernity involves a “discontinuist” interpretation of modern social development whereby modern social institutions must be viewed as distinct from all types of traditional ones. The modes of life brought into being by modernity swept away traditional types of social

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<sup>37</sup> Hom, “Hegemonic metronome: the ascendancy of Western Standard time,” 1156.

<sup>38</sup> Ibid., 1168.

<sup>39</sup> Anthony Giddens. *The Consequences of Modernity*. (Stanford: Stanford University Press, 1990), 1.

<sup>40</sup> In the first phase starting roughly in the sixteenth century and lasting until the end of the eighteenth, people were just beginning to experience “modern” life. In the second phase beginning with the French Revolution in the 1790s, people were firmly in a revolutionary age one in which personal, social and political life was changing rapidly. The third phase, at the beginning of the twentieth century modernisation encompasses the entire world, Marshall Berman, *All That Is Solid Melts Into Air – The Experience Of Modernity*. (New York City: Simon and Schuster; reprinted 1999 [Tenth edition], 1983).

order in an unprecedented fashion, altering some of the most intimate and personal features of day-to-day existence, including the measurement of time.<sup>41</sup>

To identify the discontinuities which separate modern from traditional social orders, Anthony Giddens looked at the pace of this change, the scope of this change, and the nature of the new ‘modern’ institutions. According to Giddens, Modernity occurred at an “extreme” pace with a scope that “crash[ed] across virtually the whole of the earth’s surface”, establishing institutions that simply had never existed before.<sup>42</sup> Time and space were transformed by Modernity. All pre-modern cultures had ways of understanding and measuring time in some form. But measuring time had always been linked with place – natural phenomena - and was therefore usually “imprecise and variable”. No one could tell the time of day without reference to a socio-spatial marker making “when” intrinsically connected to “where” in the measurement of time. Western standard time is different and modern because it is precise and independent of place and therefore a social institution quite distinct from the multitude of traditional ones.

What Modernity did to time was to separate it from nature. Time measured by a clock in medieval Europe helped in this separation and expressed a “uniform dimension of ‘empty’ time” in which precise designation of “zones” of the day could be constructed and used for specific purposes.<sup>43</sup> Once measuring time was no longer dependent on natural phenomena, it could be used to organise new or re-organise existing social institutions in society. Another effect Modernity had on standardising the measurement of time was that it helped create a basis on which to control geographic space. A railway timetable, for example, is not merely a temporal chart denoting standardised measurements of time but is actually a time-space ordering device, indicating when and also where geographically a train will be located.<sup>44</sup> Time, along with many other traditional social relations, were “lifted out” of their local context and restructured across indefinite spans of time-space in a process Giddens called “disembedding”.<sup>45</sup> The appeal of Western standard time was its

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<sup>41</sup> Giddens, *The Consequences of Modernity*, 3-4.

<sup>42</sup> Ibid., 6.

<sup>43</sup> Ibid., 17.

<sup>44</sup> Ibid., 19-20.

<sup>45</sup> Ibid., 21; Anthony Giddens has written extensively on the notions of time and space making the argument that sociology has never come to grips with their importance. Giddens states “most social analysts treat time and space as mere environments of action and accept unthinkingly the conception of time, as mensurable clock time, characteristic of modern Western culture” (Giddens, *The Constitution of Society: Outline of the Theory of Structuration*, 110).

paradoxical capability to be extremely mathematically precise but also functionally flexible in its use.<sup>46</sup> Western standard time is a tool that could be used for specific objectives because it is largely a social construction not a scientific measurement based on the natural world.

To illustrate how the expansion of the European time discipline to more spheres of human life as well as non-European cultures helped shape or reshape aspects of modern life, the following is a number of different processes of modernity that were affected by Western standard time. They show how Western standard time helped changed traditional social institutions related to work, ideology, and social interaction allowing the measurement of time, once it was combined with territory sovereignty, to become a means to carry out political objectives.

#### *The Industrial Revolution: The commoditisation of time*

The social institutions in which Western standard time changed uses of time the greatest was its role in organising activities related to work in modern society. The Industrial Revolution, starting in Great Britain in the middle of the eighteenth century, saw the further spread of ‘merchant time’ throughout Europe and then beyond. By the early eighteenth century, England was able to overtake the Germans who had previously had the most advanced and precise clock technology.<sup>47</sup> Historian Jacques Le Goff noted that those cities that led in the growth of the textile trade, the first branch of a capitalist manufacturing export economy, also led the way in clock technology and public clock installations.<sup>48</sup> Dan Thu Nguyen has theorised that “the change in economic organisation has its origins in the mutation of the measurement of time and of the instruments thereof”.<sup>49</sup> Western standard time allowed for a more precise measurement of time and transformed how society viewed time. In the modern era, time became a commodity and the basis for a new model of economic development.

Industrialisation had a commoditised conception of time at the very heart of the economy. According to Hom, Western standard time is both the creator and master

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<sup>46</sup> Dan Thu Nguyen. “The Spatialization of Metric Time: The Conquest of Land and Labour in Europe and the United States.” *Time Society*, Vol. 1, No. 29, (1992): 46.

<sup>47</sup> Aveni, *Empires of Time – Calendars, Clocks, and Cultures*, 89.

<sup>48</sup> Biernacki. “Time Cents: The Monitization of the Workday,” 63.

<sup>49</sup> Nguyen, “The Spatialization of Metric Time: The Conquest of Land and Labour in Europe and the United States,” 34.

of modern labour relations.<sup>50</sup> Marxist historian E. P. Thompson wrote of the change in the concept of time that took place in the decades just prior to the Industrial Revolution in England. His work is the study of how precise measuring of time affected labour discipline and the inward apprehension of time by the English working class. He noted the most important change was the dramatic move from a work-time that was task-oriented to one which was time-oriented.<sup>51</sup> In other words work became the buying and selling of one's time not the buying and selling of one's potential economic output.<sup>52</sup> The change to time-oriented work made measuring smaller units of time more important. Once time became accepted as a commodity, its effects spread throughout society and it became something that needed recording, valuing, and monitoring. While some scholars understand this change as the result of new manufacturing techniques, Thompson argued, on the contrary, that the change to a work oriented industrial time involved broader cultural changes around the concept of time in society.<sup>53</sup> Without the *Zeitordnung* of the late Middle Ages and the influence of the Christian cultural time discipline, the appearance of new manufacturing inventions and techniques would not have necessarily lead to the dramatic changes caused by the Industrial Revolution. It seems clear that the standardisation of time measurement helped to create an industrial economy but is also a product of the economic, social, and political conditions driving industrialisation in Europe.

From Thompson's work, others have taken the framework he established and linked changes in the measurement of time to other dimensions of social institutional change happening in different societies. Paul Glennie and Nigel Thrift attempted to "recast" Thompson's framework of labour changing to time-oriented work in England by critiquing his narrow focus on the English workplace as the only source of industrial time discipline. They point to other equally important sources of enforcing a new concept of time based on its commoditisation including: trade and marketing, the church, the structure of proto-industrial, artisanal, and agricultural work, communications, civic administration, the law, recreation and consumption

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<sup>50</sup> Hom, "Hegemonic metronome: the ascendancy of Western Standard time," 1157.

<sup>51</sup> E. P. Thompson. "Time, Work-Discipline & Industrial Capitalism." *Past and Present*, No. 38 Dec., (1967): 60.

<sup>52</sup> For example a milliner might have worked until he had produced five new hats, now, he was employed to work for 12 hours making hats; the output of quantity of hats superseded by the input of his time – the new commodity.

<sup>53</sup> Paul Glennie and Nigel Thrift. "Reworking E. P. Thompson's 'Time, Work-Discipline and Industrial Capitalism'." *Time Society*, 1996, 5: 275, (1996): 277.



changes, and other forms of disciplinary institutions such as prisons, the work-house, and hospitals.<sup>54</sup> All these institutions and social processes required a certain level of time-consciousness to operate effectively and provide further support to the argument that it was European cultural forces that led to precise time-measuring technological advances.

The contemporary political economists of the Industrial Revolution noted the implications of a Western standardised measurement of time as a means towards greater economic efficiency and a change in relations between different groups in society. The subject permeates even the great works of the political economy of Industrial England by both Adam Smith and Karl Marx. In 1776 Smith in his *The Wealth of Nations* highlights the productivity advantages of increasing divisions of labour in the manufacturing of commodities.<sup>55</sup> Specialisation is not just a more efficient use of available labour, but also a more efficient use of available time.<sup>56</sup> Industrial time's revolutionary economic impact lay, not in its increase in the total numbers of hours worked by the working population, by in the establishment of regularity and intensity of work allowing for greater economic planning.<sup>57</sup> Increased attention and regulation of time created greater potential for growth in the new industrial society.

A century later Karl Marx in *Das Kapital* stated that the value of the commodity of labour "...like that of all other commodities, is determined by the working-time necessary to its production".<sup>58</sup> From Marx's standpoint, "labour-power" is the commoditised time bought and sold by the capitalist and the worker. But what is

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<sup>54</sup> Glennie and Thrift, "Rewriting E. P. Thompson's 'Time, Work-Discipline and Industrial Capitalism'," 282-3.

<sup>55</sup> Adam Smith. (*An Inquiry into the Nature and Causes of the Wealth of Nations*. (London: Penguin Classics [Reprinted 1982], 1776); The specialisation process, whereby total production is divided among workers by task, increases productivity by saving time spent on a single worker switching between tasks. That single worker's focus on one task over time also increases his skill and dexterity in that task. This constitutes the underlying shift in the importance of time in economics.

<sup>56</sup> However, Smith is guilty of a conflation of the value of labour with the value of time, placing labour as the "real measure of the exchangeable value of all commodities" in Smith, *The Wealth of Nations*, 26; Smith writing in the 1770s, did not foresee the evolution of time into a common tradable commodity; this occurred over the next century.

<sup>57</sup> M. A. Bienefeld. *Working Hours in British Industry – An economic history*. (London: London School of Economics and Political Science, 1972): 72.

<sup>58</sup> Karl Marx. *Das Kapital – A Critical Analysis of Capitalist Production, Volume I*. (Moscow: Foreign Languages Publishing House [Reprinted 1958], 1867): 231; Marx understood the radical new role time was playing in the development of capitalism. Labour and time are intrinsically connected to one another but are still distinct concepts. There appears to be a common conflation of labour and time when we discuss Marx's work. However he understood the difference between what could be described as task-oriented labour and time-oriented labour; wage labour is primarily the latter.

being exchanged is the value of the time of the worker, not his labour *per se*. If labour-power alone were being exchanged, the worker would continue to work continuously until his task was completed (task-oriented work) instead he is being rented – his time sold – for fixed periods within which his labour is at the discretion of the capitalist (time-oriented work). What the worker is really selling to his employer is the value of his time or the price of the working-hour as determined by the market. If the capitalist can choose to pay the worker for the hours he decides to make him work, rather than, what was more common at the time, pay the worker for a fixed and certain period of time, the capitalist “...can now wring from the labourer a certain quantity of surplus-labour without allowing him [the labourer] the labour-time necessary for his own subsistence”.<sup>59</sup> The capitalist comes to control the worker through the time commodity market. Also, in his chapter on ‘The Working-Day’, Marx regards the determination of what constitutes a working-day as “...a struggle, a struggle between collective capital, i.e., the class of capitalists, and collective labour, i.e., the working-class”.<sup>60</sup> Without limits on the working-day, the power in the market of labour-power (i.e. time) resides with the buyer in his effort to extract more and more surplus-labour. When the worker “...consumes his disposable time for himself, he robs the capitalist.” For Marx, efforts to expand the working-day to as long as possible benefit the capitalist at the expense of the worker.<sup>61</sup> The measurement and standardisation shifts from a struggle between the Catholic authorities and the Protestant urban centres to a struggle between capitalist and workers in a modern industrial economy.

### *The Industrial Revolution: The personalisation of time*

The market of exchange for commoditised time made the impartial and objective measurement of time far more important. Previously it had been the wealthier interests in communities who controlled the public clock and therefore the standard of time in the lives of the local peoples. The commoditisation of Western standard time and the proliferation of affordable personal time-measuring devices allowed the measurement of time to be “privatised” and monitored by individuals along with

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<sup>59</sup> The real working day becomes abnormally lengthened as the labourer must wait for permission to sell his time for which the capitalist, keeping him in a state of limbo, becomes the monopoly buyer. Marx gives an example of a riot that occurred in 1860 by workers in the building trade who resisted attempts by their employers to pay them per hour in Marx, *Das Kapital*, 546.

<sup>60</sup> Marx, *Das Kapital*, 234.

<sup>61</sup> Ibid., 233.

institutions. The partiality of the public clocks that did not conform to this common standard began to be questioned. Just who controlled the measurement of time became a major part of industrial life. Because the Industrial Revolution turned time into a tradable, individualised commodity, whoever controlled its standard of measurement was more important than ever before. If the buyer of time also owned and operated the public clock there was an incentive to manipulate the clock in order to ensure they received the most from the time they had bought from the seller. At the beginning of the Industrial Revolution, time measurement controlled by factories was frequently abused in this way. Douglas Freake in his research on the history of the wristwatch highlights the words of an eighteenth textile mill worker who E. P. Thompson also quoted: “There was nobody but the master and the master’s son who had a watch...There was one man who had a watch...It was taken from him and given into the master’s custody because he had told the men the time of day...”.<sup>62</sup> As clock technology continued to improve by the late seventeenth century, the cost of owning and maintaining a private clock decreased and the role of the public clocks began to decline as everyday people realised they could ‘keep’ their own time.<sup>63</sup>

However it was a slow process for working people to learn how to defend themselves against employers who wanted to extract as much value as possible out of the time they had bought. Who controlled time was part of some of the earliest industrial strike actions. The organisation of the standard of time in factories attracted increased public attention.<sup>64</sup> Factory clocks were sometimes attacked as symbols of the tyranny of industrial forms of work representing humanity’s mastery of time only to use it to enslave others in wage-labour bondage. With the rise of trade unionism, workers began to negotiate over how their time was to be measured, who was to measure it, and how it was to be communicated to them.<sup>65</sup> But it was not until working people started to measure and keep time themselves did this problem of control subside. Historian David S. Landes writes:<sup>66</sup>

Where people had once depended on the cry of the night watch, the bell of the church, or the turret clock in the town square, now they had the time at home or on their person and could order their life and work in a manner once reserved to

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<sup>62</sup> Douglas Freake. “The Semiotics of Wristwatches.” *Time & Society*, 4, (1995): 72.

<sup>63</sup> Rossum, *History of the Hour – Clocks and Modern Temporal Orders*, 316.

<sup>64</sup> Ibid., 317.

<sup>65</sup> Ibid., 317-8.

<sup>66</sup> Landes, *Revolutions in Time: Clocks and the Making of the Modern World*, 89.

regulated communities. In this way, privatization (personalization) of time was a major stimulus to the individualism that was an ever more salient aspect of Western civilization.

The proliferation of inexpensive personal timepieces allowed workers to keep their *own* time in order to check that the factory's time adhered to the same standard.<sup>67</sup> Time-measurement was leaving the control of institutions - churches, cities, factories - and was moving to the exclusive control of individuals. In line with the development of commoditised time where a person's time was bought and sold, the effective personalisation of the measurement of time reinforced a sense of individual empowerment and worth in European culture. As Landes highlights, Western standard time helped reinforce the principle of individualism in the post-Enlightenment political philosophy of Western Europe.

This individualisation of time-measuring had the added consequence of instituting and promoting the time discipline of punctuality beyond the medieval institutions that had developed it.<sup>68</sup> Precise measurement of time did not just change the economic organisational foundations of European society it also changed the political foundations by re-organising the power of different interests in society. By privatising the measuring of Western standard time, it was harder for the factory clocks, or for that matter other institutions, to exert as much control over the standardisation of time. Individuals helped to keep the time collectively with institutions. People also began to order every aspect of their own personal lives according to the measurements of Western standard time.

#### *The Industrial Revolution: The development of the standard 'working week'*

By the nineteenth century, workers had largely won the struggle over who measured time, all that remained was the struggle over who would standardise and enforce the measurement of time across society. For example, the concept of a standardised 'working week' adhered to by society was unheard of prior to the Industrial Revolution. When people worked was once governed by dynamic markers of time like necessity, custom, and observance of religious holidays. Today, the 'working week' has been ingrained into our society as being the daylight hours of Monday

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<sup>67</sup> Hom, "Hegemonic metronome: the ascendancy of Western Standard time," 1159.

<sup>68</sup> Douglas Freake. "The Semiotics of Wristwatches." *Time & Society*, 4, (1995): 72.

through until Friday, this was only standardised as a result of the Industrial Revolution. But what institution would decide and enforce what the new standard working week would be? It was only the mediation of the state that solved this issue.

As mentioned, in the past, rules around standards of time and work had been left to custom, tradition, and community regulation and had always been about restricting the time periods available for labour. The new organisational structures caused by the Industrial Revolution provided new incentives to extract as much time out of workers as possible in order to maximise available output in industrial production. New labour relations reinforced this model; employers sought to limit the ability of the workers to be idle and therefore in their eyes unproductive. In some countries the state stepped in and took responsibility for regulating and standardising the time related to working hours including the regulation of maximum working hours per day. Prior to that intervention, workers had constrained choices. In return for wages, workers surrendered to the employer complete command of their labour for fixed periods of time. Workers were punished for even the smallest infraction, in some cases being locked out of factories for being a few minutes late or being fined an hours' wages for being only five minutes late.<sup>69</sup>

Expanded franchises and the rise of trade unionism made the working week a political issue and the modern state was forced to act as mediator or risk societal unrest. Factory owners sought to 'discipline out' of the workers the observance of traditional holidays and irregular hours of work that were associated with the deeply ingrained agrarian task-oriented work rhythms. Most workers still observed "St. Monday" a traditional day of rest for rural people which subsequently led to long hours were worked on Thursdays and Fridays to compensate. Long work days at the beginning of the Industrial Revolution were common partially due to the "long weekends" that workers took.<sup>70</sup> Using testimonials from proceedings at the Old Bailey Criminal Court in London, Hans-Joachim Voth notes the steady decline through the eighteenth century of St. Monday as a day of recovery from the weekend by working people. At the beginning of the nineteenth century the chances of someone working on Monday had increased by 40 per cent.<sup>71</sup> It eventually became

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<sup>69</sup> Gregory Clark. "Factory Discipline." *The Journal of Economic History*, Vol. 54, No.1, (1994): 131-2.

<sup>70</sup> Ibid., 134.

<sup>71</sup> Hans-Joachim Voth. "Time and Work in Eighteenth Century London." *The Journal of Economic History*, Vol. 58, No. 1, (1998): 37.

too expensive for workers to take Mondays off if their employer still expected them to make up the hours over the course of the week.<sup>72</sup> For employers, it was not so much the number of hours worked that was the issue, but rather the irregularity and unpredictability of the work week that St. Monday caused. The concept of a standard working week came into being in order to increase economic efficiency in industrial English society.

One of the effects of the standardisation of the working week was better co-ordination of society so as to make more efficient use of capital and labour in the new economy.<sup>73</sup> The British state through the passage of multiple Acts of Parliament began to regulate the maximum time people could work in factories in Great Britain. In addition to limiting the abuse of workers and employment conditions for children, the Factory Acts also established some *regularity* for industrial time. The first Factory Act to try to establish regular working days in the textiles industry was passed in 1833. It was not until the passage of the 1847 Act that the 'Ten Hour Day' for women and children became law.<sup>74</sup> The 'Ten Hour' movement had been demanding legal restrictions on the hours of mill operations for decades and illustrates an example of how time standardisation had become a political issue for which the state would eventually take action.<sup>75</sup>

#### *The French Revolution: The re-education of society using time*

One important but often overlooked consequence of the standardisation of the measurement of time was the possibilities of enforcing through the mechanical clock and annual calendar, new ways of thinking and new ways of behaving. The most ambitious attempt at trying to use the measurement of time to re-educate society was the creation of the French Republican Calendar in France in the 1790s. This reform tried to 'rationalise' time based on Enlightenment faith in reason and its antipathy towards religious authority. It failed, and lasted only twelve years but it serves as an important example of how measuring time can impact thinking and behaviour in this case to modernise society ideologically.

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<sup>72</sup> Douglas A Reid. "The Decline of Saint Monday 1766–1876." *Past & Present*, No. 71 May, 1976, (1976): 101.

<sup>73</sup> Clark. "Factory Discipline," 137.

<sup>74</sup> Eric J. Evans. *The Forging of the Modern State: Early Industrial Britain 1783-1870* (3rd edition). (Harlow: Pearson Education Limited, 2001): 490.

<sup>75</sup> Howard P. Marvel "Factory Regulation: A Reinterpretation of Early English Experience." *Journal of Law and Economics*, Vol. 20, No. 2, (1977): 381.

The units of measure of time are largely arbitrary. Although conventional units of measure were embraced, they could be designed to suit the wants and needs of whoever was powerful enough to control them. If Modernity created a political awakening in Europe, time measurement found itself part of this new mass social upheaval. The promotion of Enlightenment ways of thinking about the human experience instilled widespread confidence in Western civilisation of their own culture but also a sense of alienation from their traditions.<sup>76</sup> This is partially the reason for the failure of the most ambitious and comprehensive attempt to reconstruct the established standard measurement of time in Republican French society. Alongside the economic revolution in Great Britain, a political revolution was happening on the European continent in France. Along with weights and measures (a process that slightly pre-dates the French Revolution),<sup>77</sup> the measurement of time was also subjected to the same driving forces that produced the metric system. The reformers of the French Republican decimalised the measurement of time constituting the most radical reform of time measurement in Europe since the Romans invented the 24 hour day.

Like many gestures in the Republican Revolutions of the eighteenth century, the revolutionaries emulated Ancient Roman ideas and “taking a leaf of calendar change from the book of Caesar” this new rational calendar was drawn up and implemented in France.<sup>78</sup> The old temporal order in France was “obliterated” and on 24 November 1793, the National Convention put into effect a standard of time measurement that included six distinctive features:<sup>79</sup>

- A new chronological dating framework to begin from September 22, 1792 as Year One thereby abolishing the birth of Jesus Christ as the first year of the Common Era.
- A new annual cycle that started on the 22<sup>nd</sup> of September rather than the 1<sup>st</sup> of January.

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<sup>76</sup> David Christian. *Maps of Time: An Introduction to Big History*. (Berkeley: University of California Press, 2004): 350.

<sup>77</sup> George Gordon Andrews. “Making the Revolutionary Calendar.” *The American Historical Review*, Vol. 36, No. 3, 1931: 515-6; Proposals for new decimalised standards of time can be found in almanacs produced around the time, much of whose ideas were actually implemented by the formers.

<sup>78</sup> George Gordon Andrews. “Making the Revolutionary Calendar,” 532.

<sup>79</sup> Eviatar Zerubavel. “The French Republican Calendar: A Case Study in the Sociology of Time.” *American Sociological Review*, Vol. 42, No. 6, (1977): 870.

- The standardising of the length on a ‘month’. The year was to still have 12 months but they were to be of 30 days and each had a special 5 day period (6 days in a leap year) to make up for the discrepancy.<sup>80</sup>
- The abolition of the seven day week and the establishment of a week of 10 days in its place.
- The day was decimalised and divided into 10 hours of 100 minutes and a minute of 100 seconds.
- The introduction of new nomenclatures for days of the year. The year had four “seasons” which correlated to autumn, winter, spring and summer. Each day had its own object of identification (e.g. 22 September is *raisin* or day of the grape).

Seeking the near total destruction of the ways of the *Ancien Régime*, the reformers in France were not averse to making changes that were both ideological and symbolic.<sup>81</sup> According to sociologist Eviatar Zerubavel, the French Republican Calendar had ideological purposes to promote: secularisation, naturalisation and rationalisation. For secularisation, the de-Christianising of France was a major political objective of the republican movement. The traditional calendar, which was heavily based on Christian temporal markers, was seen as giving the Catholic Church the power of “temporal regulation of social life”. Changing the temporal order cut at the very heart of the Church’s social power in French society. By naming the months and the days after features and objects of nature, the reformers of the Calendar sort to associate it with some basis in the natural world and to give it a veneer of legitimacy. For rationalisation, the Calendar was to promote ideas of science and reason over superstition and belief, so uniformity of time units made “sense”.<sup>82</sup> Thus the Calendar was supposed to be both ‘natural’ and eminently rational.

However, the French Republican Calendar was abolished by Napoleon in 1806. One of the main reasons for its failure was its inability to establish roots in French republican society. The total obliteration of the old temporal customs was simply too revolutionary. The French people never accepted the new calendar as legitimate and the overemphasis on de-Christianisation simply alienated society. Efforts to

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<sup>80</sup> This was a concept adopted from the Ancient Egyptians.

<sup>81</sup> Zerubavel, “The French Republican Calendar: A Case Study in the Sociology of Time,” 871.

<sup>82</sup> Ibid., 871-4.



undermine the foundations of what we know as Western standard time were destined to produce poor results. The French reformers sought to reinvent time measurement completely, rather than build upon existing conventions. Their failure has not stopped groups from trying to resurrect decimalised time elsewhere at different period of history. The exact same calendar would briefly reappear in the short life of the Paris Commune in 1871. It would be brought up at the 1884 International Meridian Conference, and appeared every now and then when states were considering weights and measurement standardisation throughout the nineteenth and twentieth centuries in the Americas. No serious attempt has been made to introduce decimalised time because it is for the most part a solution to a non-problem, the existing standard measurement of time was more than capable of meeting the needs of society, and because decimal time, unlike the metric system, has no strong institutions actively championing its adoption.<sup>83</sup>

By adopting this unique, calendar and time standard, Republican France also isolated itself from the rest of the world including the rest of Europe. Converting French Republican time to the more common Western standard time was quite the challenge.<sup>84</sup> Historian George Gordon Andrews argues that the Republican Calendar was passed by the National Convention too hastily and without enough debate as to its merits or likelihood of success. He argues that the haste was the product of the National Convention paying more attention to another important republican issue: the trial of the deposed King Louis XVI.<sup>85</sup> Nevertheless, the French Republican Calendar provides an example of how the framework of Western standard of time, while being in many respects a social construction of somewhat arbitrary measurements, is still rooted in cultural behaviours and concepts. Attempts to quickly and completely reform these conventions were doomed to fail because Western standard time is neither completely scientific nor rational.

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<sup>83</sup> Vera, Hector. "Decimal Time: Misadventures of a Revolutionary Idea, 1793–2008." *KronoScope* 9.1-2, (2009): 45-8.

<sup>84</sup> Zerubavel, "The French Republican Calendar: A Case Study in the Sociology of Time," 875.

<sup>85</sup> Andrews, "Making the Revolutionary Calendar," 524-5.

Western standard time and the sophisticated horological devices associated with it, spread to new parts of the world from the end of the medieval period. This was facilitated by two important changes in European society: improving the techniques used in ship navigation and, along with the invention of the steam engine and telegraph, allowing for the coordination of long distance travel and communication. Western standard time and precise time-measuring technology were part of a range of factors related to Modernity that enabled the dawn of the European Age of Imperialism. Combining these factors made possible more rapid human travel over long distances. The shrinking of distance depended upon, but also facilitated crucial developments in time measurement and management allowing Europe to achieve dominance over world affairs for centuries.

Calculating accurate measurements of longitude at sea had been one of the great mysteries of the pre-modern age, “a riddle to seamen, a challenge to scientists, a stumbling block to kings and statesmen”.<sup>86</sup> Without the ability to place themselves on a map, sea navigators, prior to the modern age, relied on the strategy of hit-and-miss or following the shoreline for safety. Finding the first longitude was relatively easy; measuring the altitude of the North Star above the horizon was a reasonably accurate way to establish this. However this was only helpful when ships were in the northern hemisphere, once they were in the southern hemisphere, navigation by the North Star was not an option.<sup>87</sup> But, since the earth turns continuously on a single axis, along a given longitude one can see the same sun, moon, and star positions. The only difference is that one sees these things at different times. All that was needed to calculate accurate longitudinal positions was to compare the time of observation of a given celestial event at a known longitude with the observed time at another site, or to keep constant track of the time at a place of known longitude and compare it with time at a ship’s local position.<sup>88</sup> As a meridian turns through 360 degrees of longitude every twenty-four hours, it turns 15 degrees per hour or 1 degree every four minutes.<sup>89</sup> Strict reliance on the movement of the sun will not always give an accurate location because the natural temporal order is not ‘perfect’ in terms of how

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<sup>86</sup> Landes, *Revolutions in Time: Clocks and the Making of the Modern World*, 111.

<sup>87</sup> *Ibid.*, 105.

<sup>88</sup> *Ibid.*, 106.

<sup>89</sup> Lucia Harrison. *Daylight, Twilight, Darkness and Time*. New York City: (Silver, Burdett and Company, 1935): 153.

time is measured. The sun we observe in the sky does not move uniformly for the entire earth year. A clock running on a constructed mean solar time is needed to keep as accurate a reading as possible of the approximate longitude and latitude of a navigator's location.<sup>90</sup> The problem was solved only once the technological obstacle of a reliable mechanical device for measuring longitude on board a ship was solved.

The search for such a device dates back as far as Antiquity where the Ancient Greeks worked out that longitude could be calculated as a function of time measurements, they simply lacked the time measuring technology to do so.<sup>91</sup> The need to know one's longitude at sea was a source of competition for the invention of more accurate time-measuring devices. European powers interested in colonial expansion initiated contests offering lucrative awards to anyone who could invent an accurate longitude measuring device.<sup>92</sup> Before the invention of accurate time-measuring equipment and the standardisation of time at known longitudes, navigators had no better way of measuring longitude than by so-called "dead reckoning" – basically an informed guess.<sup>93</sup> Christopher Columbus reckoned his speed by watching bubbles and debris as they floated by his ship to calculate his location. Most new places "discovered" in the Age of Discovery by the Europeans could never be returned to.<sup>94</sup> The level of time-measuring technology could not handle the pitching, rolling, storm-tossed environment of a ship at sea.<sup>95</sup>

By 1776, the clocks of Englishman John Harrison had largely solved the problem and ships were now able to travel to and from almost anywhere at sea on the face of the earth.<sup>96</sup> Harrison's *H No. 4* clock was the most accurate timekeeper of its age and allowed navigators to keep track of the time in a known location usually Greenwich Mean Time at the Royal Observatory in London.<sup>97</sup> With the problem of calculating longitude at sea lessened, "epic efforts of seafaring explorers to chart the earth's surface, and later of colonisers to acquire territorial assets for their sovereign

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<sup>90</sup> Harrison, *Daylight, Twilight, Darkness and Time*, 160.

<sup>91</sup> Barnett, *Times Pendulum: The Quest to Capture Time – From Sundials to the Atomic Clock*, 120.

<sup>92</sup> Hom, "Hegemonic metronome: the ascendancy of Western Standard time," 1161.

<sup>93</sup> Landes, *Revolutions in Time: Clocks and the Making of the Modern World*, 108.

<sup>94</sup> Barnett, *Times Pendulum: The Quest to Capture Time – From Sundials to the Atomic Clock*, 117.

<sup>95</sup> Christianson, *Timepieces: Masterpieces of Chronometry*, 128.

<sup>96</sup> Nguyen, "The Spatialization of Metric Time: The Conquest of Land and Labour in Europe and the United States," 30; English clock-maker John Harrison solved the problem of longitude with his clocks that could withstand the environment of a ship at sea and keep time accurate to within 2 seconds per day in the 1730s. Harrison's *H-4* clock would win the King granting him the 'Longitude Prize' of £8,750 for his lifelong efforts to use time to facilitate more accurate navigation in Christianson, *Timepieces: Masterpieces of Chronometry*, 131-6.

<sup>97</sup> Eric Burton. *The History of Clocks & Watches*. (Rochester, Kent: Grange Books, 2002): 89-91.

homelands” could commence.<sup>98</sup> Consequently, European empires were able to expand and reach every part of the world since a ship could now make near perfect voyages to and from known locations. The world was becoming ‘global’ for the first time thanks in part to advancements in modern time-measuring technologies. In the pre-modern world where the fastest means of transportation was the horse, a common standard of time measurement covering a large geographic area was not as important. But now that both the modes of transportations and speeds at which they could travel began to improve by the eighteenth century, people could travel faster, for longer.

But the invention of the steam engine and the railway system would have been less revolutionary to modern human society had it not been coupled with the standardisation of the measurement of time across great distances in the form of standardised time zones. This in turn would bring the world into a single concept of time derived from the meridian in Greenwich, London.<sup>99</sup> The railroads played a crucial role in both the use of Western standard time and the conquest of new territories by European powers. Railroads provided the fastest travel and communication method over long distances in human history up until that point.

By the middle of the nineteenth century, countries were beginning to adopt “national standard times” primarily to coordinate the schedules of the railways but also to facilitate the national communication networks that had come into existence from the postal service to the telegraph. This time zoning was much easier in places like Great Britain which only covered 8 degrees of longitude than it was for example the United States of America which at that point covered 57 degrees.<sup>100</sup> Mass standardisation of time measurement was necessary to coordinate the railway system due to the fact that a train could now quickly cut across multiple local time standards which were set by local institutions.<sup>101</sup> In the early days, the railway companies tried to work around the assortment of local times. They published large local time conversion tables. But the train was simply too fast to be able to ignore the significant discrepancies in local times from station to station.<sup>102</sup> Railway time systems were first standardised nationally with the sovereign state setting a single national

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<sup>98</sup> Rossum, *History of the Hour – Clocks and Modern Temporal Orders*, 324.

<sup>99</sup> Barnett, *Times Pendulum: The Quest to Capture Time – From Sundials to the Atomic Clock*.

<sup>100</sup> Zerubavel, “The Standardization of Time: A Sociohistorical Perspective,” 5-6.

<sup>101</sup> Hom, “Hegemonic metronome: the ascendancy of Western Standard time,” 1162.

<sup>102</sup> Landes, *Revolutions in Time: Clocks and the Making of the Modern World*, 285.

standard of time measurement and the train schedules adapting to it accordingly. Standardisation improved efficiency in mass rapid transportation. Railway systems were then able to support the kind of order and control necessary for aiding the development of commerce, modern administration, new economic structures, and to help quell political unrest. Railways companies who set the timetables would be highly influential in the establishment of standard time zones particularly in the United States.

An improvement to long distance communication was another event that expanded the progress of Modernity aided by Western standard time and accurate time-measuring devices. The postal system, the technique of transporting communications eliminating the natural factor of fatigue with the help of messenger relay, horse changes, and the maintenance of changing stations, while not new, this system's efficiency was improved by new time-measuring technologies.<sup>103</sup> With more precise measurement of time, postal services by the eighteenth century were increasing the reliability of their deliveries. Coupled with improvements to modes of transportation, postal services had to find ways to synchronise their local time-measuring devices in order to know when, and where, post was coming or had been delivered.<sup>104</sup> The Prussian Codes of 1710-1712 stipulated that unequal running of clocks between posts would not be an acceptable excuse for inaccurate delivery time prediction (then, postage was charged by the time it took to deliver).<sup>105</sup> The telegraph also made the world smaller and connected people across multiple continents. Knowledge of the local time in another location on the globe was essential to making the telegraph useful and predictable. Without the standardisation of the measurement of time internationally this would have remained difficult.

The improvements to transportation and communication coupled with more accurate navigation techniques transformed the world, and standardised time measurement, was at the very heart of this revolution. The West was able to move beyond its geographic boundaries and spread its ideas, its people, and its power across the globe.<sup>106</sup> Modernity was spreading and so too was its conception of time, no longer based on the natural world but available as a tool of society and state to change the way people lived and related to one another. The standardisation of the measurement

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<sup>103</sup> Landes, *Revolutions in Time: Clocks and the Making of the Modern World*, 324.

<sup>104</sup> Ibid., 342.

<sup>105</sup> Ibid., 343.

<sup>106</sup> Hom, "Hegemonic metronome: the ascendancy of Western Standard time," 1164.

of time had finally moved to the state level and would soon attempt another leap to the international level before the end of that century.

*Globalisation: Western standard time goes global*

The year 1884 was a significant one for Western time standardisation. In the year previous, only the United Kingdom, Sweden, the United States of America, and Canada had time zones based on the Greenwich longitude as a “Prime Meridian”, the point at which all other longitude measurements are referenced from. The rest of the world was a mishmash of local time standards or national railroad times standards where this relatively new technology existed. But on maps in the 1880s, the cartographers usually maintained the capital of their home nation as the prime meridian.<sup>107</sup> In 1883 the United States of America instituted time zones to combat their railroad time standardisation problems, because the continental United States was so vast, one single national time would be insufficient to balance transportation coordination efficiencies with the practicalities of the circadian cycle. It would be impractical to have the sunrise at different times of day across a country so large.

So by 1884, the issue of standardisation between states began to arise and the goal of an international system for time standards was becoming more favoured. The problem of state level standardisation of time measurement became apparent with the advent of the European railway network.<sup>108</sup> It was one thing to coordinate the train schedule within a state but a completely different matter to coordinate it between states. The problem of territorial sovereignty arose to make things more difficult. An international time system could not be imposed on other states without significant costs.

The idea about wrapping one unified system of time zones all the way around the world came from a Canadian railway engineer named Sir Sanford Fleming (1832–1915). His idea was met with widespread indifference from those who at least humoured him.<sup>109</sup> Fleming wanted a single, universal time measurement for the earth as a whole, with each of the twenty-four zones labelled by assigning letters of the alphabet spaced 15° apart. Every clock in the world would display the same time standard everywhere, for example when the sun past a certain point it might be “D

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<sup>107</sup> Barnett, *Times Pendulum: The Quest to Capture Time – From Sundials to the Atomic Clock*, 141.

<sup>108</sup> Zerubavel, “The Standardization of Time: A Sociohistorical Perspective,” 12.

<sup>109</sup> Zerubavel, “The Standardization of Time: A Sociohistorical Perspective,” 12.

o'clock", 30 minutes and 27 seconds this would be displayed as "D:30:27" globally. Fleming believed his ideas could be helpful for the standardisation of time measurement in geographically "wide" states such as the United States, Russia, Brazil and Canada.<sup>110</sup> However, the increasingly political issue remained of where to put the Prime Meridian of 0° longitude. Most states favoured the Meridian through Greenwich which was by convention used as the Prime Meridian due to the predominance the British Empire enjoyed at sea in naval power and merchant activity. In typical Anglo-Gallic rivalry, the French resisted the idea of London as the location of the Prime Meridian wishing instead for their national observatory in Paris to be the centre of world time.<sup>111</sup> Getting enough of the major world powers to agree to a single prime meridian would be no easy task and interesting compromises included the Great Pyramid of Egypt, Jerusalem, or the Bering Straits.

In October 1884 in Washington, D.C., at the first and only International Meridian Conference held, delegates from the twenty-five nations that attended agreed to adopt Greenwich Mean Time as the Prime Meridian. France and Brazil abstained while San Domingo voted against the motion. The vote was only a recommendation to their respective governments but the recommendations largely remain to this day.<sup>112</sup> It was at this conference that Western standard time became international and universal through recognition of the success of the constructed temporal rhythms that had helped facilitate the rise of the West.<sup>113</sup> It was the combination of an intra-state time zoning system, seen as successful in the United States, coupled with a universal prime meridian that started the process of all states joining the international time zone system. Some states were slower to join than others: Liberia managed to resist until 1972.<sup>114</sup> Most states became part of the international regime by the 1930s, or enough at least for the system to reach critical mass.<sup>115</sup> France would continue until the 1910s to provide much of the opposition to the selection of Greenwich as the Prime Meridian, and therefore threatened to upset the whole international time zone system. France called for "neutrality" of the Prime Meridian's location, and by

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<sup>110</sup> Peter Galison, *Einstein's Clock, Poincare's Maps – Empires of Time*. (New York City: W. W. Norton & Company, 2003).

<sup>111</sup> Landes, *Revolutions in Time: Clocks and the Making of the Modern World*, 286.

<sup>112</sup> Barnett, *Times Pendulum: The Quest to Capture Time – From Sundials to the Atomic Clock*, 142.

<sup>113</sup> Zerubavel, "The Standardization of Time: A Sociohistorical Perspective," 13.

<sup>114</sup> Liberia is also one of only three nations that have yet to officially adopt the metric system (The United States and Burma are the other two).

<sup>115</sup> Barnett, *Times Pendulum: The Quest to Capture Time – From Sundials to the Atomic Clock*, 142-3.

neutrality they of course meant anywhere but Great Britain.<sup>116</sup> Great Britain and France for a generation after 1884 fought a low-key struggle over which Empire ruled the standard of international time measurement.<sup>117</sup> France would eventually concede, again, realising that going it alone in time measurement standardisation merely isolated its society internationally. France would retard Paris Standard Time by 9 minutes and 21 seconds to bring it in line with Greenwich Mean Time.<sup>118</sup> As we shall see in Chapter 2, because the modern state holds a monopoly authority over the affairs that occur within its territorial borders, states could not be forced to adopt Western standard time. Time measurement and standardisation is and remains a matter for states to decide for themselves.

The creation of the international time zone system is seen as a major step in making our planet a single temporal entity and would effectively abolish all other temporal orders in societies that wished to be part of the modern world. But a quick look at a time zone map shows that the lines do not always adhere to Stanford Fleming's plans which he based on rational rules. There was now in place an international regime which standardised time measurement internationally according to the Western standard of time and made interactions between both people and states easier to synchronise. The regime was a mean solar time for one meridian beginning in London that could be used by states to standardise time and create their own meridians based on this.<sup>119</sup> Whether or not states would follow the Fleming proposal was a matter for them. Not all countries committed themselves to using the standard of time set up by the 1884 Conference, as we shall see there are many anomalies and discrepancies in different countries' uses of Western standardised time measurement. The convention around daylight-savings times are just one example of conventions still governed by the state and not by international institutions, laws, or treaties.<sup>120</sup>

Opposition to an international standard time is usually based on practical grounds. In communities located as far as 7.5 degrees of longitude away from the nearest

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<sup>116</sup> The French delegation ruled out Paris in order to show they were not masking national interests in a universal flag; Zerubavel. "The Standardization of Time: A Sociohistorical Perspective," 14.

<sup>117</sup> In reality Britain had won from the start and the French were just being difficult, allegedly because "Greenwich" is difficult to pronounce in French; Derek Howse. *Greenwich time and the discovery of the longitude*. (Oxford: Oxford University Press, 1980):153.

<sup>118</sup> Landes, *Revolutions in Time: Clocks and the Making of the Modern World*, 286; France tried for a last ditch compromise by suggesting that in exchange for Greenwich as the Prime Meridian, the British adopt the metric system of weights and measures. Britain ignored them; Barnett, *Times Pendulum: The Quest to Capture Time – From Sundials to the Atomic Clock*, 142.

<sup>119</sup> Harrison, *Daylight, Twilight, Darkness and Time*, 167.

<sup>120</sup> c 17.



established meridian, the standard of time might differ by as much as 30 minutes from actual solar time (the previous standard time measurement in most cases). Opposition internationally to Western standard time has had other grounds for objections. For many, resistance to this standard was part of the resistance to Modernity and European imperialism in general. Some saw Western standard time as blasphemous in much the same way as the early Church had initially condemned “merchant time” in the European cities of the Middle Ages. Islamic countries today, while officially adopting standardised time in order to interact with non-Muslims, still set their prayer time according to the movement of the sun as they have done so since the seventh century.<sup>121</sup> Resisting Western standard time has also been used to express separatist sentiments among populations in national societies. In the United States, various utopian communal groups have set their own standard measurement of time and shunned “outside time” in order to deliberately isolate their communities in much the same way the medieval monks tried to. The Italian city-states of Pisa and Venice for two centuries after the Georgian Calendar reforms continued to celebrate New Years’ on March 25 and March 1 respectively.<sup>122</sup> To accept a national standard of time measurement is to accept the legitimacy of the institution that sets it; today this standardiser is the modern sovereign state. Western standard time and the international time zone system that it underpins are not merely standardisation processes but also political ones when coupled with the principle of sovereign territoriality over geographic space.

*Western standard time: a global hegemon?*

The pedantic and obsessive measurement of time, which started in the monasteries of Medieval Europe over 500 years ago, has spread to almost every society on the globe and almost every human activity. Methodical and precise time measurement which began as a way to accurately coordinate different ways for Christian monks to glorify God was transformed by its spread throughout the rest of European society and laid the foundations of a modern society. Western standard time has been complicit in, and affected by, almost every facet of change in European urban centres and early capitalist practices. The Christian culture of Europe and how it understood the nature and purpose of time led to a dramatic divergence in time-

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<sup>121</sup> Landes, *Revolutions in Time: Clocks and the Making of the Modern World*, 18.

<sup>122</sup> Ibid., 19.

measuring technology, taking the lead away from the horologists of the Chinese and Islamic empires. The divergence was fuelled by a desire for time in Europe to be measurable with precision and which made punctual daily coordination of activities possible. Western standard time as a tradable commodity created dramatic changes in the way people in Europe organised their lives economically and also politically. Modernity spread to the rest of the world by means of technology that modern time-measuring technologies helped to facilitate. Today, Western standard time constitutes the only internationally acceptable standard of time measurement in the contemporary world. It has truly become modernity's most global hegemon.

## CHAPTER 2: TERRITORIAL SOVEREIGNTY

Whilst the history of the rise of the Western standard time to a position of hegemony in the measurement of time is interesting, it is only when it is discussed in conjunction with the contemporaneous rise of another Western concept that its political aspects and International Relations implication appear more clearly. This chapter will explore the relationship between the Western standard time and the concept of territorial sovereignty. What is territorial sovereignty? What are its origins? Why is it an important part of the standardisation process of time and other things? What are the benefits a state can affect or receive from standardising time? And what does the standardisation of the measurement of time tell us about the status of territorial sovereignty in a globalised world?

The rise of the importance of territoriality in allowing states to exercise exclusive sovereign authority over societies and the standardisation of the measurement of time both have a Western European origin and are related in certain ways. The enclosure of societies within territorial borders allowed for the development of several processes related to Modernity that resulted in the state stepping in to standardise the measurement of time in order for society, and its own legitimacy, to benefit from better organised industrial working hours, coordination of the communication and transportation networks, and improved efficiencies in information distribution. Territorial sovereignty helped facilitate conditions which led to societies becoming increasingly more time-conscious and also facilitated circumstances where the state could act as the primary institutional standardiser of time measurement in the same way it was with money, language, weights, measurements, education and other things.

*What is territorial sovereignty?*

Territorial sovereignty, or territoriality, is a “spatial strategy to affect, influence, or control resources and people, by controlling area”. It involves the active use of

geographic space to classify social phenomena, to communicate social boundaries, and to influence or control resources.<sup>123</sup> It is also the political organisation of space using underlying territorial principles in the way space should be organised. Political organisation becomes territorial when the legal reach of the public authority is coterminous with “certain” and “spatially-based” boundaries what are known as national borders.<sup>124</sup> Territoriality links politics, if defined as “authoritative rule,” with the geographical reach of this rule. When the principle of territoriality emerged it immediately raised the issue of rule over space rather than rule based on claimed use, customary right, or personal relationships which had been the previous central principles of political organisation.<sup>125</sup> This territoriality principle developed out of the ‘Peace of Westphalia’ in 1648 and was further enhanced by the development of mercantilist economies and, later, by an industrial capitalism that emphasised “clustering of external economies (resource mixes, social relations of production, labor pools, etc.)” and “capturing powerful contiguous positive externalities from exponential distance-decay declines in transportation costs”.<sup>126</sup> Conquest of geographic space became a means for legitimising political power in the emerging international system.

Territorial sovereignty puts emphasis on borders and their need to be constantly maintained and recognised through often socially disruptive practices and inherently conflict focussed discourses which emphasise “the other” or those outside the authoritative rule of the sovereign by being outside of *their* borders.<sup>127</sup> Territorial political organisation implies rule over distinctive space, along with the people and the economy within that space.<sup>128</sup> Territorial sovereignty is therefore the use of territory for political, social, and economic ends.<sup>129</sup>

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<sup>123</sup> R. Sack. *Human Territoriality: Its Theory and History*. (Cambridge: Cambridge University Press, 1986): 21-34, quoted in James Anderson and Liam O’Dowd, “Borders, Border Regions and Territoriality: Contradictory Meanings, Changing Significance,” *Regional Studies*, 33:7, (1999): 598.

<sup>124</sup> James A. Caporaso “Changes in the Westphalian Order: Territory, Public Authority and Sovereignty,” *International Studies Review*, Vol. 2, No. 2, (2000): 10.

<sup>125</sup> *Ibid.*, 10.

<sup>126</sup> John Agnew. “Sovereignty Regimes: Territoriality and State Authority in Contemporary World Politics,” *Annals of the Association of American Geographers*, 95, No. 2, (2005): 441.

<sup>127</sup> James Anderson and Liam O’Dowd. “Borders, Border Regions and Territoriality: Contradictory Meanings, Changing Significance,” *Regional Studies*, 33:7, (1999): 598.

<sup>128</sup> Caporaso “Changes in the Westphalian Order: Territory, Public Authority and Sovereignty,” 11.

<sup>129</sup> Agnew. “Sovereignty Regimes: Territoriality and State Authority in Contemporary World Politics,” 441.

For political scientist John Caporaso, it was the coming together of three concepts – territory, authority, and sovereignty – that defined the nature of the territorial state in the modern world:<sup>130</sup>

The purest expression of territory is Newtonian space. By itself it tells the politically interested person little. But melded to a particular kind of authority structure – sovereign authority structures – the political content of space takes on significance. The fusion of sovereign public authority with physical space defined by exact borders is the fundamental organizing principle of the modern world.

The chief characteristic of the modern understanding of territorial rule is the consolidation of “all parcelized and personalized authority into one public realm” which entails two fundamental spatial demarcations: public/private and internal/external. The public sphere is constituted by the monopolisation of the legitimate use of force by the central authority – the state – who, internally, expresses this monopolisation through “the king’s peace” or the sole right of the sovereign to enforce their own laws. Externally the monopolisation of legitimate force is the right to make war. If politics is understood as authoritative rule, then the distinctive feature of the modern system of rule is “that it has differentiated its subjects collectively into territorially defined, fixed, and mutually exclusive enclaves of legitimate dominion”.<sup>131</sup> This bundling of territoriality into state sovereignty is the essential characteristic of the international system because each state now strives to exercise exclusive sovereignty over a delineated, self-enclosed geographic space and this form of state sovereignty has been globalised with the entire world map subdivided into a single geopolitical grid composed of multiple, contiguous state territories.<sup>132</sup>

Territoriality has given space a political significance that seeks to define state power by control over geography and the people therein rather than by control of people through relationships or human bonds alone. Space has become something that can be conquered, given political significance which must then be communicated, either physically or symbolically to others, not to mention the ability to enforce such

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<sup>130</sup> Caporaso, “Changes in the Westphalian Order: Territory, Public Authority and Sovereignty,” 21.

<sup>131</sup> John Gerard Ruggie. “Territoriality and Beyond: Problematizing Modernity in International Relations.” *International Organization*, Vol. 47, No. 1, (1993): 151.

<sup>132</sup> Neil Brenner, “Beyond state-centrism? Space, territoriality, and geographical scale in globalization studies,” *Theory and Society* 28: 39-78, (1999): 47.

claims and have them recognised by others. Territoriality is an inherently political construction but also one which is highly dynamic in seeking to subdivide space.<sup>133</sup>

### *The Western origins of territorial sovereignty*

As briefly mentioned, territoriality differs from other principles of political organisation; rule by and over tribes called kin-based sovereignty, rule by believers or religious-based sovereignty, and rule in terms of administrative task called functional-based sovereignty.<sup>134</sup> The three prominent sovereign authorities during the Middle Ages in Europe based their sovereignty along these conceptions; they were feudalism, the Holy Roman Empire and the Roman Catholic Church. None of these institutions based their sovereignty on territorial claims but rather on links of kinship and human bonds. Feudalism had rules and mutual ties of dependence, the Church saw itself as a community of believers as did the Holy Roman Empire whose Emperor had a semi-religious status of authority over the lesser kings and princes of the German states of central Europe.<sup>135</sup>

Sovereign authority over territory was neither an ancient nor universal method of political organisation even in its birthplace of medieval Europe.<sup>136</sup> Territorial sovereignty was the product of the historic, social, and economic conditions of Western Europe dating as far back as the fall of the Roman Empire in the fifth century. Territoriality, only since the mid-seventeenth century, has developed into a successful strategy for establishing a form of political jurisdiction over societies defined by borders rather than other organisational principles.<sup>137</sup> Territorial sovereignty is not an inalienable fact, but rather a claim about the way political power is or should be exercised. Struggles over the principles underlying sovereignty are at the very heart of the Western European experience of both space and time; how territory is sharply demarcated and controlled exclusively by a single sovereign authority has driven the historical development of that continent.

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<sup>133</sup> Mark Blacksell, *Political Geography*, (London: Routledge, 2006): 17-9.

<sup>134</sup> Ruggie. "Territoriality and Beyond: Problematizing Modernity in International Relations." 139-174.

<sup>135</sup> Hendrik Spruyt. *The Sovereign State and Its Competitors*. (Princeton: Princeton University Press, 1994), 35.

<sup>136</sup> Spruyt. *The Sovereign State and Its Competitors*.

<sup>137</sup> Agnew. "Sovereignty Regimes: Territoriality and State Authority in Contemporary World Politics," 437.

While some elements of a modern state have their roots in the Roman Empire and perhaps earlier, the part which emphasises the territorial basis of a states' legitimacy to rule dates back to the conclusion of the Thirty Years' War (1618-1648) and subsequent treaties signed that created the so-called Peace of Westphalia. The modern definition of the sovereign state has developed to *require* the use of territory to define the limits of its power. The most influential definition of a modern sovereign state from the perspective of Western political philosophy was outlined by the German sociologist Max Weber in his essay *Politics as a Vocation*:<sup>138</sup> "...a state is a human community that (successfully) claims the *monopoly of the legitimate use of physical force* within a given territory" (emphasis the author's). Weber would develop this definition further in *Economy and Society* giving the state's formal characteristics as follows:<sup>139</sup>

It [the state] possesses an administrative and legal order subject to change by legislation, to which the organized activities of the administrative staff are also controlled by regulations, are oriented. This system of order claims binding authority, not only over the members of a state, the citizens, most of whom have obtained membership by birth, but also to a very large extent over all action taking place in the area of jurisdiction. It is thus a compulsory organization with a territorial basis. Furthermore, today, the use of force is regarded as legitimate only in so far as it is either permitted by the state or prescribed to it... The claim of the modern state to monopolize the use of force is as essential to it as its character of compulsory jurisdiction and of continuous operation.

Some key features from Weber's definition of what makes up the modern sovereign state are: a centralised and bureaucratically organised administrative and legal order run by an administrative staff, a monopoly on the use of force, and, importantly, a binding authority over what occurs within its area of jurisdiction; a territorial basis.<sup>140</sup> This Weberian definition does have its limitations in defining all forms of political organisations. If we accept that this definition of the modern sovereign state is *the* definition of a state, according to John Hoffman, we are discounting as states the institutions that existed and to some extent exercised a form of sovereignty prior

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<sup>138</sup> Max Weber. *Politics as a Vocation*. (Philadelphia: 1965, reprint; Translated by H.H. Gerth and C. Wright Mills, Fortress Press, 1919).

<sup>139</sup> Max Weber. *Economy and Society: An Outline of Interpretive Sociology*. (New York City: 1968, reprint; Edited by Guenther Roth and Claus Wittich. Translators: Ephraim Fischoff [and others], Bedminster Press, 1922): 5.

<sup>140</sup> Graeme Gill. *The Nature and Development of The Modern State*. (Houndsmills, Basingstoke: Palgrave-Macmillan, 2003): 2-3.

to the Renaissance in Europe. This includes the Greek polis, the Roman city state, empires, medieval principalities and kingdoms, and the Chinese, Indian, and Islamic polities.<sup>141</sup> So “...France was not really a state in Merovingian times when it was led by the king of the Franks rather than the king of France”.<sup>142</sup> With territory as the foundational organising principle of power, states could expand spatially and become much larger in geographic size now that they were based on geography rather than kinship. In some parts of the world, modern Weberian states have failed to develop at all because of the difficulties in conquering the geographic space in that region.<sup>143</sup>

Prior to the outbreak of war in Europe in 1618, Protestant-Catholic relations had been maintained by the ‘Peace of Augsburg’ in 1530, where Lutheranism and Catholicism was given equal footing in the German states of the Holy Roman Empire. But it was to be a political settlement only, one fashioned because neither side was powerful enough to crush the other outright. This fine balance of power was broken by a third party not part of the Augsburg compromise of peace, and who were becoming increasingly militant during this period: the Calvinists.<sup>144</sup> The Holy Roman Emperor and his allies would subsequently face wave after wave of shifting enemy alliances in a conflict that lasted a generation and claimed the lives of one-third of the German people.<sup>145</sup>

Because of the Thirty Years’ War, territorial sovereignty based on defined and contiguous borders became essential for the safety of the different European religious populations and for the prevention of sectarian violence caused by the

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<sup>141</sup> John Hoffman. *Beyond the State*. (Cambridge: Polity Press, 1995): 49.

<sup>142</sup> Francis Fukuyama. *The Origins of Political Order*. (New York City: Farrar, Straus and Giroux, 2011): 80.

<sup>143</sup> Colonial kings, colonial governors, and presidents in the independence era have all struggled to exert authority over the often inhospitable territories of the continent of Africa. Political scientist Jeffrey Herbst arguing it is the physical geography of Africa that creates a low population density and inability for sovereigns to control these large, relevantly empty territories. While humanity began in Africa, it thrived in other regions; Fukuyama. *The Origins of Political Order*., 90.

<sup>144</sup> M. S. Anderson *The Origins of the Modern European State System 1494–1618*. (London: Longman, 1998): 205-6; Also key to the coming maelstrom was the issue of the Holy Roman Empire’s geostrategic location on the European continent. It bordered almost all the other major continental powers meaning its neighbours had a high concern for any potential violent disturbances. Located in the middle of the Rhineland and bordering France on both sides, the violent decline of the Catholic Spanish Empire and conflict with the Spanish Netherlands made German politics increasingly chaotic and uncontrollable as the Holy Roman Empire’s institutions likewise began to decay.

<sup>145</sup> Joseph Bergin. *The Seventeenth Century – Europe 1589-1715*. (Oxford: Oxford University Press, 2001); The Thirty Years’ War had a multitude of other causes, including the sectarian composition of the Electoral College that elected the Holy Roman Emperor. Alliances came to light that threatened the Catholic hegemony of the College.



Reformation and Counter Reformation. The crucial political issue of the day became security or rather the lack of it and it was the territorial state that emerged as a solution to this problem. One other beneficial side effect of this security solution was societal and economic stability which allowed enclosed territorial states to mobilise their resources and use them with greater economic efficiency.

At the conclusion of the Thirty Years' War in 1648, the treaties signed during this period have become important to International Relations and to the development a Western conception of sovereignty with territory firmly established as a cornerstone. From the mid-seventeenth century in Europe, official religious affiliation for a state would be determined by its ruler, not an external authority. Sovereigns had to accept that they had no authority over the people or the affairs of the territory of another sovereign.<sup>146</sup> The question of governance was no longer about functionality as Max Weber would centuries later note. Who governed a society was now about space not conceptual or relationship based. State sovereignty became the absolute territorial organisation of political authority in Western European states. By 'enclosing the state' the consequences for politics was domestic mobilisation within define boundaries which resulted in the movement of capital and labour becoming more restricted as different peoples and their wealth sort the protection of certain sovereigns.<sup>147</sup> This territorialisation of sovereignty would also facilitate another important process for the measurement of time in Western Europe: its wider societal standardisation.

### *Why states standardise*

For a modern sovereign state, standardisation is essential to uniting fragmented and localised communities into a larger 'national' society loyal to the state. The standardisation process can include everything from weights and measurements, language, laws, and even the measurement of time. Standardisation can influence individuals, organisations, or even nation-states to behave in certain ways and without it the coordination of human activities would be much more difficult. Common standards can help to facilitate contact, cooperation, and trade over large

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<sup>146</sup> To consolidate this new system of international relations in Europe, people transfers occurred, causing increased trade and industrial activity during this period according to; Joseph A. Camilleri and Jim Falk. *The End of Sovereignty? The Politics of a Shrinking and Fragmenting World*. (Brookfield, Vermont: Edward Elgar, 1992).

<sup>147</sup> Caporaso "Changes in the Westphalian Order: Territory, Public Authority and Sovereignty," 10-11.

areas and even throughout the world.<sup>148</sup> The standardisation of measurements is not always achieved in a formal process, for example, the result of some committee assigned to the task; rather a standard can be reached through its position of “market dominance”. In economic terms, a standard can be “an open public document” upon which institutions of civil society can alter and therefore not easily subject to misuse by monopoly power.<sup>149</sup> But more commonly for a state, standardisation is a function which they *can* reserve a monopoly on. This is true in the standardisation of the measurement of time today. The process by which this occurred took centuries and initially involved mostly non-state actors but the imperatives of Modernity made monopoly control over time standardisation essential for precise and coordinated organisation of society rooted in modern conceptions of the use of time particularly as a commodity; time became as valuable as money.

An analogy can be drawn between the standardisation of the measurement of time and the standardisation of money. While one is material and the other conceptual, both items have become matters of trust. Incapable of enforcing accurate time measurement ourselves across all of society, we trust that the standard we all do measure time against, whether it be from the monastery bells, the public clock, the pips on a radio news broadcast, or the bottom right hand corner of our computer screens, is kept at a consistent and as accurate a standard as possible by someone else. It is for this reason that a single time standardiser in society is more desirable than many.

Money functions similarly. Without an element of trust that the coins and plastic notes we exchange are credibly backed by a common and knowable standard of value, the entire system breaks down. Banknotes issued by the Bank of England today display the words: “I promise to pay the bearer on demand the sum of...”, the banknote itself is worth far less than the nominal amount displayed on it.<sup>150</sup> Standardised money was like early time-measuring devices: an ancient Chinese invention. Despite several hundreds of mints, the Chinese state insisted on central control and uniformity of standards in order to have money comply with a common standard of worth. One reason that money needed the power of the state was to

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<sup>148</sup> Nils Brunsson, “Organizations, Markets, and Standardization.” In *A World of Standards* by Nils Brunsson, Bengt Jacobsson, (Oxford: Oxford University Press, 2000): 21.

<sup>149</sup> Knut Blind, *The Economics of Standards: Theory, Evidence, Policy*. (Cheltenham: Edward Elgar, 2004): 17.

<sup>150</sup> Niall Ferguson, *The Ascent of Money – A Financial History of the World*, (London: Allen Lane, 2008): 27.

combat counterfeiting in order for, what are really just a small metal discs, to maintain some form of credibility.<sup>151</sup> Coins became a precious metal associated with powerful sovereigns who monopolised the minting of money partly to exploit it as a source of revenue.<sup>152</sup> The tremendous power that money brings made it important for those trying to assert sovereignty over others to establish unquestioned and total control over the standard of money in the areas they claimed. The Saxon kings in England knew this and enacted the Statute of Greatley in 928 AD which specified use of a single national currency issued by the king, a monetary monopoly other European sovereigns did not assert under some 600 years later.<sup>153</sup>

For time measurement, the state has come to be expected to regulate the standard of time within its territorial boundaries and it is from the state that civil society can know the legally enforceable measurement of time at any given moment if there is a dispute. As we saw in Chapter 1, some of the very first industrial strike actions during the Industrial Revolution were over the accuracy of the factory clocks and accusations by workers that the clocks were being manipulated to serve the interests of the employers. Time is money and tradable within a commodity market, and like many markets related to trust, a central authority is often needed to maintain the standard credibility of the commodity being traded or the market breaks. The measurement of time, as an important feature of modern society, needs a powerful central authority to enforce a common standard to allow for its effective use. The standardisation of money by the state, like time, can also be highly symbolic. Whilst initially considered profane by Judeo-Christian culture, money developed, nonetheless, to represent the power of the secular state. The very narrow range of economic transactions that the Catholic Church authorities allowed would see the doctrine condemning usury largely fall away as the influence and power of money became recognised.<sup>154</sup> The coin, inscribed with the head of the sovereign, symbolised power and a claim of sovereignty over the users. The coercive authority of the modern sovereign state extends to monetary affairs and the ability to enforce its own laws is sufficient to maintain confidence in the specie issued by it.<sup>155</sup>

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<sup>151</sup> Glyn Davies, *A History of Money – From Ancient Times to the Present Day*, (Cardiff: University of Wales Press, 1994): 55.

<sup>152</sup> Ferguson, *The Ascent of Money – A Financial History of the World*, 24.

<sup>153</sup> Davies, *A History of Money – From Ancient Times to the Present Day*, 129.

<sup>154</sup> Thomas Crump, *The Phenomenon of Money*, (London: Routledge & Kegan Paul, 1981):17-8.

<sup>155</sup> Davies, *A History of Money – From Ancient Times to the Present Day*,135.

With the standardisation of the measurement of time, the state has assumed responsibility for monitoring of its value in society and is today trusted to keep an accurate and consistent standard for the benefit of the public. In the same way standardisation of money provided the sovereign with certain benefits, standardisation of time measurement does also. Standardisation of time measurement has benefits because it is the means by which labour is commoditised and traded in the modern economy, it is related to the real value of money in terms of the need for interest rates and impact of inflation. Effective organisation of societies across large geographic areas was facilitated by space becoming 'enclosed' due to the concept of Westphalian sovereignty based on territoriality. Internal differences within a state's territory increases transaction costs and keeps societies fragmented. Standardisation does not only decrease transaction costs but also allows for economies of scale. In the case of measuring time, standardisation facilitated more efficient allocation and use of it as an economic resource.<sup>156</sup>

The modern state has an interest in rationalising the overall economy because it leads to higher revenues and therefore the possibilities for larger military capacity. Standardisation and certitude are key advantages of having one sovereign authority within a defined space. It was in the interest of the state authorities to remove barriers of internal trade. This included measurements and weights which unless standardised would keep the economy, and therefore society, more fragmented and localised rather than allowing for a national economy.<sup>157</sup>

A common time measurement standard is also among the most essential requirements of a common reality, one of the parameters of the social world. Sociologist Eviatar Zerubavel states that "if time is to be shared as an intersubjective social reality, it ought to be standardized".<sup>158</sup> The need to standardise a common temporal references in order to allow for a coordination of behaviour exists even at the lowest levels of social organisation. By standardising time and allowing for a common intersubjective social reality, common experiences occur leading to the development of common identities within the same temporal zone. Standardising time is a way to unite people into a much larger social community. But it is much

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<sup>156</sup> Blind, *The Economics of Standards: Theory, Evidence, Policy*, 19.

<sup>157</sup> In England, for example, by the Late Middle Ages there were an estimated 25,000 local variations of weights and measurements. The institution that could best overcome this problem was a single sovereign authority; Spruyt, *The Sovereign State and Its Competitors*, 159-162.

<sup>158</sup> Eviatar Zerubavel. "The Standardization of Time: A Sociohistorical Perspective." *American Journal of Sociology*, Vol. 88, No. 1, (1982): 2.

easier to achieve time coordination at the level of the family than it is at the community level or national level.<sup>159</sup> Standardising time between states would be no easy task either but would be fundamental to establishing a global common reality. Only when the measurement of time met the issue of territorial borders did disputes of the measurement of time reach the international level and required resolution. Two states can have differing standards of measuring time and both have the coercive means to enforce their standard within their own society.

### *The economic benefits of standardising time*

Before looking at further territorial sovereignty aspects of time standardisation, there exists a developing body of research on the economic potential that better international standardisation and coordination of time measurement can bring in a global economy, which is creating incentives for more inter-state action to standardise time internationally.

Research by economists has found that at a microeconomic level artificial time cues (time zones and television schedules) are far more influential in affecting the synchronisation of behaviour among people across the United States than natural time cues such as daylight hours are. When people worked, slept or watched television was more likely to be influenced by artificial time cues than natural ones. The anticipated effects which sunlight and circadian rhythms have on sleeping pattern can be counteracted by something as arbitrary as the end of prime time television.<sup>160</sup> Thus better and more thought out coordination of such artificial time cues could lead to Americans, regardless of where they lived, having a more synchronised daily schedule and reaping the benefits that this would bring in terms of both improved economic efficiency and common intersubjective social realities.

Good planning when it comes to standardised time could increase a firm's or even a country's comparative advantage in global trade. A combination of different time zones between international trading partners, combined with good connections via communication networks, makes it possible to "take advantage not only of geography but the full twenty-four hours of the world's working day ... that means

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<sup>159</sup> Zerubavel, "The Standardization of Time: A Sociohistorical Perspective," 2.

<sup>160</sup> Daniel S. Hamermesh, Caitlin Knowles Myers and Mark L. Pocock, "Time Zones as Cues for Coordination: Latitude, Longitude, and Letterman." In *NBER Working Paper Series* (Cambridge: National Bureau of Economic Research, 2006): 16-17

more efficient use of a global resource”.<sup>161</sup> For example, if a company can spread its operations into three countries in three different time zones of equally distance apart across the globe, it is possible to have a company operate continuously as when country 1’s workday ends, country 2’s begins and when theirs ends country 3’s begins and so on.<sup>162</sup> Such practices are already occurring in particular the information technology sector of the economy where workers for companies in Silicon Valley, California go to bed as their counterparts in India are just waking up, checking their email inboxes, and continuing to work on the same project until they in turn send the work to the inboxes of the awakening Americans.<sup>163</sup> Outsourcing of services may not just be beneficial for lowering a firm’s labour costs but may also be beneficial for increased trade growth. Firms can be more competitive because they are in operation almost continuously because of effective use of the resource of time, efficient use of time standardisation, and increased network connectivity.<sup>164</sup>

Economists also found that by looking at the transaction costs of information intensive foreign direct investment (FDI), differences in time zones could have a negative effect on the patterns of FDI in bilateral trade. While improvements in technology have made communication easier and less costly, the problem of time coordination has only become more relevant.<sup>165</sup> The international time zone system which may have been suitable in 1884, today, might in fact be more of a burden than a convenience to globalisation.

One phenomenon that is recently beginning to change the relevance of time zones is the development of ‘internet time’ which is under the control of no state. Having dramatically reduced the transaction costs of the communication of information, the internet is also making time zones increasingly obsolete with movements underway since the 1990s to make the World Wide Web the basis for the measurement of time in global society not modern sovereign states and their time zones.

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<sup>161</sup> Frances Cairncross quoted in Toru Kikuchi, “Time Zones as a Source of Comparative Advantage.” In *Review of International Economics*, Vol. 17, No. 5, (2009): 961-2.

<sup>162</sup> Toru Kikuchi, “Time Zones as a Source of Comparative Advantage.” In *Review of International Economics*, Vol. 17, No. 5, (2009): 962-3.

<sup>163</sup> Sugata Marjit, “Trade theory and the role of time zones.” In *International Review of Economics and Finance*, Vol. 16, (2007): 154.

<sup>164</sup> Toru Kikuchi, “Time Zones, Outsourcing and Patterns of International Trade.” In *Economic Bulletin*, Vol. 6, No. 15, (2006): 4-6.

<sup>165</sup> Ernesto Stein and Christian Daude, “Longitude matters: Time zones and the location of foreign direct investment.” In *Journal of International Economics*, Vol. 71, (2007): 111.

In 1998 Swatch Inc, a wristwatch making company based in Switzerland, announced the creation of “Swatch time”. Officially called “Biel Meantime (BMT)” this new standard is the name designated for Internet Time instead of Universal Time Coordinated (UTC) for the current system. Under BMT the standard measurement is in “.beats” as opposed to minutes and seconds. A day in Swatch Time begins at midnight BMT, which is written as “@000” and is the same as Central European Time in winter (UTC+1). The Prime Meridian, dedicated and initiated on October 23, 1998, is marked for all to see on the facade of the Swatch International Headquarters on Jakob-Staempfli Street, Biel, Switzerland.<sup>166</sup> Swatch time has not been used to any great extent partly because it puts the standardisation power in the hands of a private company who sell the clocks that measure time on this standard. But it shows that a standard of time based on the internet is still nonetheless possible.

*Will territorial sovereignty continue to matter for measuring time?*

While a theoretical understanding of territorial sovereignty has been relatively well studied, its practical short-comings have been less so. It is always important not to over-emphasise the centrality of territory to sovereignty in modern International Relations for it is a field of social science that “has been the most spatially oriented site of modern social and political thought”. Even within the field, most schools of International Relations Theory have fallen into the “territorial trap” by which they “[idealise] fixed representations of territorial or structural space as appropriate irrespective of historical context”. Only ‘critical’ International Relations Theory appears to avoid the trap of seeing geography as a body of fixed facts setting the environment for the actions of territorial states that have changed little for two hundred years and apply to regions of significant contextual differences.<sup>167</sup> While space is an important principle of political organisation it is not the *only* principle, it may also no longer be the most important.

Globalisation has posed a serious challenge to the authority of the state and also to the territorialisation of sovereignty for non-state actors. Money, the little badges of state sovereignty, have become increasingly denationalised, many people hold

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<sup>166</sup> CSGNetwork. “Swatch Internet Time Converter and Display.” *CSGNetwork.com*. Retrieved on January, 18, 2012 from <http://www.csghnetwork.com/csghbmtcv.html>

<sup>167</sup> John Agnew, “The Territorial Trap: The Geographical Assumptions of International Relations Theory” *Review of International Political Economy*, Vol. 1, No. 1, Spring 1994 (1994): 55-6.

citizenship in multiple states, borders are increasingly porous to migration, and it is difficult to establish the state origin for a number of commodities in world trade. The negative environmental externalities do not respect international boundaries. It seems no longer that effective sovereignty is not necessarily predicated on and defined by the strict, fixed territorial borders of individual states.<sup>168</sup> This brings up interesting questions regarding the authority over things previously unquestionably based on a state's territorial sovereignty. Debates involving territoriality and globalisation question the future of states and borders and whether national states are losing their pivotal role in the global system. On one side of the debate is the argument that in the modern world, territoriality is not as important to theoretical conceptions of sovereignty. On the other side the argument is informed by two related themes: the stubborn particularities of borders and their adaptability to wider forms of social change, including globalisation and the increased lack of territorial congruence between economy, polity, and culture in all states, which is one of the major themes of globalisation studies.<sup>169</sup> It is on the latter argument that the relationship between territoriality and standardised time measurement rests. That the measurement of time is *still* state dominated and it is this unit of analysis that sets the terms of the debate over the construction of time standards in the world today because of the importance of territoriality in establishing sovereignty in the international context.

So what is the relationship between territoriality and the measurement of time? The concept of Westphalian sovereignty, with its emphasis on modern states' legitimate monopoly jurisdictional claim over geographic territory, allows the modern state to define the standard measurement of time within its own borders without interference from other sovereigns.

Standardising the measurement of time can be part of nation-building. Through similar incentives of standardisation for laws, money, language, weights and measures, the standardisation of the measurement of time is advantageous for a modern state in promoting a national shared intersubjective social reality as well as certain economic organisational efficiencies related to industrial time discipline. Therefore, the standardisation of the measurement of time by a modern state functions as a means to uphold its claim to holding the monopoly of legitimate

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<sup>168</sup> Agnew. "Sovereignty Regimes: Territoriality and State Authority in Contemporary World Politics," 438.

<sup>169</sup> Anderson and O'Dowd. "Borders, Border Regions and Territoriality: Contradictory Meanings, Changing Significance," 599.



power within defined geographic boundaries through building national identity and generating wealth.

Problems can arise when states with different standards measurements of time try to interact with each other. If the standards are too different they will be harder to convert with each other. For this reason Western standard time, initially imposed by imperialism in non-Western states, remains in effect in states even after they gained independence from their colonial masters. The international environment puts pressure on states to try to harmonise their standards of time measurement due to time's importance to the functioning of capitalist economies which rely heavily on effective organisation of time. Therefore the modern state must walk a fine line between the desire to define the measurement of time to suit its own needs internally, and the imperatives of globalisation which promote the development of a common global standard of time measurement.

### CHAPTER 3: THE INTERNATIONAL TIME ZONE SYSTEM

Time zones are very much the staple of the international time standards and divide the world into 24 zones north-to-south of 15 degrees of longitude wide starting from the Prime Meridian passing through Greenwich, London. The failure of the 1884 International Meridian Conference to produce any laws for international time standardisation meant that the international time zone map represents the decisions of each state at any given moment only. Changes can and do occur at any time depending on the wishes of the states within this system.

Because of the relationship time standardisation has with the modern sovereign state, it is the concept of territorial sovereignty which influences the structure of time zones and the way they are drawn on the world map by states. While the Fleming Proposal called for strict adherence to the longitudinal lines, in reality not one time zone runs in a straight line from pole to pole. Instead lines tend to weave along state borders both national and even sub-national. States located on longitudinal lines rarely allow their territory to be divided by time zone unless their geographic width is substantial (United States, Russia, Canada and Brazil) although as there are no rules on this matter this is not always the case (China and India).

For states that use Western standard time, there is a decision to be made as to how time will be structured. Some states have fewer options than others if their primary goal is harmonisation with their immediate neighbours. A state in the middle of a time zone will find it easier to conform to its place on the international time zone map. Where the line passes right through the middle of the state, different factors must be balanced in making the decision.

This chapter is a region-by-region look at the politics of the international time zone system as they exist at the end of 2011. It will attempt to highlight some of the anomalies and outliers to a theoretically 'correct' system as Sanford Fleming proposed in 1884. And explain why most of these are linked to the modern sovereign state and territorial sovereignty. By looking at how imperfect the international time

zone system is we can better understand just how lawless the system is and what calculations states make in structuring time over their society. By doing this, I seek to show how the standardisation of time affects debates on sovereignty within and between states.

The maps below show states and their territorial boundaries in black, the observed time zone in red and the lines of longitude in light blue. States which observe the same time zone are the same shade of green in relation to their immediate neighbours. The meridian lines should be drawn halfway between the light blue lines of longitude. All time zones are named for their Universal Time Coordinated measurement with Greenwich Meantime known as UTC, and Central European Time as UTC+1 and so forth.

### *Time zones of Russia*

As the largest state in the world geographically, comprising a total land area of 16,377,742 square kilometres,<sup>170</sup> the Russian Federation is also the world's widest state spanning a total of twelve time zones starting in Eastern Europe and finally crossing the International in the far-east as can be seen in Figure 1 below.



Figure 1: Time zones of the Russian Federation (as at October 2011)<sup>171</sup>

Russia from the Baltic to the Bering Sea has more time zones than any other country on earth. Russia while technically spanning twelve time zones only has nine official time zones ranging from UTC+3 in the military base enclave of Kaliningrad in Eastern Europe, to UTC+12 at the Bering Sea in the far-east, pushing the

<sup>170</sup> "Russia," *The CIA World Factbook*, Retrieved November 7, 2011 from <https://www.cia.gov/library/publications/the-world-factbook/geos/rs.html>

<sup>171</sup> All time zones maps produced by *i-Google Maps*. Retrieved November 7, 2011 from <http://www.i-google-map.com/timezones/>

International Dateline eastward towards the Americas. But almost from the beginning in the west of Russia, time zones are all theoretically incorrect. Under the Fleming Proposal, Russia in the west should start at UTC+2 but is actually 2 hours ahead starting at UTC+4. Western Russia does not observe the time zone of UTC+5 at all. If we follow the time zones eastward they tend to conform to the territorial boundaries of the Russian regional governments. Russia's long border with China and Mongolia, who share the same time zone of UTC+8, means that at certain geographic locations three different time zones intersect each other. In China's north-east they are still on UTC+8 while their immediate Russian neighbours are 3 hours ahead of them.

Another time zone 'problem' caused by Russia's zoning designs is the small border it shares with Norway in the north-west where Norway observes Central European Time of UTC+1 but borders Russia at its Moscow Time zone of UTC+4 a full 3 hours difference. The fact that the area is sparsely populated probably limits too many practical inconveniences but the irregularity shows what states Norway prefers to harmonise its standard of time with.

### *Time zones of Europe*

Europe's relatively small size allows for a limited minimum number of time zones to provide for accurate time standardisation across the continent. However some states continue to take pride in their temporal separation from their neighbours. Of note is the position of the Prime Meridian at 0 degrees longitude which passes through the Royal Observatory in Greenwich, London in the United Kingdom and a time zone of UTC also known as Greenwich Meantime (GMT). Based on this there has been the adoption of a time zone one hour ahead of UTC by Western and Central European countries (known as Central European Time or CET). CET has been given legal effect by the Bundestag as the only legal time measurement standard in the Federal Republic since 1978.<sup>172</sup> The one hour difference between GMT and CET has meant that since the United Kingdom adopted Greenwich Mean Time as their national time standard, the European continent has been separated both geographically and temporally from the British Isles for the last 150 years as seen in Figure 2 below.

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<sup>172</sup> "German Time Act" in *German Federal Law Journal* (Bundesgesetzblatt, BGBl.), Part I, 1978, pp. 1110–1111. Retrieved on November 4, 2011 from <http://www.cl.cam.ac.uk/~mgk25/time/zeitgesetz.en.html>



occupation and their time zones were changed to match Berlin Time of UTC+1 by the Nazi regime or their wartime collaborators. Changing time zones symbolically showed how Western Europe was now under the political control of Nazi Germany now that the people in countries occupied had to set their watches to those of the Third Reich in Berlin. The political debate around the standardised measurement of time illustrates how time zones can still be a potentially emotive issue of national sovereignty in the contemporary world. The issue is tied up with the Eurosceptic debates that still exist in British domestic political discourse.

Further west in Europe, the island nation of Iceland has chosen to adopt a time zone an hour behind its actual location thus harmonising it with the United Kingdom and avoiding a 2 hour continental separation. Portugal too has adopted UTC as its official time zone rather than harmonising with its Iberian neighbour Spain which has chosen the European continental time of CET rather than a more theoretically accurate standard measurement of UTC.

Central European Time divides Western and Central Europe from Eastern Europe and West Russia who observe UTC+2 and UTC+4 respectively. One significant anomaly is the standard time observed in Kaliningrad which is UTC+3. Kaliningrad is bordered by Poland who observes UTC+1 and Lithuania who is UTC+2, making the Russian enclave in terms of time, east of its geographical western neighbours. It is closer to West Russia in terms of time (UTC+4) than to its immediate European neighbours. The same situation occurs with the Jan Mayen Islands belonging to Norway who share their time zone with Norway at UTC+1 yet the islands lie geographically west of the British Isles and so their real time zone observance should be UTC-12. Such anomalies highlight the way time zones can be used in linking the non-contiguous territory of states which are separated by significant distance. Having peripheral territory on the same standard of time as the centre can help integrate the two together and separate the peripheral territory from its immediate neighbours in terms of synchronised time measurement.

Most European states observe a daylight savings period where the time shifts forward one hour beginning in late spring in order to 'save the daylight' and for people to experience greater hours of daylight particularly at the end of the day. In the United Kingdom, daylight savings was introduced in 1916 with the passage of

the *Summer Time Act 1916*, this law was eventually updated in 1972,<sup>175</sup> a summer time period is set by Order-in-Council by the government of the day. For the states who observe CET, most of whom are also members of the European Union, the supra-national institutions of that organisation have issued directives on the matter in a rare example of time standardisation being regulated by institutions above the state level. Daylight savings time in Europe was first standardised by the European Union in 1996 by Directive 2000/84/EC, the most recent directive was issued in 2001.<sup>176</sup> Clause 2 of the 2001 Directive states:

Given that the Member States apply summer-time arrangements, it is important for the functioning of the internal market that a common date and time for the beginning and end of the summer-time period be fixed throughout the Community.

The Directive instructs member states to publish their plans for daylight savings observance for the subsequent five years for the purposes of “clarity and accuracy of information”.<sup>177</sup> This indicates that while time zoning is still very much a matter for the member-states of the EU to decide, the most important factor is that the time zone be declared so other member-states can adapt to it and know the time standard of their neighbours. Being able to anticipate another state’s time standard is vital to efficient coordination of transportation, trade, and communication between two states on different time standards.

In 2011, the Russian government as part of a major reform of time zones decided to make daylight savings permanent year round. This decision by Russia had implications beyond its borders. Both Ukraine and Belarus, Russia’s western neighbours established parliamentary committees to consider how they would respond to the Russian decision because of their close political and economic ties. Russia’s time zone reforms and the decision to permanently observe daylight savings was considered so important to their ability to coordinate with Russia that time zoning became a political issue related to nationalism and geopolitics. Ukraine, which is UTC+2, initially decided that they too would follow Russia and institute

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<sup>175</sup> “Summer Time Act 1972”. Retrieved November 4, 2011 from <http://www.legislation.gov.uk/ukpga/1972/6/introduction>

<sup>176</sup> “Directive 2000/84/EC of the European Parliament and of the Council of 19 January 2001 on summer-time arrangements.” Retrieved November 4, 2011 from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000L0084:EN:NOT>

<sup>177</sup> Ibid.

year round daylight savings. However significant public protests meant that the government decided to reverse their earlier decision made in October. The reason given by the Ukrainian Government for the initial change had been “that the constant switching between winter and summer time harmed people's health and caused stress”.<sup>178</sup> Whether this is the true reason is somewhat doubtful especially given the close economic ties Ukraine has with Russia.

One major practical problem arising from permanent daylight savings was that in the Western provinces of Ukraine, for some months of the year, the sun would rise at 10:00am. Belarus who enjoys even closer relations both economic and political with Russia, and is located geographically east of Ukraine, has chosen to follow its eastern neighbour in making daylight savings permanent year round.<sup>179</sup> Changing time zones in one state can therefore have implications for the time zones in another state depending on the relationship between them and importance they place on coordination of things like trade, transport, or communication with each other.

#### *Time zones of Canada*

Canada faces pressure to harmonise its time zones with its largest and more powerful land neighbour: The United States. As a result, Canada's time zones generally conform to the demarcations set out by their southern neighbour but for a few exceptions.

As Figure 3 below shows, many of Canada's time zones intersect the US-Canada border at the same point except for Mountain Time (UTC-7) which ‘goes around’ the province of Saskatchewan who observes Central Time along with its neighbouring provinces to the east. Differences from the time zones of the United States include that fact that Canada's eastern seaboard is much further east than that of the United States and incorporates the Maritime Provinces of Newfoundland and Labrador, Nova Scotia, Prince Edward Island and New Brunswick. These provinces exist in Atlantic Time (UTC-4) and Newfoundland Time (UTC-3) which both exist east of Eastern Standard Time (UTC-5) in the United States bringing Canada's total number of time zones to six while the continental United States has only four. Legal

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<sup>178</sup> Richard Balmforth, “Ukraine cancels plan to drop winter time change,” *Reuters*, October 18, 2011, Retrieved November 7, 2011 from <http://www.trust.org/alertnet/news/ukraine-cancels-plan-to-drop-winter-time-change>

<sup>179</sup> “Ukraine To Move Clocks Back By One Hour On October 30,” *Ukrainian News Agency*, October 29, 2011. Retrieved November 7, 2011 from <http://un.ua/eng/article/357782.html>



jurisdiction over time standardisation in Canada is a provincial matter as the federal government is not empowered by the *Constitution Act 1867* to perform this function.<sup>180</sup>



Figure 3: Time zones of Canada (as at October 2011)

As such Canada, when it comes to time zones, is known as a “nation of chronic lawbreakers”.<sup>181</sup> Canadian provinces, as we shall see in Chapter 4, value highly their sovereign jurisdiction over time measurement standardisation and refuse to allow the issue to be federalised and taken over by the central government. The reasons for this will be explained later and will illustrate how time standardisation continues to influence the topic of sovereignty particularly within a large state such as Canada.

#### *Time zones of the United States*

The United States of America can claim to be the nation that first put Stanford Fleming’s time zone ideas into practice when in 1883 the US was temporally divided into four standards of time from the Atlantic to the Pacific. As Figure 4 below shows

<sup>180</sup> “Constitution Acts, 1867 to 1982,” Retrieved November 11, 2011 from [http://laws.justice.gc.ca/eng/Const/Const\\_index.html](http://laws.justice.gc.ca/eng/Const/Const_index.html)

<sup>181</sup> H. David Matthews and Mary Vincent, “It’s about time,” *Canadian Geographic* September/October 1998 issue. Retrieved November 10, 2011 from <http://www.canadiangeographic.ca/Magazine/SO98/alacarte.asp>

the United States solved the challenges to national transportation and communication coordination caused by a lack of time standardisation by instituting four time zones across the continental United States. The catalyst for the creation of official time zones across wide geographic areas was the invention and use of the telegraph and of the railways where information, people, and material could suddenly be moved long distances and at faster speeds than ever before.



Figure 4: Time zones of the United States of America (as at October 2011)

It is a misconception in the history of time measurement standardisation that the railway companies alone precipitated the standardisation of time in the United States. Until 1840, time standards were strictly a local affair for Americans. Every city, township, and county had their own local time and had their own local ‘timekeeper’ to measure their time standard. The most common time standardiser was the local post office who required effective time measurement in order to coordinate postal services. Then suddenly, as the railway lines moved westward, knowing the correct time with precision in other locations became more important and vital to more efficient coordination.

A comparative timetable showing local times in major American cities from 1857 gives a list of local time compared to noon in Washington, D. C. If it was noon in Washington then according to the timetable it was 12:14pm in Albany, NY or 11:36am in Detroit, MI or 9:02am in Sacramento, CA.<sup>182</sup> Local observatories, the other great local time standardiser of this period, began to commercialise their efforts

<sup>182</sup> Matthew W. White. *The Economics of Time Zones*. (Working Paper, Philadelphia: University of Pennsylvania, 2005).

to maintain accurate time-keeping and sold it to the railway companies to enable them to provide more accurate schedules for their services.<sup>183</sup> But while the railways were a modern human activity that helped to show the practical imperatives of better time measurement standardisation over long distances, it was not the sole activity.

Ian R. Bartky in *The Adoption of Standard Time* goes to great lengths to try to dispel the notion that time standardisation in the United States was purely about organising the railway schedules. Rather it was modernisation pressures from the scientific community that led to state intervention in time measurement standardisation and the creation of civil laws governing the structure of time zones in the continental United States.<sup>184</sup> In 1832 the United States had 229 miles of railway lines but by 1880, three years before the introduction of official time zones, the US had 94,671 miles. Yet between these years few discussions appeared publically about the need for time standardisation of the multiple railroad and local times.<sup>185</sup> The American scientific community's proposals for standardisation were being made as early as the 1870s. There reasons for pushing for greater time measurement coordination was in order to better conduct scientific experimentation across large distances. Coordinating the railways was merely a secondary reason to standardise time in the United States not the prime motivator as has been argued by most researchers on this topic. A bill was introduced to the US Congress in 1881 to standard time based upon the recommendation from the Naval Observatory; it died in committee.<sup>186</sup>

It took until William F. Allen, a railway engineer by training and also the permanent secretary of the railroads' General Time Convention authored the plan to formally standardise time measurement in the United States and create the broad time zones that the continental United States maintains to this day.<sup>187</sup> According to Matthew W. White in *The Economics of Time Zones* "...Allen understood the substantial implications for the railroads of a national time standard, and the costs to be borne if a patchwork of local times was mandated by legislation."<sup>188</sup> To deal with the issue of inter-city rivalry, Allen highlighted the "curious fact" that the central meridian for the eastern section of the United States was exactly five hours and six seconds from

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<sup>183</sup> White, *The Economics of Time Zones*, 3.

<sup>184</sup> Ian R. Bartky, "The Adoption of Standard Time." *Technology and Culture*, Vol. 30, No. 1, (1989): 25.

<sup>185</sup> *Ibid.*, 29.

<sup>186</sup> *Ibid.*, 39.

<sup>187</sup> *Ibid.*, 45-6.

<sup>188</sup> White, *The Economics of Time Zones*, 5.

the Prime Meridian in London. By simply adjusting for six seconds, a potential rivalry between say New York City and Chicago was avoided in a way that the British and French rivalry failed to be.<sup>189</sup>

Getting the local counties and municipalities to agree to abolish their local times was the biggest obstacle to Allen's plan for standardisation. White highlights the problem of changing from multiple local time systems to a single common one as comprising a "splintering equilibrium" where the costs of change will be incurred by a city's residents and businesses, but the benefit would arise only if other locales changed as well bringing time measurement standardisation into the discipline of game theory. In this case mass cooperation is the only way for all to enjoy a greater benefit.<sup>190</sup> In the absence of a central authority to enforce the change, getting the local governments to change would be difficult. The federal government was unwilling to take such a role and the cities and counties unwilling to give up sovereignty over time standardisation. Instead the railway companies acted as the central authority and adopted the Allen Plan forcing the local governments to either adopt standard time or maintain the cost of local time conversion which they had been using for the past several decades.

Allen distributed to 570 railway stations a detailed letter and maps with his plan asking for a decision on the proposed national time zone system. The conversion date to the new system was set for November 18, 1883 and it was reported that not a single railroad accident occurred that day as a result of converting to the new time standards. In New York City, it was described as "the day of two noons" by the press as time was adjusted to conform to the new Eastern Standard Time of UTC-5. From Canada, Stanford Fleming hailed what he called the "noiseless revolution" as most people accepted the new system with little bother.<sup>191</sup>

The relative ease by which time was standardised into zones in the United States meant that the issue never had to be taken up by the federal government or the state governments. The success of the experience no doubt helped in demonstrating to the International Meridian Conference the next year that it was possible to change deeply ingrained time measurement standards that had existed for generations if the benefits could be shown to dramatically outweigh the perceived costs. Time zones in

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<sup>189</sup> Bartky, "The Adoption of Standard Time," 47.

<sup>190</sup> Ibid., 7.

<sup>191</sup> Ibid., 49.

the United States have remained the same, with only a few counties jumping zones, since that November day in 1883.

### *Time zones of Central and South America*

Time standardisation in Central and South America is dealt with in six time zones which can be seen in Figure 5 below.



Figure 5: Time zones of Central and South America (as at October 2011)

All Central American states except Panama observe Central Standard Time (UTC-6), the same as most of Mexico. Mexico has two time zones, both Central and Pacific Standard Time (UTC-7) as opposed to simply having a single national time. The states of Mexico that have Pacific Standard Time are those that border the south-western states of the United States of America who observe the same time zone.

These are geographic areas of much inter-state commerce and cross border interaction between the two states. South American states, Colombia, Ecuador, and Peru share the same time zone of UTC-5 which is Eastern Standard Time in North America.

South America's time zones have one significant anomaly that deliberately does not conform to the accepted conventions of the international time zone system. In 2007, Venezuela created its own time zone of UTC-4.5 in what the leadership of that state described as a deliberate effort to increase the economic productivity of the nation by maximising the available daylight hours for as much of the year as possible. According to the BBC, critics of the move by the Venezuelan President Hugo Chavez said the move was "unnecessary and the president simply wants to be in a different time zone from his arch-rival, the United States".<sup>192</sup> Venezuela sits on the border between UTC-4 and UTC-5 so like other states in this situation, it had to make a decision as to how to standardise its time measurement rather than the choice being made for it by being entirely within one time zone. Splitting the difference and adopting a 0.5 time zone is actually not uncommon (India, Iran, and Myanmar).

Brazil, the largest state on the continent by size, has multiple time zones that are all derived from Brasilia Standard Time (BST) of UTC-3. According to the laws of Brazil, the state legislatures are constitutionally allowed to decide whether or not the state observes daylight savings time, so the number of time zones at any given point of the year can fluctuate between three or four depending on the month of the year and the decisions of the states.<sup>193</sup> Observance of daylight savings time in Brazil became official in 1931 and was applied to the entire nation until 1988 when it was scaled back to apply to only those parts of the country that wished to observe it.<sup>194</sup> In 2008, BST-2 (UTC-5) was officially abolished by the federal government in a move that concerned the state legislatures. Due to public pressure and a subsequent state referendum held in 2010, the time zone could be reinstated in the near future.<sup>195</sup> Legislative moves by the federal government are currently underway to make BST

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<sup>192</sup> "Venezuela creates own time zone," *BBC News Online*. Retrieved on November 15, 2011 from <http://news.bbc.co.uk/2/hi/americas/7134927.stm>

<sup>193</sup> "Presidential Decree No. 7584, October 13, 2011" Retrieved on November 15, 2011 from [http://www.planalto.gov.br/ccivil\\_03/\\_Ato2011-2014/2011/Decreto/D7584.htm](http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2011/Decreto/D7584.htm)

<sup>194</sup> "Brazil Abolishes Its Fourth Time Zone in 2008" *Time and Date*. Retrieved on November 15, 2011 from <http://www.timeanddate.com/news/time/brazil-abolishes-fourth-time-zone.html>

<sup>195</sup> "Time Zone Change is Possible in Acre, Brazil." *WorldTimeZone*. Retrieved on November 15, 2011 from <http://www.timeanddate.com/news/time/brazil-acre-time-zone.html>

the only official time standard in the country a move that would require further repatriation of powers from the states to the federal government.<sup>196</sup>

In South America's time zones Argentina is another interesting example of a state making calculates on what time zone to impose. While the country is geographically located in UTC-4, Argentina observes the BST time zone which is UTC-3. Argentina determines whether to observe day-light saving time on a year-by-year basis, and individual provinces may opt out of the federal decision. At present, Argentina does not observe daylight saving time at all.<sup>197</sup>

### *Time zones of Africa and the Middle East*

The continent of Africa has four significant time zones: Cape Verde Time (UTC) West Africa Time (UTC+2), Central Africa Time (UTC+3) East Africa Time (UTC+3). Only the Southern African state of Namibia observes day-light savings time and so for part of the year it is UTC+2 while for others it is UTC+1.

Most of Western Africa observes a uniform time of UTC, referred to as Cape Verde Time. The last West African country to adopt Cape Verde Time was Liberia who did not observe a time standard within the international time zone system until 1972, prior to this when a person crossed the border into Liberia they had to adjust their watch by forty-five minutes and thirty seconds to conform to local Liberian Time.<sup>198</sup>

From Figure 6 above we can see that only a couple of states are out of their correct time zones. Most of the African states which were former territories of the French Empire adopted UTC+1 as their official time along with Metropolitan France in 1911 when France decided to finally give up its crusade to have Paris as the Prime Meridian.<sup>199</sup> These states have for the most part kept this time standard until the present day.

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<sup>196</sup> "Brazilian territory could have unified zone" *WorldTimeZone*. Retrieved on November 15, 2011 from [http://worldtimezone.net/dst\\_news/dst\\_news\\_brazil05.html](http://worldtimezone.net/dst_news/dst_news_brazil05.html)

<sup>197</sup> "El Gobierno no adelantará la hora oficial el próximo domingo." *lanacion.com*. Retrieved on November 15, 2011 from <http://www.lanacion.com.ar/1187055-el-gobierno-no-adelantara-la-hora-oficial-el-proximo-domingo>

<sup>198</sup> Barnett, *Times Pendulum: The Quest to Capture Time – From Sundials to the Atomic Clock*, 142-3.

<sup>199</sup> *Ibid.*, 143.



Figure 6: Time zones of Africa and the Middle East (as at October 2011)

The North African state of Libya which is located in the UTC+1 longitude in fact observes the same time zone as its Arab neighbour Egypt. Both observe the time zone of UTC+2. The same goes for Sudan and South Sudan who are also one hour behind their correct time zone. At one geographic point on the south-east border of Libya, three time zones converge, an anomaly that the international time zone system was designed to avoid but the impact of territorial sovereignty has changed the rules that underpin the time zone system to favour political considerations rather than rational scientific ones.

In the Middle East, the Islamic Republic of Iran which is divided by the UTC+3 longitude line has chosen to adopt the time zone of UTC+3.5 as its official time in order to have the entire country in a single time zone but to not distort the times of sunrise and sunset as much as possible. The Kingdom of Saudi Arabia did not adopt the official time zone of UTC+3 until as late as 1962.<sup>200</sup> Islamic countries in the Middle East face a globalisation pressure to conform to the international time zone

<sup>200</sup> Barnett, *Times Pendulum: The Quest to Capture Time – From Sundials to the Atomic Clock*, 143.



standard rather than a modernisation one because of the nature of their society being historically nomadic, it people living in hot desert climate, and the use of Islamic laws which demand the use of a measurement of time derived from natural time signals unlike Western standard time.

### *Time zones of Asia*

Of all regions in the world, it is Asia whose time zoning is the least conformist to the Fleming Proposal and appears to be brushed aside if considered inconvenient or more accurately, a challenge to territorial integrity. As Figure 7 below shows China is the biggest but is not the only state to make its own rules when it comes to time standardisation.



*Figure 7: Time zones of Asia (as at October 2011)*

The People's Republic of China is the biggest culprit in distorting a uniform international time zone system with a single standard time measurement of UTC+8 across the entire country despite China being so large it exists in five time zones geographically. This creates the unusual situation of the sun rising mid-morning and setting well into the evening in the western provinces of Xinjiang and Tibet. This was not always the case and prior to 1949, China had five time zones which were

then abolished by the incoming Communist regime (this will be discussed in greater depth in Chapter 4).

The Republic of India also has only one standard time of UTC+5.5 which is an irregular standard but allows better coordination with the eastern Indian states such as Arunachal Pradesh, Mizoram, Nagaland and Assam. It also isolates it from Bhutan and Bangladesh, who observe UTC+6, but only by half of an hour rather than a full hour.

India historically had multiple time zones. Originally there were two time zones, Bombay Time (4 hours and 51 minutes ahead of GMT) and Calcutta Time (5 hours, 30 minutes, and 21 seconds ahead of GMT), both established in 1884. This very irregular time standard proved to be too unworkable so a uniform Indian Standard Time came into existence in 1905 at its current measurement of UTC+5.5.<sup>201</sup> Myanmar (Burma) also has an official time that is half an hour off the standard longitude at UTC+6.5 making it another state in Asia breaking the conventions of the international time zone system.

The two states on the Korean Peninsula, a geographic area which sits almost exactly on the division line between two time zones, have made the choice to observe the same time standard as Japan who observes a standard time of UTC+9 rather than Beijing Standard Time of UTC+8. While in Indonesia, which technically covers four time zones in area, the government only officially recognises three. Indonesia has time zones from UTC+9 to UTC+7 to account for its geographically wide area. West Papua is one hour behind Papua New Guinea despite the diving line being entirely a matter of political geography and historical development. Time in Malaysia is interesting because while the capital of Kuala Lumpur is in West Malaysia where 80 per cent of the population live, the country since 1982 observes the a uniform time standard based on the geographic location of East Malaysia, which is in a time zone one hour ahead of the west.<sup>202</sup>

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<sup>201</sup> "Indian Standard Time," Retrieved on November 13, 2011 from <http://wwp.greenwichmeantime.com/time-zone/asia/india/time/indian-time-zones.htm>

<sup>202</sup> Helmer Aslaksen, "Time Zones in Malaysia," Department of Mathematics, National University of Singapore. Retrieved on November 13, 2011 from <http://www.math.nus.edu.sg/aslaksen/teaching/timezone-old.html>

### *Time zones of Australia and the Western Pacific*

The sheer vastness of the island-continent of Australia made time co-ordination an imperative in order to facilitate more efficient coordination of transportation and communication in a single state known as 'Australia'. Australia was known as 'the timeless land' before federation. Creating functioning time standards over the whole country was deemed a necessary prerequisite for closer political union. As seen in Figure 8 below, Australia fits into four time zones geographically but observes three time zones: Eastern Australian Time, Central Australian Time, and Western Australian Time respectively.



*Figure 8: Time zones of Australia and the Western Pacific (as at October 2011)*

Efforts to standardise the measurement of time across Australia began in the late nineteenth century. In 1895, the Australian colonies sort to synchronise their clocks in order to create standardised time zones. After midnight on the first Sunday of February, the local post offices suspended the working of their clocks until it was the right moment to set the clocks ticking to the agreed standard. The Australian colonies were some of the last English speaking nations to try to adopt elements of the Fleming Proposal but the fact that most people were geographically clustered in the same geographic parts of Australia - such as the south-east - meant there was less resistance to standardising time measurement across large geographic areas. Australia was also relatively empty in terms of settlers in comparison to the United

States. The Bill to standardise the measurement of time passed through all the Australian legislatures with few amendments and almost no debate.<sup>203</sup>

South Australia and Queensland to this day have issues over time measurement standardisation. These issues are historical. In the 1880s, Sir Charles Todd, the Post Master-General of South Australia made contact with Stanford Fleming and used many of his ideas to promote the creation of a similar time zone system for Australia. He made a proposal in 1891 to the Inter-Colonial Postal Conference in Sydney. The proposal called for a single Australian Standard Time based on the 135<sup>th</sup> longitude which happens to run through the middle of Australia, specifically through South Australia. What Todd wanted was his state, South Australia, as the temporal centre of that system. The other colonies agreed to this move, all except for one: Queensland. The Surveyor-General of Queensland, Clement Wragge, saw himself as ‘the Australasian meteorological czar’ and he and Todd had a bitter personal rivalry towards each other.

Clement Wragge argued that if the Todd Proposal was adopted Queensland would have to adjust its Brisbane Local Time by one hour and twelve minutes and he deemed this unacceptable. Todd felt Wragge and the concerns of the Queenslanders were “more imagined than real” and pushed his proposal. The deadlock was only broken when the Queensland Post Master-General put forward a compromise of three standard time zones: Western, Central and Eastern. The proposal was adopted by both Queensland and South Australia who both still to this day continue to assert their own ideas on the proper standard measurement of time in their geographic jurisdictions.<sup>204</sup>

For example, South Australia keeps the atypical time standard of UTC+9.5 as does its neighbour the Northern Territory whose time standardisation is governed by the Commonwealth Government of Australia. If the Fleming Proposal were to be followed, South Australia should be on UTC+9 and would almost fit within that time zone perfectly. But instead this state has a time standard that pulls it temporally towards eastern Australia and allows South Australia to assert its right to govern its own time measurement standard within Australian federation and within the international time zone system.

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<sup>203</sup> Graeme Davison, *The Unforgiving Minute: How Australia learned to tell time*, (Melbourne: Oxford University Press, 1993), 72-3

<sup>204</sup> Davison, *The Unforgiving Minute: How Australia learned to tell time*, 72-3.

Queensland continues to play the role of critic in the Australian time zone system. In 1971 the premiers of the other eastern Australian states sort to reintroduce permanent daylight savings a concept that had only previously been used during the World Wars in order to lengthen the day to allow for enforcement of strict black-outs at night. The only eastern state to vote overwhelmingly against the introduction of permanent daylight savings time in Eastern Australian Time in a referendum was Queensland due to a concern that school children would have to walk home in the hot midday sun. But it was also a symbolic move linked to the political culture of the Bjelke-Petersen administration and their assertion of Queenslander sovereignty over other states and the Commonwealth Government.<sup>205</sup> Objections to daylight savings taps into a rural fundamentalism which relies on a love of tradition, a suspicion or resentment of the alien, urban ways, a dependency on natural law, and a belief in individual initiative and self-reliance. After a brief two year revival, daylight savings in Queensland was extinguished entirely in 1992 with a referendum that saw abandonment of daylight savings voted for by two or three to one in some parts of northern and western Queensland.<sup>206</sup> Time in Australia according to Davison “remains a significant, if erratic, political force [...] in the face of global changes too rapid and far-reaching to comprehend.”<sup>207</sup> The standardisation of the measurement of time remains unsettled in some parts of Australia for reasons related to territorial sovereignty and to local political cultures.

Moving eastward in the Western Pacific to New Zealand, we find a nation with its time zones up against the International Dateline making it the country that is the first to experience each new day under the rules of the international time zone system. New Zealand’s closest meridian passes straight through the South Island. So a choice had to be made on what the nature of New Zealand’s time zones would look like. As a country with a small population, it was decided that a single time zone would be preferable to splitting the country into two parts. On November 2, 1868, New Zealand adopted a single standard time to be observed nationally, and is considered the first state to have done so.<sup>208</sup> However it was UTC+11.5 an irregular measurement to begin with before being advanced to UTC+12 during the Second

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<sup>205</sup> Davison, *The Unforgiving Minute: How Australia learned to tell time*, 119.

<sup>206</sup> Ibid., 120-1.

<sup>207</sup> Ibid., 21.

<sup>208</sup> “Our Time,” *Evening Post*, Volume CVII, Issue 80, 8 April 1929, Page 10, Retrieved on November 13, 2011 from <http://www.paperspast.natlib.govt.nz/cgi-bin/paperspast?a=d&cl=search&d=EP19290408.2.88&srpos=2>

World War, a change made permanent by the *Standard Time Act 1945*.<sup>209</sup> Daylight savings was adopted in 1974 and has been periodically lengthened since that date with the most recent lengthening occurring in 2007.<sup>210</sup>

### *The International Dateline*

The International Dateline is the best example of the lawlessness of the international time zone system. In theory, the lines of the time zone system should be as straight as possible, ideally following lines of longitude. But the International Dateline is perhaps the least straight line of any in the system. The problem exists because of the wide geographic areas of the Pacific Island states and their relationship to other states bordering the Pacific.

The International Dateline first manuevors its way through the Bering Sea separating the eastern most point of Russia in Asia from the state of Alaska in the Americas. By the time it gets to the equator, it must accommodate the time standardisation decisions of the Pacific Island states on whether they wish to lie east or west of the dateline. This decision is important because the International Dateline determines the beginning and end of the official day of the international time zone system. Kiribati appears to be the only nation on earth that has two time zones which are technically 24 hours apart yet located right next to each other. As Figure 9 below shows, the International Dateline appears to spend very little time on its designated 180 degree line of longitude.

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<sup>209</sup> "Time Keeping," *Te Ara: The Encyclopaedia of New Zealand*. Retrieved on November 13, 2011 from <http://www.teara.govt.nz/en/timekeeping>

<sup>210</sup> "Time Act 1974," Retrieved on November 13, 2011 from <http://www.legislation.govt.nz/act/public/1974/0039/latest/DLM412764.html>

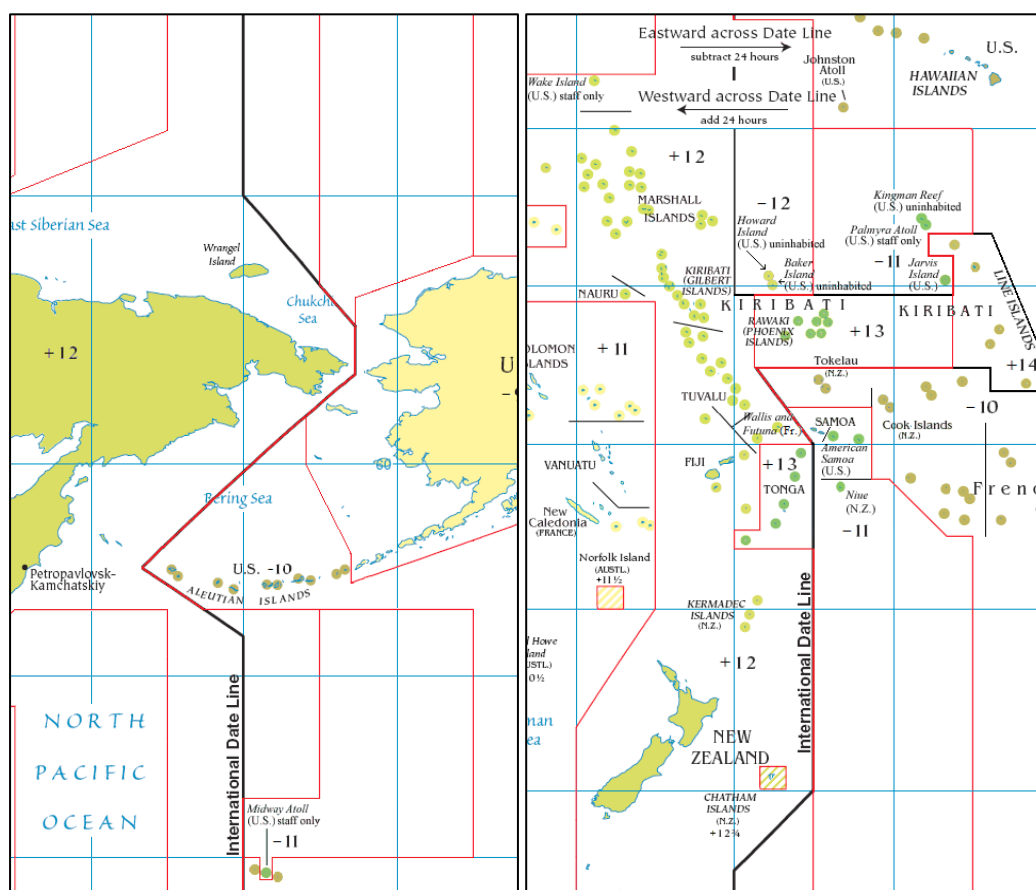


Figure 9: The International Dateline (as at October 2011)

The nation of Samoa which geographically lies 32 kilometres east of the 180 degree longitude, in May 2011, decided to “jump” the International Dateline and be part of “tomorrow” in an effort to better coordinate its society with its Western Pacific neighbours Australia and New Zealand rather than with the United States the most significant neighbour lying on the other side of the Dateline. Samoans will lose an entire day because of this and for them 31 December 2011 will simply not happen.<sup>211</sup> Historically, Samoa has a habit of jumping the Dateline when it first did so in 1892 in order to harmonise with the United States “when the king [of Samoa] was persuaded of the benefits of being closer to American ships as they sailed westwards from San Francisco”.<sup>212</sup> With Samoa on the opposite side of the Dateline to New Zealand it was temporally 23 hours behind New Zealand Standard Time. From January 1, 2012 it will be only one hour ahead of New Zealand Standard Time. A

<sup>211</sup> Amedea Kelly-Taglianini, “The difference between: East and West,” *The Oxford Student* November 11, 2011. Retrieved on November 14, 2011 from <http://oxfordstudent.com/2011/11/11/the-difference-between-east-and-west/>

<sup>212</sup> “Samoa and the international date line: Back to the future” *The Economist*, Banyan Blog Online. Retrieved on November 14, 2011 from [http://www.economist.com/blogs/banyan/2011/05/samoa\\_and\\_international\\_date\\_line](http://www.economist.com/blogs/banyan/2011/05/samoa_and_international_date_line)



few months following the decision of the Samoan government, Tokulau also announced that it too would jump the International Dateline and be temporally closer to New Zealand and Australia instead of the United States. Because Tokulau is part of the Realm of New Zealand, the New Zealand Parliament will have to amend the law in order to bring affect to this change.<sup>213</sup>

Taking a step back from the current construction of the International Dateline, its history is a fascinating story of conflicting imperialist ambitions in the Asia-Pacific region. The problem of where to mark the end of today and the beginning of tomorrow arose only once global travel became possible. Despite popular belief, knowledge of the spherical nature of the earth was known by the Ancient Greeks and as early as the thirteenth century, Islamic travellers were aware of ‘the circumnavigator’s paradox’ where if one travelled around the globe in a single direction at some point he was bound to loss or gain a day.<sup>214</sup>

Where to put the International Dateline was conventionally agreed to be through the Pacific Ocean between Asia and the Americas. The European explorers who came to the Pacific Ocean by sailing eastward such as the Portuguese, and then the Dutch, the English, and the French, naturally kept their ship’s journals according to the day count of their home land and this was also adopted by the colonists who settled in and around the Pacific Ocean. However, the colonisation of the Pacific Ocean by the Spanish occurred from the opposite direction because of the Spanish possessions in the Americas. A problem came from the discovery and colonisation of the Philippines. Most of the shipping from the Philippines to Spain went across the Pacific Ocean to the Mexican port of Acapulco. It was then transported overland, and then shipped across the Atlantic to Spain. In order that the Spanish ships crossing the Pacific Ocean between the Philippines and Spanish America would not have to adjust the dates in their journals whenever they sighted land, the Philippines observed the same day count as that of the Spanish America’s. Therefore the Philippines existed in temporal isolation from its Asian neighbours as can be seen in Figure 10 below.

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<sup>213</sup> Paul Chapman, “Tokelau joins Samoa in jump across international dateline,” *The Telegraph*. Retrieved on November 14, 2011 from

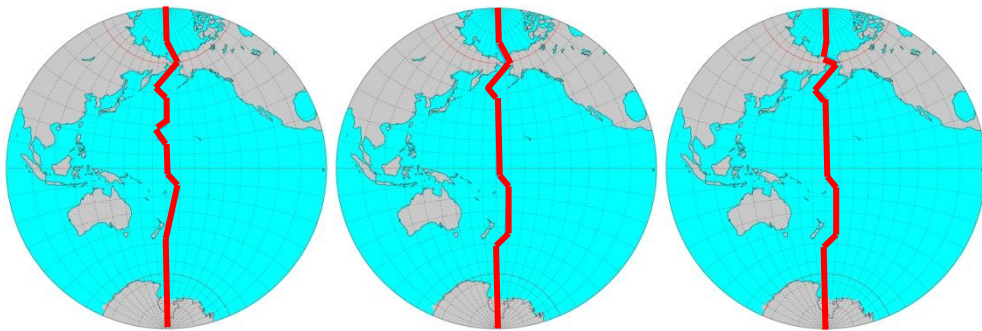
<http://www.telegraph.co.uk/news/worldnews/australiaandthepacific/newzealand/8812649/Tokelau-joins-Samoa-in-jump-across-international-dateline.html>

<sup>214</sup> R. H. van Gent, “A History of the International Date Line”, Institute for History and Foundations of Mathematics and the Physical Sciences, 2008. Retrieved on November 14, 2011 from <http://www.staff.science.uu.nl/~gent0113/idl/idl.htm>





position of the International Dateline. Two adjustments to the International Dateline took place in 1910 near the island chain of Hawaii and between Samoa and the Chatham Islands as can be seen in Figure 11 below. In the former case a small westward extension of the date line had been deemed necessary so that the small islands of Patrocinio and Morrell Island featured on most 19th-century nautical charts would keep the same date as Hawaii. In 1910 it was realised that these island were in fact mistakes of cartographers and did not exist so the line was straightened out as a result.



*Figure 11: Changes to the International Dateline 1884-1921*

In 1867 Alaska was acquired in a purchase by the United States from the Russian Empire for a sum of US\$7.2 million. The change in Alaska to the American standard of time measurement was put into effect by decreeing that Friday, 6 October 1867, of the same year would be followed by another Friday, 18 October 1867 – a shift of 12 days due to the change from the Julian Calendar, still in use in Russia until the Revolution of 1917, to the Gregorian calendar, plus one day on account of the day change and then minus one day for the relocation of the date line to the waters of the Bering Strait.<sup>217</sup>

### *Can time zones be a form of political resistance?*

By analysing the lines of the time zones we can see that sometimes the design of the international time zone system is driven predominantly by the issue of territorial integrity rather than practical considerations related to geography, science, or economics. Because in the modern international system both geographic space and the standardised measurement of time have an intrinsic political value, where the

<sup>217</sup> R. H. van Gent, “A History of the International Date Line”, Institute for History and Foundations of Mathematics and the Physical Sciences, 2008. Retrieved on November 14, 2011 from <http://www.staff.science.uu.nl/~gent0113/idl/idl.htm>

lines of the time zones demarcate have an importance to a state more so than they would if their legitimacy of rule was not based on territoriality.

While most states observe certain conventions of time standardisation in the international time zone system, those countries that are most likely to have unique or irregular standards of time tend to be states who in general are dissatisfied with the structure of the international political or economic system or face internal issues related to their own territorial integrity such as separatist movements. In most circumstances resisting the international time zone system can be seen as indifference but in others it is a deliberate act of defiance.

For example, the Ayatollah Khomeini declared outrage that Muslim countries were setting their clocks according to “European time” calling it “...a nightmare”.<sup>218</sup> Time zones in some circumstances act as symbolic gestures of defiance against the legitimacy of the international environment, the forces of modernity, or the process of increased globalisation. Time zones can be used to uphold territorial sovereignty by states or to demonstrate the legitimacy of the state over disputed geographic areas.

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<sup>218</sup> Zerubavel, “The Standardization of Time: A Sociohistorical Perspective,” 19.

## CHAPTER 4: TEMPORAL SOVEREIGNTY

The contemporaneous rise of Western standard time and territorial sovereignty, and the relationship between the two concepts has resulted in the modern sovereign state taking responsible for the standardisation of the measurement of time. In modern international politics, this power of standardisation by states over their society, has allowed them to use that power to help them enforce their legitimacy and authority over the people and territory they claim. The use of measuring time and the enforcement of particular time standards is an idea I have termed ‘temporal sovereignty’.

While territorial sovereignty is about spatial strategies to affect, influence, or control resources and people by controlling area, temporal sovereignty relies on the standardisation and enforcement of particular measurements of time, to affect, influence, or control resources and people, by influencing societies in the ways that Western standard time can. Because in modern international relations, control over geographic territory is the prime determinate of sovereignty, and allows a state to act without external interference within its borders, the state can structure the standard measurement of time to take advantage of many of its benefits without interference from other states or non-state actors.

In modern international politics, temporal sovereignty provides two ways to ‘stake a claim’ to authority of rule over people and space, they are:

1. Helping to build common identities among people living in the same standard of time through creating a common intersubjective social reality.<sup>219</sup>
2. Making social and commercial interactions more efficient between people overcoming the barriers of geographic distances.<sup>220</sup>

By imposing a single common standard of time, states can facilitate people experiencing a single social reality, mitigating difference and standardising human

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<sup>219</sup> Zerubavel. “The Standardization of Time: A Sociohistorical Perspective,” 2.

<sup>220</sup> Brunsson, “Organizations, Markets, and Standardization,” 21.

experience reinforcing a common identity, which can be useful for societal stability and loyalty to the state. In the past, multiple local times kept people tied to their local community and to local identities. National standards of time can build a sense of nationhood over greater geographic distances. But a single national standard measurement of time can also have practical challenges that may cause people to resist the imposition of particular standards. For example, time zones defined with little regard for the correct longitude will result in the rising and setting of the sun at odd times of the day in some locations. The obvious solution to this issue is the creation of multiple time zones within a state, but if a single standard time promotes a common intersubjective social reality than a state divided by time zones can raise the spectre of separatism whereby regional identities develop. This can produce a direct challenge to the legitimacy of the state over certain parts of its own territorial claim.

Another opportunity that temporal sovereignty creates is allowing political centres to maintain greater political control over peripheral parts of its territory. Where this could be advantageous to a state is in terms of the national economy. The ability to better link all parts of their territory can lead to greater economic. For example, time zones can be constructed in such a way as to bring far away local economies closer in terms of time, to other local economies allowing for better organisation and cooperation between the two, all under the umbrella of a single sovereign state. This construction and manipulation with temporal orders can have its downsides. A flagrant disregard for common international norms of time measurement can make it harder for the people and economies of two states more difficult to interact with each other. There exist real world situations where people geographically located right next to each other, due to divergent time standardisation, are temporally hours apart.

This chapter will analysis how temporal sovereignty is used in three contemporary case studies to highlight its unappreciated importance to International Relations. The following are three examples of how time standardisation is being used by modern states as a tool to uphold claims of sovereignty over people and territory.

The first case study is Canada, where the provincial governments have legal authority over the standardisation of measuring time and I will show how time standardisation under the control of the periphery enables them to assert their own sovereignty against that of the central government. This forces the central

government to perform a fine balancing act between mitigating separatist tendencies from regional identities and asserting its own sovereignty as the national government of all Canadians while respecting the rights of the provincial governments and the practical challenges caused by Canada's large geographic size.

The second case study is Russia, but whereas in the case of Canada the provincial governments have control over their standards of time, in Russia the national government alone dictates how time is to be standardised in that country. Separatism is less of an issue due to the movements seeking succession being located in the same west Russian time zones. What time standardisation *is* used for in Russia is bringing the economically resource rich regions of the distance Siberian far-east temporally closer to the centre of the Russian economy in the west and away from Siberia's neighbours: Japan, China, and the Koreans.

The third case study is the People's Republic of China, a state that while geographically covering five time zones gives legal effect only to one: Beijing Standard Time. In doing so, it ensures that the regions which are most at risk of separatist challenges to national territorial integrity, the far-west, receive no aid in their claim of distinctiveness from the social or economic benefits of having their own legal time zone. Practical realities are disregarded by Beijing in order to ascertain an unquestioned sovereign claim to far-west Tibet and Xinjiang historic evidence to the contrary.

#### *The fine balancing act that time standardisation creates*

In all three cases studies, the issue at stake is the division of power between political centres and political peripheries within states that are geographically large in territory that one standard time zone is simply not practical. Time standardisation functions as a tool - some might say a weapon - of the centre or the periphery to uphold its legitimacy over the territory and therefore people for which it claims. Standardising time can also be used as a tool against other competitors to this sovereignty whether they are sub-national governments or separatist movement in civil society.

In a federation, control of the power to standardise time is also about the relationship between the centre and the periphery and the degree to which they must *share* power and sovereignty. This is consistent with the theoretical and practical nature of

federalism in modern Political Science where there is always a tension over power and sovereignty between the national and sub-national governments. Neither level of government can abolish the other outright therefore power and sovereignty must be shared and specific functions allocated to each tier.<sup>221</sup> Of the two sets of governments, neither is ready to abandon its sovereignty and yield fully to the other; it is a conflict combined with a keen awareness of mutual dependence. There is a tension between the national government seeking to achieve national unity by suppression of diversity and provincial autonomy, and the provincial governments who seek autonomy through resistance to national power and sovereignty.<sup>222</sup> A political cleavage develops with the sub-national governments nurturing sub-national loyalties and identities, and the national government who seeks to do the same but at a national level.<sup>223</sup> Federation being an “auxiliary form of political accommodation in territorially fragmented societies” means that challenges can be dealt with in two ways institutionally: intrastate federalism or interstate federalism. These are the difference between policies that are centripetal (standardisation and harmonisation) or policies that are centrifugal (diversification).<sup>224</sup> The centre-periphery policy-making relationship in a federation is always the balancing of these two types.

The tension is true for control of time standardisation, the national government will always seek to regulate a standard of time that promotes national cohesion and brings the periphery temporally closer to the centre. This is the case in the Russian Federation where the central government has complete sovereignty over time. But for federations where time is either shared by the central and periphery, within the sovereign jurisdiction of the periphery only, or a legally ambiguous issue, time standardisation becomes a serious political issue.

Time standardisation becomes tied up in debates over sovereignty within particular states. The nature of the creation of the federation can sometimes shed light on why the power over the standardisation of time measurement is observed within certain states. The two most common routes to federation, ‘coming together’ by which

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<sup>221</sup> Rod Hague and Martin Harrop, *Political Science: A Comparative Introduction*, 6<sup>th</sup> Edition, (Basingstoke: Palgrave Macmillan, 2010): 273.

<sup>222</sup> Ivo D. Duchacek, *Comparative Federalism: The Territorial Dimension of Politics*, (New York City: Holt, Rinehart and Winston, Inc, 1970): 192-4.

<sup>223</sup> Roger Gibbins. “Federal Societies, Institutions, and Politics.” In *Federalism and the Role of the State* by Herman Bakvis and William M. Chandler, (Toronto: University of Toronto Press, 1987): 18-19.

<sup>224</sup> Thomas O. Hueglin. “Legitimacy, Democracy, and Federalism.” In *Federalism and the Role of the State* by Herman Bakvis and William M. Chandler, (Toronto: University of Toronto Press, 1987): 43.

sovereign states create a new central authority, and ‘holding together’ by which sovereignty is transferred to lower tiers of government.<sup>225</sup> ‘Coming together’ states like Canada, Australia, and the United States of America have time standardised and enforced by sub-national governments while ‘holding together’ states like Germany, India, and Russia have time standardised and enforced by the national government.

In a unitary state, control of time standardisation is about the relationship between the centre and the periphery and the *absolute monopolisation* of sovereignty by the centre. There is less of an issue over who controls time standards and so time standardisation is used to achieve other goals of the state rather than division of sovereignty. One such goal is national cohesion and consolidation of territorial claims. The centre will use enforcing time standards to weaken challenges to its sovereignty by actors in the periphery who wish to achieve greater self-rule or autonomy. Federalism is often promoted as a solution to this problem of secession movements in large ethnically diverse states. The relationship between self-rule and ethnic divisions or “the paradox of federalism”, is giving autonomy to a recognised group within a state makes the state more likely to stay intact and the chances of ethnic conflicts are reduced.<sup>226</sup> Political scientist Ivo D. Duchacek notes that “even if the ruling group finds some demands for succession more justifiable than others, it will tend to resist them all because it fears a chain reaction – a kind of domino theory of self-determination”.<sup>227</sup> A unitary state lacks this paradox and so faces serious challenges if the state is ethnically diverse with strong sub-national identities that have little autonomy or power to show for it.

Time standardisation has been used as a tool of the unitary state to try to break down the potency of ethnic nationalism and build new civic nationalisms in order to remain a strong centre with no peripheral challengers. Successful unitary states that tend to be ethnically homogenous avoid this problem of separatism. Those that aren’t tend to have problems. Belgium is one such example where a once unitary state, due to the pressure of two equally strong sub-national ethnic nationalisms, reformed into a federation in order to transfer power from the centre to the periphery. The Flemish and the Walloons since 1993 effectively have their own sub-national states within a

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<sup>225</sup> Hague and Harrop, *Political Science: A Comparative Introduction*, 6<sup>th</sup> Edition, 274.

<sup>226</sup> Jan Erk and Lawrence M. Anderson “The Paradox of Federalism: Does Self-Rule Accommodate or Exacerbate Ethnic Divisions.” In *The Paradox of Federalism: Does Self-Rule Accommodate or Exacerbate Ethnic Divisions*, by Jan Erk and Lawrence M. Anderson (Oxford: Routledge, 2010): 3.

<sup>227</sup> Duchacek, *Comparative Federalism: The Territorial Dimension of Politics*, 72.



united Belgium.<sup>228</sup> Time standardisation can aid in building a common intersubjective social reality that promotes a loyalty to the unitary state above ethnic nationalism and separatism.

*Canada: Temporal sovereignty and regional identities*

Canada provides an excellent case study to analysis the dynamics of temporal sovereignty from the standardisation of time measurement in a state where the sub-national provincial governments have authority over regulating time rather than the national government. This leads to centrifugal time standards across Canada and each province being in charge of the legal enforcement of their own standard of time. Alongside this has been the development of strong regional identities in Canada, while some are based a ethnicity and linguistics, others are based on geography. Because geography impacts the standardisation of accurate time measurement, a situation has developed where each regional identity in Canada seems to observe and enforce their regional standard of time measurement. British Columbians have Pacific Standard Time while Canadians in Newfoundland have their own Newfoundland Standard Time. Whether that matters to each communities sense of identity will of course depend on other factors, but in general, national cohesion by the federal Canadian government is made more difficult if diverse communities of citizens with already strong regional identities are separated temporally.

The Canadian federal government must balance its desire to build a common Canadian identity including a loyalty to the state, without threatening the division of powers over time standardisation established by the federal constitution or risk aliening the provincial governments and potentially causing them to exit the union. In Canada, there still remains a desire by the provinces to assert their right to autonomy and sovereignty over their territory but this comes into conflict with the concern of the federal government to avoid and discourage any moves by the provinces towards separatism.

In Canada, time standardisation is a political matter which brings the peripheral provincial governments into potential conflict with the central federal government.

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<sup>228</sup> Jason Sorens. "The Partisan Logic of Decentralization in Europe." In *The Paradox of Federalism: Does Self-Rule Accommodate or Exacerbate Ethnic Divisions*, by Jan Erk and Lawrence M. Anderson, (Oxford: Routledge, 2010): 72.

At a total area of 9,984,670 square kilometres<sup>229</sup> and spanning six time zones, to build a unified Canada the role of time standards would need to be used to create temporal coherency. First, it is important to understand how the provincial governments came to gain sovereignty over their own standards of time by looking to the history of federalism in Canada. Then, I will turn to how the provinces regulate time standards and how this affects their relationship with the federal government in its desire to govern a united Canada.

### *The historic basis of regional Canadian identities*

Since its founding, Canada has faced challenges to its existence as a united nation by prominent nationalist groups in society including: the French Canadians, the indigenous First Nations, and the regional English Canadians of the West, Prairie, and Atlantic coast against the Central Canadians of Ontario and Québec.

Deep-rooted cultural divisions which served once as the *raison d'être* for Canadian federalism are now the most powerful threat to its stability.<sup>230</sup> Expressing regional identities take many forms in Canada but the most common is in the form of politics.<sup>231</sup> Canada's federation was designed primarily to handle this political conflict between the two most important linguistic and religious communities, the Protestant English and the Catholic French; it has been seen as a failure for much of Canadian history. Even significant constitutional reforms beginning in the 1960s, which culminated in the repatriation of full parliamentary sovereignty from the United Kingdom and the creation of the Charter of Rights and Freedoms, have failed to significantly address the perceived flaws of the federal system in satisfying the aspirations of both English and French Canadians.<sup>232</sup> So rather than empower sub-national governments, Canada's constitution leans more towards centralisation in an attempt to avoid the preserved tension that exaggerated states' rights over the federal government in the United States of America. As the constitution was drafted at the

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<sup>229</sup> "Canada," *The CIA World Factbook*, Retrieved November 20, 2011 from <https://www.cia.gov/library/publications/the-world-factbook/geos/ca.html>

<sup>230</sup> Donald V. Smiley, *Canada in Question – Federalism in the Seventies*, (Toronto: McGraw-Hill Ryerson Limited, 1972): 143.

<sup>231</sup> G. A. Rawlyk, R. P. Bowles & B. W. Hodgins, *Regionalism in Canada: Flexible Federalism or Fractured Nation?* (Scarborough: Prentice-Hall of Canada Ltd, 1979): 7.

<sup>232</sup> Gibbins. "Federal Societies, Institutions, and Politics." 27-8.

end of the American Civil War, this factor would have been on the minds of the Fathers of Confederation.<sup>233</sup>

The tilt towards the centralisation of state power concerns the regional communities in particular the French Canadians of Québec as it is viewed as putting too much power in the hands of the Ottawa Government who they see as being controlled by English speaking, Protestant majorities against French interest. Proponents of “centralist” ideas of power are viewed by the French communities as cultural extremists akin to the Orange Lodge or United Empire Loyalists.<sup>234</sup> The information around the drafting of the *British North America Act 1867* seems to support the idea that London and the Canadian colonies were creating a highly centralised new state and that the provinces would only retain the powers which were considered to be of local concern. The federal government was able to take control of issues like criminal law, marriage, and divorce which in the federation to the south, the United States, were highly protected state matters.<sup>235</sup> The provincial Canadian governments were able to keep control over time standardisation as a local matter because it was still considered a local matter in most other places in the Western world.

While federalism implies the use of the state as “an instrument of unification” the Judicial Committee of the Privy Council, the first, final court in Canada, has fairly consistently adopted an autonomist conception of federation where the provinces are “free to define their general policy in their own sphere of activity, without being obliged to conform with any pattern set down by the central authority”.<sup>236</sup> The opening words of Section 91<sup>237</sup> of the *British North America Act 1867*,<sup>238</sup> while giving the federal parliament broad legislative powers also preserve the sovereignty of the provinces on matters not specifically granted to the federal parliament.<sup>239</sup> This is important to the regulation of time standards for unless that power is given to the

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<sup>233</sup> Dikshit, *The Political Geography of Federalism – An Inquiry into Origins and Stability*, 76.

<sup>234</sup> Edwin R. Black, *Divided Loyalties: Canadian Concepts of Federalism*, (Montreal: McGill-Queen’s University Press, 1975): 21.

<sup>235</sup> Black, *Divided Loyalties: Canadian Concepts of Federalism*, 33.

<sup>236</sup> Louis-Philippe Pigeon, “The Meaning of Provincial Autonomy.” In *Canadian Federalism: Myths and Reality*, by J. Peter Meekison, (Toronto: Methuen, 1968): 159.

<sup>237</sup> “It shall be lawful for the Queen, by and with the Advice and Consent of the Senate and House of Commons, to make Laws for the Peace, Order, and good Government of Canada, in relation to all Matters not coming within the Classes of Subjects by this Act assigned exclusively to the Legislatures of the Provinces.”

<sup>238</sup> The British North America Act 1867 is still in effect and more commonly known as the Constitution Act 1967.

<sup>239</sup> Pigeon, “The Meaning of Provincial Autonomy,” 161.

federal government, constitutionally the provinces have a strong legal argument that they still control regulation powers over this issue.

From its founding, Canada has needed the characteristics of federalism due to poor continental communication systems and a deep-rooted tradition of local self-government in the Maritime Provinces, who continually tried to block a legislative union of the Canadian colonies. The leaders of French Canada also made federalism a non-negotiable foundation for the new state.<sup>240</sup> After the conquest of Québec by the British in 1763, attempts were made by the British Crown to limit the expansion of the New France populations in Québec and to encourage settlement by English-speaking peoples in the region to dilute the community. The English settlers instead preferred to settle in the Ohio Valley assuring the survival of a culturally French community within a British territory. Each side retained a separate political identity with Upper Canada home to English Canadians and Lower Canada home to the French Canadians. Even the *Act of Union 1840* failed to bring the two together into a single nation of Canada despite establishing a single parliament for the United Provinces of Canada.

Granting of responsible government to the colonies of North America began in the mid-nineteenth century as Britain ceded economic control of its colonies because of the repeal of the Corn Laws in 1846. Efforts by Canadians to unify were finally successful in 1867 with the creation of the Canadian Confederation. By 1949 all political entities above the 45<sup>th</sup> parallel in North America with the exception of Alaska were part of 'Canada'.<sup>241</sup> Since then, regional identification has remained strong, research into the migration patterns of Canadians after 1945 found that inter-regional migration is low, most stay within their cultural region if they move.<sup>242</sup>

Federal/provincial relations can have an impact on the results of state and national elections. In modern Canadian history, state elections have been called on the issue of the division of power between the two levels of government, particularly in the province of Québec. However, research has shown that the results can be somewhat inconsistent, in some cases the electorate votes for a more assertive provincial government and a highly centralist federal government within the same electoral

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<sup>240</sup> J. R. Mallory. *The Structure of Canadian Government*, (Toronto: MacMillan of Canada, 1971): 28.

<sup>241</sup> Ramesh Dutta Dikshit, *The Political Geography of Federalism – An Inquiry into Origins and Stability*, (New York City: A Halsted Press Book – John Wiley & Sons, 1975): 70-4.

<sup>242</sup> Bell & Tepperman, *The Roots of Disunity – A Look at Canadian Political Culture*, 154.

cycle. Regardless, provincial autonomy still remains the “stock-in-trade” for most provincial politicians seeking office.<sup>243</sup>

Canada has been described as “a kind of consociational democracy held together by elite accommodation”. However, developments in Québec and its relationship to the Western provinces between the 1960s and the 1990s have made some question provincial leaders’ commitment to Canadian unity.<sup>244</sup> Regional discontent, sometimes driven by cultural differences, other times by economic ones, continues to drive wedges between regional cultures in terms of building a national Canadian identity. The federal government has tried both transfer payments and repatriation of provincial powers to the central to try to achieve this goal.<sup>245</sup>

The so-called *Quiet Revolution* in Québec in the 1960s put new demands on the federal government to cede more power and grant greater autonomy to that province, and in turn all provinces. Québec made demands of financial autonomy, withdrawal of federal involvement of matter within provincial jurisdiction, and more institutionalised procedures of intergovernmental collaboration.<sup>246</sup> To head of the separatists in Québec, Canadian Prime Minister Pierre Trudeau released *A Time for Action* in 1978, a plan to reform the constitutional arrangements of 1867 in favour of a more united Canada at the expense of the perceived confederation arrangements of the status quo. The proposal called for: A national statement on ‘Canadian-ness’; a Charter of Rights and Freedoms; a House of Federation in the Canadian Parliament; reform appointment method to the Supreme Court; new federal/provincial division of powers; clarifying the role of the monarchy; and repatriation of the constitution from the United Kingdom.<sup>247</sup>

While being the most vocal and recognised regionalist movement in Canada, the French Canadians are not the only regional group which threaten Canadian unity. The western province of British Columbia, separated from the rest of Canada by the Rocky Mountains also has a strong regional identity. British Columbia see themselves as being “created in a different era under different conditions, and in a

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<sup>243</sup> Smiley, *Canada in Question – Federalism in the Seventies*, 97.

<sup>244</sup> Bell & Tepperman, *The Roots of Disunity – A Look at Canadian Political Culture*, 158.

<sup>245</sup> *Ibid.*, 174.

<sup>246</sup> Smiley, *Canada in Question – Federalism in the Seventies*, 150.

<sup>247</sup> David Bell & Lorne Tepperman, *The Roots of Disunity – A Look at Canadian Political Culture*, (Toronto: McClelland and Stewart, 1979), 200-1.

different way by different men” in comparison to the rest of Canada.<sup>248</sup> Their relative geographic isolation from the Central Canadian provinces of Ontario and Québec only compounds the sentiments.

The local politicians and media of the so-called Prairie Provinces of Manitoba, Saskatchewan, and Alberta also speak of a “western alienation” between themselves and the rest of central and eastern Canada. The problem from the viewpoint of the west is that the constitution is too centralist with an image of an imperialist rather than a federalist form of government.<sup>249</sup> Resentments build, and the provinces cling to their history, their cultural, and their identities tightly seeing any further effort by the federal government to interfere with this autonomy as another step towards complete nationalisation.

This undercurrent of separatism from varying groups has led the federal government to view efforts by the provinces to assert their right to control matters of identity, even time standardisation, as efforts towards disunity and disintegration. Conflation of Québécois, or other regional nationalism and assertions of sovereignty through regional time zoning and daylight savings legislation has put the federal government into an unnecessarily acrimonious conflict with the provinces over an issue that could actually bring the periphery closer to the centre and allow for a more united Canada over a large geographic area.

#### *How time standardisation empowers provincial state interests*

On the specific issue of standardisation of time measurement and the construction of time zones within Canada, the authority for provincial governments to perform this regulation come from provincial statutes passed by the provincial legislatures. Some provincial statutes deal directly with the issue of the standard measurement of time. For example the provinces of Ontario, Newfoundland, and Québec all have what standard of time the province recognises by law contained in statutes passed for that specific purpose. Ontario has the *Time Act 1990*,<sup>250</sup> Newfoundland has the *Time*

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<sup>248</sup> Rawlyk, et al., *Regionalism in Canada: Flexible Federalism or Fractured Nation?*, 44-45.

<sup>249</sup> *Ibid.*, 50-1

<sup>250</sup> Legislative Assembly of Ontario, *Time Act, R.S.O. 1990, Chapter T.9*, Retrieved January 13, 2012 from [http://www.e-laws.gov.on.ca/html/statutes/english/elaws\\_statutes\\_90t09\\_e.htm](http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90t09_e.htm)

*Definition Act 1989*,<sup>251</sup> and Quebec has the *Legal Time Act 2006*.<sup>252</sup> Other provinces have their legal time standards contained in legislative interpretation acts such as British Columbia's *Interpretation Act 1996*.<sup>253</sup> Either way, it is the provinces that give legal authority to the standard measurement of time, based on Western standard time, across Canada, not the national government.

While Canada is neatly divided into six time zones according to the longitudes, parts of the country exist in temporal anomalies where some Canadian provinces, municipalities, and towns ignore these time zone boundaries and observe the time standard that best suits them. Daylight savings is defined differently from one province to the next, with the prairie province of Saskatchewan not observing it at all. Some individual cities in other provinces chose not to observe it either. And while Alberta's time-abiding citizens strictly follow Mountain Time, violators can be slapped with a \$25 fine for observing another official standard time.<sup>254</sup> The magazine *Canadian Geographic* has highlighted examples of anomalies of time standards in Canada caused by provinces being able to regulate time zones themselves rather than a central authority.

The British Columbia-Alberta border not only divides those provinces but also Pacific Standard Time and Mountain Standard Time. The British Columbian communities of Fort St. John and Dawson Creek, which are located only a few miles from the Alberta border, are on Mountain Standard Time all year round, meaning Mountain Time in the winter and Pacific Time in the summer. This puts them at odds with the rest of their own province who are on Pacific Standard Time for most of the year. Slightly further north along this border, the East Kootenays region from Cranbrook to Golden, are an hour or so ahead of their provincial Pacific Standard Time. They follow Mountain Time while the B.C. town of Creston ignores daylight

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<sup>251</sup> Newfoundland and Labrador House of Assembly, *Time Definition Act 1989*, R.S., c. 469, s. 1. Retrieved January 13, 2012 from <http://nslegislature.ca/legc/statutes/timedefn.htm>

<sup>252</sup> National Assembly of Québec, *Legal Time Act*, *Statutes of Québec*, 2006, c. 39. Retrieved January 13, 2012 from [http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=5&file=2006C39\\_A.PDF](http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=5&file=2006C39_A.PDF)

<sup>253</sup> Legislative Assembly of British Columbia, *Interpretation Act*, R.S.B.C. 1996, C. 238, Retrieved January 13, 2012 from [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96238\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96238_01)

<sup>254</sup> H. David Matthews and Mary Vincent, "It's about time," *Canadian Geographic* September/October 1998 issue. Retrieved November 10, 2011 from <http://www.canadiangeographic.ca/Magazine/SO98/alcarte.asp>

savings completely, putting the town on Mountain Time in the winter and Pacific Time in the summer.<sup>255</sup>

Further westward on the Alberta-Saskatchewan border, the Canadian border city of Lloydminster has a special city charter permitting the use of Mountain Standard Time with daylight savings to better harmonise its standard of time with Alberta all year round because Saskatchewan does not observe daylight savings at all. Residents of the east Saskatchewan towns of Denare Beach and Creighton also break Saskatchewan's anti-daylight savings law by putting their clocks ahead during the summer to keep up with their neighbours in the major city of Flin Flon, Manitoba.<sup>256</sup>

Intersected by the 90<sup>th</sup> longitude, Ontario has chosen to create two time zones rather than simply have one standard time across the entire province. Clocks to the west of the longitude observe Central Standard Time while those on the eastern side observe Eastern Standard Time. But there are still some towns who shun their legal standard. Located on the time zone boundary of the 90<sup>th</sup> longitude, the towns of Pickle Lake and New Osnaburgh do not bother with daylight savings when the rest of Central Standard Time does. The town of Big Trout Lake which is east of the longitude chooses to follow Central Standard Time instead of Eastern Standard Time. In order to be temporally harmonised with the major Ontario city of Thunder Bay, lying east of the longitude, the nearby towns of Upsala and Shebandowan on the other side of the longitude, break the Ontario *Time Act* and use Eastern Standard Time, while the town of Atikokan ignores daylight savings, meaning residents use Eastern Standard Time in the winter and Central Standard Time in the summer.<sup>257</sup>

Finally in Québec's far eastern North Shore, the standard time ideally should be Atlantic Standard Time all year round with no daylight savings, in order to make it the same as the provinces of Labrador and Newfoundland where the Labrador part lies geographically north of this part of eastern Québec. However, Québec residents as far east as Natashquan use Eastern Standard Time like the rest of the province. If a person moves southward from Labrador to Québec then they will gain one hour, something that should only happen moving in an eastward direction. Also in this part of Canada, Labrador should actually follow Newfoundland Standard Time, but most parts, with the exception of the southeast corner, use Atlantic Standard Time. If

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<sup>255</sup> Matthews and Vincent, "It's about time."

<sup>256</sup> Ibid.

<sup>257</sup> Ibid.



Labrador were to do so then it would be two hours ahead of its immediate western and south neighbour Québec.<sup>258</sup>

All these anomalies show the desire of local Canadian communities to decide for themselves the standard of time measurement they wish to observe. Time zones in Canada are not arbitrary lines but represent markers of regional and local identity and their power to govern their local affairs without the interference of the federal government or other provincial ones. From this messy structuring of temporal orders we can see that standardisation of time can be used to assert political statements about the limits of sovereignty between different actors over the same geographic territory and people.

In conclusion, Canada's time zones are structured in particular ways because it is the provincial governments who have the constitutional power to standardise time in Canada. The provincial governments value their autonomy highly, particularly in parts where regional identity is strongest. The stronger the regional political identity, the more likely that those communities live in a standard of time in conflict with the Fleming's proposals rational principles for international time zone standardisation. The federal government has found it difficult to take these powers away from the provinces for the purposes of regulating to create a more efficient standard of time across all of Canada, one which would help to build a common intersubjective social reality and in turn a stronger national identity. Because of this, time zones in Canada tend to follow political lines of demarcation based on the territorial boundaries of the provinces not mathematical lines of the Stanford Fleming proposal of 1884. Canada's time zones also show what local people believe to be important and distinctive communities within Canada. Whether Canadians realise it or not, time zones are a mark of regional identity. British Columbians follow Pacific Standard Time, the Prairie Canadians follow Mountain and Central, Ontario and Québec follow Eastern, the Atlantic Provinces follow Atlantic Standard Time, and Newfoundland has a standard all of its own as well.

#### *Russia: Temporal sovereignty and economic nationalisation*

The Russian Federation is an example of a state where the control over the standardisation of the measurement of time is within the exclusive power of the

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<sup>258</sup> Matthews and Vincent, "It's about time."

federal government rather than shared or under the exclusive power of the regional governments. This then is the opposite of Canada. Russia is a federation where time standardisation is imposed on the periphery by the centre in order to meet *their* goals of asserting national sovereignty over territory. The issue is less one of territorial integrity but more about national integration, of bringing the far away eastern regions closer to the centre in the west near Moscow and allowing the centre greater political control over this economically important region.

The challenges to Russian national sovereignty posed by having parts of a country temporally so far away are significant particularly when the country's territory covers twelve time zones more than any other country on earth. In the extremities, the Russian people have a closer experience of time with the peoples of neighbouring states than they do with their fellow Russians some 3,000 kilometres apart. The Russian government is able to use its power to standardise the use of time to bring the sparsely populated, but strategically and economically important far-east periphery closer to the west and integrated into a national system. First, it is necessary to outline why the far-east is so important and also the way federalism operates in Russia. Then, I will turn to the question of why the time zones of the far-east region are 'distorted' and what manipulating time zones in this region does to relationships with the central government and the national economy.

#### *The economic importance of the Siberian far-east*

While accounting for 36 per cent of Russia's total geographic area, the regions of the Siberian far-east contain only 5 per cent of Russian's total population. This is in stark contrast to the large and growing population of China, a country which Russia shares a 3,000km long border with. Fear of the resource-rich region facing pressure from Chinese migration has become part of Russia's foreign policy and domestic political discourse. Russia being "flooded by the Chinese" has made the issue of better control and assertions of sovereignty over Siberia critical for the central government located thousands of kilometres away in Moscow.<sup>259</sup> The image of a 'yellow peril' sweeping through the far-east towards the European side of Russia, is a fear in modern Russian politics that permeates both the general public and the

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<sup>259</sup> Vladimir Kontorovich, "Can Russia Resettle the Far East?" In *Post-Communist Economics*, Vol. 12, No. 3, (2000): 365.

political elites.<sup>260</sup> The standardisation of time and the regulation of time zones in Russia have become part of an effort to better integrate eastern Siberia into the national economy and to promote the region's Russian-ness at the expense of its location in continental Asia.

In the short term, these Chinese migration fears are without empirical foundation. Significant Chinese settlement has not materialised in the far-east yet. But in the long term, the Russian population is predicted to decline through low fertility rates and increasing migration to the Russian west, while a dramatic increase in the migrant-worker Chinese population is not so easily predicted it is nonetheless still anticipated.<sup>261</sup> If anything, these fears of a Chinese "invasion" of Russian far-east territories are based more on Russian domestic problems rather than from any actions of the Chinese people or Chinese government.<sup>262</sup>

Due to the impending depletion of the Ural and western Siberian oilfields, Russia's current main supply of energy resources, intensive development of the far-east is needed for Russia to meet its energy needs in the near future.<sup>263</sup> But in what some have termed, "the scramble for Siberia", the once isolated and sparsely populated Russian far-east is rapidly becoming a geographic location of greater political importance.<sup>264</sup> Tighter control of these energy resources makes Russia more powerful in geostrategic terms in East Asia, where for most of its history it has enjoyed little influence. Russia is being wooed by Japan and China for stakes in the eastern Siberia oilfield. Japan who in 2006 imported almost 90 per cent of its crude oil from the Middle East, seeks to diversify its energy sources.<sup>265</sup> Since China's spectacular economic growth period began in the late 1970s causing a surge in the world price of oil, Russia's vast energy resources have begun to entice Beijing strategists to look north for their energy needs. However, energy hungry Japan has been investing in the infrastructure of Siberia to the tune of an estimated USD\$15 billion with some seeing a Russo-Japanese energy alliance to the detriment of

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<sup>260</sup> Lo Bobo, "The long sunset of strategic partnership: Russia's evolving China policy." In *International Affairs*, Vol. 80, No. 2, (2004): 298.

<sup>261</sup> Kontorovich, "Can Russia Resettle the Far East?" 379.

<sup>262</sup> Bobo, "The long sunset of strategic partnership: Russia's evolving China policy," 298.

<sup>263</sup> Goldstein & Kozyrev, "China, Japan and the scramble for Siberia," 168.

<sup>264</sup> *Ibid.*, 172.

<sup>265</sup> *Ibid.*, 170.

China's energy security.<sup>266</sup> The Russian far-east represents a giant energy cash-cow for the Russian economy and the Russian government who receives substantial revenues from their 50.01 per cent stake in oil and natural gas monopoly company, Gazprom. Eastern Siberia alone is estimated to hold 20 billion barrels of oil equivalent to the entire proven reserves of the United States of America.<sup>267</sup> To extract this, significant infrastructure investment is required and control of that infrastructure is critical to return the huge revenues predicted by the Russian government.

The Russian government believes it needs ways to ensure maintenance of strong political ties to the far-east, which while within the same continuous territory, is still thousands of kilometres away and populated by only a tiny percentage of the total Russian population most of whom are ethnically non-Russian making effective and strengthened governance over the resources rich region critical. The Russian government believes it can actively integrate the far-east into the national economy. Such a move would likely produce revenue windfalls for the central government. While some argue a more loosely confederated Russia, where there is a more powerful Siberian regional republic and even a Far-East regional republic, would find it easier to cultivate closer economic relations with its neighbours and hence great greater domestic prosperity,<sup>268</sup> it appears Russia sees its future prospects as involving greater political control of its peripheral interests from the political centre in Moscow.

Under the Presidency of Vladimir Putin and Dmitri Medvedev, the Russian political centre has moved to strengthen its control over the peripheral far-east through reforming the constitutional arrangements in favour of asymmetric federalism tilting power in favour of the federal government. The nature of Russian federalism is a product of both its historic legacy as the dominant republic of the Soviet Union and of its recent turbulent history of economic and political change since the Soviet Union's collapse in 1991. The power structure of the Soviet Union was strongly hierarchical and centralised. Its transition from a federalist system as the Soviet Union to a federalist Russian republic is considered a prime example of path-

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<sup>266</sup> Lyle Goldstein & Vitaly Kozyrev, "China, Japan and the scramble for Siberia." In *Survival* Vol. 48, No.1, (2006): 163-4.

<sup>267</sup> Goldstein & Kozyrev, "China, Japan and the scramble for Siberia," 168.

<sup>268</sup> Zbigniew Brzezinski, "A Geostrategy for Eurasia." In *Foreign Affairs*, Vol. 76, (1997): 56.

dependency, where the earlier institutional choices foreclose later options.<sup>269</sup> While Russia experienced a period of decentralisation in the division of power during the 1990s, it was not the result of considered policy but rather the side-effect of intra-elite conflict, a severe and sustained economic collapse in 1998, and serious falling away of state capacity by the twenty-first century.

During this period, a wide range of powers were devolved to the regions from the Centre including: regional legislation that could contradict federal law, the power to independently of the centre appoint heads of regional departments including law and order bodies, and economic resources and property rights which effectively gave the regions a right of veto over national economic policy.<sup>270</sup> Powerful regions would prove unworkable for a Russian Federation in 1993, Moscow collected only 40 per cent of the taxes and revenues owed to it by the regional governments that year. This weakness at the centre was not simply a perception; it was very real, and by the end of the 1990s was seen as needing reform by the proponents of a more ethno-nationalist Russian state.<sup>271</sup> The financial collapse of the Russian economy in August 1998 created calls for a recentralisation of state power in Russia and the creation of a strong centre. The demand was satisfied; if 1991-8 brought seven years of decentralisation than 1998-2005 would bring a period of recentralisation by the federal government of power in Russia.<sup>272</sup>

The Russian Federation is currently made up of eighty-three regions; forty-six provinces (called oblasts), twenty-one republics, nine krais, four autonomous districts, one autonomous oblast, and two federal cities. Russian federalism has both a centre-periphery tension, inherent in most federations that cover large geographic areas, and also ethnic tensions between Russians and non-Russians.<sup>273</sup> Russia's ethnic minorities are predominately Muslim but are unevenly politicised throughout the country. There exist four types of ethnic group attitudes to the dominance of a ethnic Russian federalist state: the Tatars who seek only to gain acceptance of their distinctiveness within Russia (pluralist), the Finno-Ugrians who seek to be absorbed

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<sup>269</sup> Richard Sakwa. *Russian Politics and Society (Third Edition)*. (London: Routledge, 2002): 203.

<sup>270</sup> Vladimir Gel'man. "Leviathan's return: the policy of recentralization in contemporary Russia." In *Federalism and Local Politics in Russia* edited by Cameron Ross and Adrian Campbell (London: Routledge, 2009): 2.

<sup>271</sup> Sakwa. *Russian Politics and Society (Third Edition)*, 221.

<sup>272</sup> Gel'man. "Leviathan's return: the policy of recentralization in contemporary Russia," 3.

<sup>273</sup> Irina Busygina and Andreas Heinemann-Grüder. "Russian Federation." In *Diversity and Unity in Federal Countries: A Global Dialogue on Federalism – Volume 7* edited by Luis Moreno and César Colino, (Toronto: McGill-Queen's University Press, 2010): 259-60.

into the dominant group (assimilationists), the Chechens during the 1990s (secessionists), and the Islamic extremists in the North Caucasus who have a long history of conflict with the Russian state (militant).<sup>274</sup> Russia's rich ethnic diversity means there remains a devastating potential for Russia to split up.<sup>275</sup> But as most of the strongest secessionist sentiment lies in regions that are for the most part in the same time zones in western Russia, the issue of time zones helping to build common identities is less an issue than other examples. Where it is more important is economic territorial integrity for the regions of the far-east.

This 'new centrism'<sup>276</sup> in Russian federalism became an important project of President Vladimir Putin's first term in office as he instituted a number of reforms leading to what political scientists have term an 'asymmetrical federalism' in favour of the federal government rather than the regional ones.<sup>277</sup> While Canada continues to maintain an asymmetrical federalism in favour of the provinces by *de facto* and *de jure* arrangements, Russia has moved away from this type of arrangement having experienced significant economic issues and challenges to the territorial integrity of a united Russia in the post-Soviet Union era.<sup>278</sup> Today, over-centralisation is considered to be one of the severe problems of the Russian state.<sup>279</sup> While its decentralisation provided for a bargaining space and the integration of indigenous elites into positions of power during the 1990s, the downsides of peripheral bias asymmetrical federalism created a backlash among Russians against it. Putin allowed the regional treaties which had governed centre-periphery relations for eight years to expire. While the Constitution remained a "sacred cow" the extra-constitutional asymmetries of citizenship of republics, declarations of sovereignty, and the bilateral regional treaties were openly attacked by the centralists.<sup>280</sup>

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<sup>274</sup> Busygina and Heinemann-Grüder. "Russian Federation," 270.

<sup>275</sup> Sakwa. *Russian Politics and Society (Third Edition)*, 211.

<sup>276</sup> *Ibid.*, 10.

<sup>277</sup> Michael Burgess. "Between a rock and a hard place: the Russian Federation in comparative perspective." In *Federalism and Local Politics in Russia* edited by Cameron Ross and Adrian Campbell (London: Routledge, 2009): 46.

<sup>278</sup> Michael Burgess. "Between a rock and a hard place: the Russian Federation in comparative perspective" In *Federalism and Local Politics in Russia* edited by Cameron Ross and Adrian Campbell (London: Routledge, 2009): 47.

<sup>279</sup> Busygina and Heinemann-Grüder. "Russian Federation," 267.

<sup>280</sup> *Ibid.*, 279.

For time standardisation, the power is constitutionally a federal competence rather than a joint or residual one coming under the information and communication category of federal power.<sup>281</sup> But it is not unrelated to regulation of energy policy or the legal framework for the regulation of the Russian economy as a single market.<sup>282</sup> Because of the new centralism in favour of the centre over the asymmetrical federalism of the 1990s, the regional governments have little say in the regulation of time zones even in their territorial jurisdiction. The decision is made for them by Moscow. The interests of the centre are the maintenance of effective political control over the periphery especially in the resource rich far-east where Russia is facing potential future challenges to its territorial integrity. Time regulation in this case acts as a demonstration of the power of the federal government to assert its sovereignty over its territory.

In August 2011, the Federal Government of Russia instituted reforms to the regulation of time zones. With the signing of *Government Resolution 31.08.2011 N 725*<sup>283</sup> the time zones of Russia were re-formalised into federal law along with the procedure by which the standard of time is to be measured. The law created nine permanent time zones in Russia, abolished day-light savings completely, and split the Sakha oblast in the far-east into three zones in order to bring the more populated areas closer to Moscow Standard Time.<sup>284</sup> These recent reforms according to the *International Herald Tribune* “will likely be the enduring legacy of Dmitri Medvedev’s four-year term as president”. Time zones in Russia in 2011 were reduced from eleven to nine bringing the far-east temporally closer to Moscow.<sup>285</sup> President Dmitri Medvedev by presidential decree declared year round day-light

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<sup>281</sup> Dmitry Medvedev signed Federal Law On Time Keeping. Retrieved from <http://eng.kremlin.ru/news/2358>

<sup>282</sup> Busygina and Heinemann-Grüder, “Russian Federation,” 261-2.

<sup>283</sup> Full title of Presidential Decree: "On the composition of the territories that make up each time zone, and the procedure for the calculation of time in time zones, and on declaring invalid some Resolutions of the Government of the Russian Federation"

<sup>284</sup> Постановление Правительства РФ от 31 августа 2011 г. N 725 "О составе территорий, образующих каждую часовую зону, и порядке исчисления времени в часовых зонах, а также о признании утратившими силу отдельных постановлений Правительства Российской Федерации" Retrieved December 7, 2011 from <http://www.garant.ru/hotlaw/federal/346568/>

<sup>285</sup> Masha Gessen, “Medvedev’s Time,” *International Herald Tribune*, November 3, 2011. Retrieved November 7, 2011 from <http://latitude.blogs.nytimes.com/2011/11/03/medvedevs-time/>

savings time in Russia in February 2011.<sup>286</sup> When President Medvedev announced his proposal in 2009, the BBC reported that:<sup>287</sup>

President Medvedev said when he raised the issue in his state of the nation speech, that Russians had "traditionally been accustomed to feeling a pride" in how many time zones the country had "because to us it seemed a vivid illustration of the greatness of our motherland".

In this same address to the Federal Assembly, Medvedev posed the question: "Have we ever stopped to think seriously about whether dividing our country this way makes it harder to manage it effectively and leads to the use of excessively costly technologies?"<sup>288</sup> For Medvedev at least, the argument to reform Russia's time zones was framed as an economic one or at least a desire to increase the efficiency of the national economy by better linking the west and the east.

The most recent reforms help to bring the peoples of the Russian far-east temporally closer to Moscow giving the centre greater influence, improving economic relations, and disincentivising greater engagement with far-east neighbours China, Japan, and the Koreans. For example, the Russian city of Blagoveshchensk which lies directly on the border with China is temporally 6 hours behind Russia, due also to China's unusual time zoning system. The practical reality is that there is a window of just three business hours per day in order for people in that city to trade with China.<sup>289</sup> The Russians of Blagoveshchensk and their geographic neighbours across the Amur River are temporally isolated from each other because Blagoveshchensk maintains closer temporal ties to Moscow and the neighbouring Chinese closer temporal ties to Beijing who are both using time zones to display their sovereignty and to integrate distant local economies into national ones. This clash of practical time standardisation has implications for international relations of two peoples physically right next to each other but whom, through time, in fact live quite distant lives. While there is an assumption that for the sake of efficient commerce two nations would want to harmonise their time zones as much as possible, the pressures placed on Russia and China by threats to territorial integrity mean time zones are

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<sup>286</sup> Gessen, "Medvedev's Time," *International Herald Tribune*.

<sup>287</sup> Penny Spiller, "Changing Times in Russia," *BBC News Online*, November 13, 2009. Retrieved November 7, 2011 from <http://news.bbc.co.uk/2/hi/europe/8357630.stm>

<sup>288</sup> Dmitri Medvedev. *Presidential Address to the Federal Assembly of the Russian Federation*, November 12, 2009. Retrieved on December 7, 2011 from <http://www.eng.news.kremlin.ru/transcripts/297>

<sup>289</sup> Spiller, "Changing Times in Russia."



predominantly used to uphold sovereign claims to distant territory rather than facilitate better international economic transactions.

For Russians, whose state almost spans the width of the global, at any given moment in time some Russian's day has just begun while others' have already ended. The vastness of Russia was viewed as part of its greatness and a part of its nationalism, yet the practical realities of having populations in different stages of their day has an impact on temporal cohesion and even the ability of the Russian Federation to achieve good governance and trade with its neighbours. Standardisation of time measurement is being used by the Russian federal government to better integrate the distant far-east regions into the national economy controlled largely from the west Russian areas around Moscow. The power of temporal sovereignty to do this means geographic distance is no longer a significant barrier to national cohesion or efficient economic integration.

#### *China: Temporal sovereignty and imperial control*

The People's Republic of China differs from the above two case studies because it is not a federation but rather a unitary state. Political power is concentrated at the political centre in Beijing rather than divided or shared among central and peripheral governments. Because of this the central government in Beijing is able to set the standard of time without coming into conflict with legitimate constitutional claims of sovereign autonomy made by other actors within China's territorial borders. With a geographic area roughly the same size as the continental United States of America, the People's Republic, unusually, has only one legal standard of time measurement: Beijing Standard Time or UTC+8.

The challenges posed by having only one time standard over an area where there theoretically should be at least four or five is about practicality and efficiency. Using one time standard to cover such a wide geographic area has practical implications for the observance of daily sunrise and sunset which will tend to be more distorted the further west a person is from the position of the UTC+8 meridian. Also because of its geographic position on the earth's surface and its lack of daylight savings, parts of China will experience increased daylight hours in the morning rather than the evening during the summer, a somewhat inefficient use of daylight hours for the norms of modern industrial time which operates on a 9-to-5 period of business hours.

So why then does China maintain just one time standard for such a geographically large country? Prior to 1949, China had five time zones as it rationally should. Why did the Communist regime choose to merge them all into one based on time measurement in the new capital of Beijing?

To answer these questions this section will first, discuss the motivations behind the establishment of a single time zone for China by looking at the importance of post-revolution consolidation of territorial integrity and early socialist state-building measures undertaken by the new Communist regime in Beijing. Then, I will turn to the question of why having only one standard of time helps the central government to better control politically the peoples of the far western provinces, namely Tibet and Xinjiang, through time standardisation as well as other more direct forms of imperialism.

#### *Post-Communist Revolution consolidation and state-building*

After victory in the Chinese Civil War, the most important challenge for the new regime led by Mao Zedong and the Chinese Communist Party (CCP) was consolidation of Chinese territory and re-building – and in some cases building from scratch – a modern Chinese state in order to govern the world’s largest nation. Territorial sovereignty has been an important theme of modern Chinese history and may help to explain why the Chinese government has imposed on its people only one legal standard of time across such a large geographic area.

The history of territorial sovereignty in China has driven the commitment by modern Chinese governments to consolidate territory they claim to be historically “Chinese”. During the Qing Dynasty, after the loss to the British in the First Opium War of 1842, foreign nations were able to claim a legal status of ‘extraterritoriality’ or immunity to Chinese sovereign laws while in Chinese territory.<sup>290</sup> Such a status served to underpin what Chinese nationalists refer to as their ‘Century of Humiliation’; defeat and abuse at the hands of foreign, and therefore barbarian, forces. Chinese territory being carved up by foreigners, or as being turned “from the

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<sup>290</sup> Xiaoyun Liu, *Recast All Under Heaven – Revolution, War, Diplomacy, and Frontier China in the 20<sup>th</sup> Century*. (New York: Continuum, 2010): 6.

shape of a begonia leaf to the shape of a rooster” by imperialist foreign powers, is one of the major and most potent foundations of modern Chinese nationalism.<sup>291</sup>

The problem for the Qing Dynasty was that its concept of sovereignty was different from that of the Europeans. Ancient and medieval China had a more universalistic conception of sovereignty based on relative tolerance of “sub-sovereign” political entities within a Sino-centric celestial domain referred to as *tianxia* or ‘all under heaven’. As long as the various inner and outer dependencies, tributary state, guest states, peer states, and so on recognised and paid tribute to China’s centrality and superiority within the East Asian inter-state order, China tolerated the right of these entities to self-government over their societies.<sup>292</sup> The Chinese state was characterised by the pre-dominance of culture over ethnicity to the extent that cultural unity became the essential legitimising factor for Chinese political ideology. State formation took place by absorption of barbarian peoples into a Chinese ecological sphere. Chinese culture was considered universal, superior, and more sophisticated than all others and China considered itself the Middle Kingdom of all humankind.<sup>293</sup>

However, since the nineteenth century, it has been the Western conception of sovereignty based on the principles of territoriality and the equality of individual nation-states that has become the only internationally recognised form of sovereignty considered legitimate and legal. Only during the twentieth century did the solution become recognised: if China wanted to retain any degree of direct influence over its tributaries it had to first establish and then have recognised by others absolute sovereignty in the Westphalian sense not the *tianxia* sense. This would involve a greater degree of direct political control over parts of East Asian that had enjoyed more or less autonomy for centuries.

The old dependencies, even in the first years of the Communist regime, were still allowed at least in theory a greater degree of autonomy than the inner core of Chinese territory. Based largely on ethnic differences, minority groups were encouraged by the CCP to “attain self-government” but all within the framework of

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<sup>291</sup> Liu, *Recast All Under Heaven – Revolution, War, Diplomacy, and Frontier China in the 20<sup>th</sup> Century*, 7.

<sup>292</sup> *Ibid.*, 9.

<sup>293</sup> Warren W. Smith, “The Nationalities Policy of the CCP.” In *Resistance and Reform in Tibet* edited by Robert Barnett and Shirin Akiner, (Bloomington: Indiana University Press, 1994): 54.

one united, sovereign China.<sup>294</sup> Up until the Second World War, China was yet to have its claims to the areas of Mongolia, Xinjiang, and Tibet recognised, in fact Chinese sovereignty in these areas were either incomplete, nominal at best, or contested by local ethnic groups and foreign empires like Britain and the Soviet Union.<sup>295</sup> Even after the 1949 revolution, sovereignty over these regions did not change dramatically especially in Tibet where the Communists had never been able to establish a reliable political base or allies to their cause in uniting the territories of the Qing Empire into a modern Chinese sovereign state.

Throughout the 1950s, efforts were made between Lhasa, the capital of Tibet, and Beijing to reach a compromise on Tibet's status within a Communist Chinese state. But intervention by both the British and American governments to aid Tibetan independence allowed the Chinese to stoke the flames of anti-imperialist nationalism and legitimise direct consolidation of political control over the province.<sup>296</sup> After the Lhasa revolt, the entrance of the People's Liberation Army into Tibet in 1959, and the subsequent flight to exile in India of the Dalai Lama, Tibet was firmly under the control of the Beijing government and was subjected to homogenisation with the rest of China.<sup>297</sup>

The new communist regime in 1949 faced immediate pressure from their support base to build a strong, united, and modern China, one which did not rely on foreign support in order to function as the previous Kuomintang regime had done.<sup>298</sup> Since the establishment of the Chinese Republic in 1911, successive regimes had sort to consolidate political authority in the central government in order to more effectively transition China from an imperial system of rule to a more modern type based on modern concepts of state power and sovereignty. The problem was the Chinese provinces were still very powerful and managed to institutionalise their power in the Republican Constitution even claiming prominence over the central government.<sup>299</sup>

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<sup>294</sup> Chinese Communist Party, "D15. The Constitution of the Communist Party of China." In *The Chinese Communist Regime – Documents and Commentary* edited by Theodore H. E. Chen, (New York: Frederick A. Praeger Publishers, 1967): 130.

<sup>295</sup> Liu, *Recast All Under Heaven – Revolution, War, Diplomacy, and Frontier China in the 20<sup>th</sup> Century*, 176.

<sup>296</sup> Dawa Norbu, *China's Tibet Policy*, (Richmond, Surrey: Curzon, 2001): 182-3.

<sup>297</sup> Liu, *Recast All Under Heaven – Revolution, War, Diplomacy, and Frontier China in the 20<sup>th</sup> Century*, 156-8.

<sup>298</sup> A. Doak Barnett, *Communist China: The Early Years, 1949-55*. (London: Pall Mall Press, 1964), 5.

<sup>299</sup> John Fitzgerald "The Politics of the Civil War: Party Rule, Territorial Administration and Constitutional Government." In *China's Communist Revolutions – Fifty Years of the People's Republic of China*, edited by Werner Draguhn and David S. G. Goodman, (London: Routledge/Curzon, 2002): 55-8.

This was rectified by the Nationalist government upon their rise to power after the Northern Expedition overthrew the Warlord governments.

The organisational structure of the CCP, and hence the state, is based on the principle of “democratic centralism” where authority is highly concentrated at the centre.<sup>300</sup> Building on the expansion of state authority in the economy and education, that had begun by the Nationalists in response to the invasion of China by the Japanese Empire in 1937,<sup>301</sup> the Communist regime significantly increased the involvement of the state in the lives of ordinary Chinese people. The structure of the new Chinese state would be unitary; Beijing would maintain exclusive sovereignty over all Chinese territory. The once largely *de facto* autonomous provinces became institutionally subordinate to the central government led by the CCP from the nation’s capital. Unity became an important theme of the new regime and this included unity of China’s territorial claims. The Administrative Committees, six organisations which acted as governing institutions in the northeast, north, east, central-south, southwest, and northwest, were abolished in 1954. At the same time the number of provinces was reduced from thirty to twenty-six.<sup>302</sup> The Communist regime monopolised power in China and concentrated it in the hands of a few people in the upper echelons of the Communist Party. Challengers to this faced two options: collaboration or resistance. As the Communists were not adverse to the use of violence to achieve their ends, resistance in this case was synonymous with conflict.<sup>303</sup>

Tibet and Xinjiang became Autonomous Regions, a type of provincial arrangement with the Beijing government that allows them certain rights and privileges above ordinary provincial governments in the People’s Republic.<sup>304</sup> Under Chinese law, the central government exerts full and unlimited control over every centimetre of the country’s territory, autonomy in the Chinese context is the ability of the central

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<sup>300</sup> Barnett, *Communist China: The Early Years, 1949-55*, 8.

<sup>301</sup> Joseph W. Esherick, “Collapse of the Old Order, Germination of the New: Chinese Society during the Civil War, 1945-1949.” In *China’s Communist Revolutions – Fifty Years of the People’s Republic of China*, edited by Werner Draguhn and David S. G. Goodman, (London: RoutledgeCurzon, 2002): 34-41.

<sup>302</sup> Barnett, *Communist China: The Early Years, 1949-55*, 309.

<sup>303</sup> *Ibid.*, 17.

<sup>304</sup> While a Tibet Autonomous Region exists within the People’s Republic, it is considered to represent only half of its historical geographic territory. The Communists divided Tibet into the current province and the contiguous eastern province of Qinghai. The division line is considered by Tibetan experts to be “arbitrary” and based on misguided “rationalisations” of the way national minorities lived in communities; Smith, “The Nationalities Policy of the CCP,” 57.

government to make special laws that take into account local “characteristics”. Autonomous Regions are not a departure from the top-down approach of Chinese authority in other provinces.<sup>305</sup> The “rights” and “privileges” enjoyed by Autonomous Regions are barely more than the right to have government affairs conducted in local languages or the privilege of having representatives of local nationality on important local government committees.<sup>306</sup>

The situation that the Communist government in Beijing finds itself in establishing sovereignty over the territories of the western provinces means it seeks any aid, both practical and symbolic, that allows it to stamp its authority over that area and the people living there. While international recognition of its claim to Tibet and Xinjiang is well established by diplomatic relations with the vast majority of other states in the international system, popular sovereignty by the people of Tibet and Xinjiang has been less easy to gain. This serves as one possible explanation as to why the central government does not create multiple time zones throughout the country when to do so would put it in line with other geographically wide states.

#### *How time standardisation empowers imperial interests*

A single standardised measurement of time in China is part of the Chinese government’s efforts to establish and have recognised its sovereignty over the territory of which it claims including contested areas in Tibet and Xinjiang. Beijing Standard Time serves as both a symbolic and a practical tool of Chinese imperialist claims to the territory, resources, and people of the former outer dependencies of the tributary system of inter-state relations in East Asia. The imposition of a single time zone on such a wide geographic area is both an impractical and inefficient standardisation of time measurement. But its observance is important to the Communist regime’s legitimacy over the western provinces, to combating the separatist movements, and to ensuring large areas of territory remain in the control of the Chinese government in Beijing.

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<sup>305</sup> Thierry Dodin, “What policies has the Chinese government adopted in regard to minority nationalities.” In *Authenticating Tibet – Answers to China’s 100 Questions* edited by Anne-Marie Blondeau and Katia Buffetrille, (Berkeley: University of California Press, 2008): 194-5.

<sup>306</sup> Thierry Dodin, “As one of the autonomous regions, what rights does Tibet have?” In *Authenticating Tibet – Answers to China’s 100 Questions* edited by Anne-Marie Blondeau and Katia Buffetrille, (Berkeley: University of California Press, 2008): 198.

China from 1912 to 1949 had five official time zones ranging from Kunlun Time Zone in the far west of UTC+5.5, Sinkiang-Tibet Time Zone of UTC+6, Kansu-Szechuan Time Zone of UTC+7, Chungyuan Standard Time Zone of UTC+8, and Changpai Time Zone of UTC+8.5 in the far-east.<sup>307</sup> This is an indication that at some point in China's modern history, the benefits of standardising time measurement into zones was beneficial and legitimate. It was only once the Communists came to power that the decision to consolidate these multiple zones into one came about. But because of the impracticalities cause by this time standard distortion, locals in Xinjiang have taken to observance of an unofficial time standard unrecognised by the central government but widely used among local people of that region. Named after Xinjiang's capital city, Urumqi Time is calculated at UTC+6 a full two hours difference from Beijing Standard Time. Even the local government there has unofficially taken to using Urumqi Time for operating hours where otherwise it would be operating at times most people would consider non-standard business hours.<sup>308</sup>

The standardisation of time measurement has been purposefully used in this case to consolidate authority over an arguably foreign people in order to make them part of a single Chinese nation. All time in the west is kept by Beijing (or derived from Beijing Time), showing the people of this region the centre's authority over them. Some of the benefits include increased efficiencies in transportation, business, and government transactions. But it should not be forgotten that standardisation of Western standard time is less necessary in the far west provinces because it is sparsely populated compared to the modernised eastern coastal areas and those who do live there are mainly rural people still on ancient agrarian time rhythms the same as Europe was prior to the Industrial Revolution.

Why then does the Chinese government in Beijing impose its standard of time on the far western provinces? Because it sees a number of benefits associated with a single national standard of time over the entire country parts of which some have legitimate

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<sup>307</sup> Irish Times, "Great Leap Forward in time is hours too fast for China's Uighurs." In *The Irish Times*, June 6, 2009. Retrieved on January 17, 2012 from <http://www.irishtimes.com/newspaper/world/2009/0615/1224248850523.html>

<sup>308</sup> If using Beijing Standard Time, the local government would open at 10:00am and close at 7:30pm in the summer time. By using Urumqi Time, the local government operates in the same daylight hours but measured as 8:00am open and 5:30pm closed. Government of the Xinjiang Uygur Autonomous Region of China, *The Working-Calendar for The Xinjiang Uygur Autonomous Region Government*. Retrieved on January 17, 2012 from <http://www.xinjiang.gov.cn/10018/10008/00017/2005/22694.htm>

claims to being sovereign nations in their own right. China in effect uses the ability to standardise time like the Canadian provincial governments *and* the Russian federal government: to build a single national intersubjective social reality to bring the Tibetan and Uygur peoples into a single Chinese national experience, and to integrate these societies into other ones located at considerable geographic distances away.



## CONCLUSION: THE POLITICS OF MEASURING TIME

In this thesis, I have explained the rise to hegemony of the Western standard of time measurement and how it was part of the transformation and modernisation not only of European society but international society. I then established the link between territorial sovereignty and the standardisation of the measurement of time by focussing on the imperatives of standardisation and the role modern states came to play in this process. I then described the international time zone system as it exists today in order to understand how territorial sovereignty impacts the design of time zones internationally. Before finally, discussing how time measurement standardisation by states can be used to legitimise the authority of states over people and over territory using a type of temporal sovereignty. Canada, the Russian Federation, and the People's Republic of China serve as prime examples of how regional, national, and imperial objectives can be met by using control over the standardisation of time to assert and enforce claims of sovereignty in modern international politics.

The measurement of time since the medieval period in Europe has transformed time into an objective reality divorced from previous social, nature, and biological events that happened subjectively to us and so time is now dictated to us by the mechanisms of horological technology.<sup>309</sup> Measuring time by what has been called the Western standard has helped to transform the way the world is organised and the way people live their lives. But it has itself been transformed by the methods it helped to facilitate. The measurement of time, now fixed and regular, underpins the organisation of the modern world.

What began in the Christian monasteries of Western Europe as a means to coordinate the worshipping of God and isolate the religious world from the secular world, has ended up as perhaps modernity's greatest hegemonic force. Western standard time now exists as the only legitimate way to measure time in the contemporary

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<sup>309</sup> Wanda J. Orlikowski and Jo Anne Yates, "It's about Time: Temporal Structuring in Organizations." In *Organization Science*, Vol. 13, No. 6, (2002): 685-6.

international system. The importance of accurate and coordinated measurements of time drew the modern state into its role as standardiser of time. Alongside this, the development of sovereignty based on the concept of territoriality has made claims over geographic space the sole legitimate means of a state to claim final authority over societies. This relationship, the modern state's role as standardiser of the measurement of time and its sovereignty based on territory, has meant the standard measurement of time in the modern world is driven by state interests and considerations not scientific or mathematical ones.

The attempted creation of a rational international time zone system in the late nineteenth century was superseded by the desires of states to improve efficiencies in their economies and help enforce their sovereignty over society. This international system also served to help spread the use of Western standard time as the sole legitimate standard of keeping time. Yet, the origins of Western standard time, the way it works, and its underlying importance to everyday life has until quite recently never been considered a subject for analysis in the school of Political Science or International Relations.

What I have sort to do is to highlight one fact about the measurement of time in the modern world, that is, time zones as they exist at any one moment are more than just arbitrary lines on a map drawn with little care or on rational, objective principles. Time zones can have a significance that tells the observer something about debates over sovereignty both within and between particular states. Through asserting temporal sovereignty, states can legitimise their monopoly jurisdiction over geographic territory and the people living on it in a similar way that they can achieve this through territorial sovereignty. As I have shown, the power to standardise Western standard time can help to build common identities both regional and national, and can integrate economies over large distances improving economic efficiencies and control over resources.

In conclusion, measuring time should not be thought of as a scientific method, for the truth is time is a deeply political matter affecting every aspect of our daily lives. Questions still remain: Will states continue to be relevant to the standardisation of the measurement of time? Will the international time zone system continue to survive when challenged by other forms of international coordination of human interaction? And what are the implications for time standards being used to enforce

temporal sovereignty? Having established that *who* sets the standard of time is important to modern international politics both within and between states, perhaps it is time that Political Science and International Relations care more about the future development of time measurement and standardisation in order to better understand its implications for sovereignty in a world where this concept is increasingly losing its basis in territory and in states. Perhaps too, people's better understanding of time's constructed nature and its ability to affect social and economic behaviour will lead to better standardisation of measuring time in the future. If time was constructed to improve our lives it can surely be reconstructed again.

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