

**WINTER-CITIES AND MOOD DISORDER:  
OBSERVATIONS FROM EUROPEAN CITY-FORM AT THE END  
OF LITTLE ICE AGE**

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**Abstract.** The rise of modernity in Europe, from the close of the Renaissance to the Second Industrial Revolution, had spanned the period of the Little Ice Age, and was manifest by intensifying urbanization. Europeans in cities during cold days of the late LIA were able to seek warm shelter much easier than their forerunners in earlier times or their contemporaries in colonial America. But at higher latitudes during autumn and winter, daytime shelter deprived people of sunlight. The likely outcome, depression, had been a prominent trait among the founders of modern science and philosophy, many of whom lived in northern Europe. A rich source of perceptually stimulating spatial contrast, historic European city-form, compact and conducive to street walking, had been a visceral catalyst to intellectual exploration, while at the same time it had provided also a partial remedy to some of the mood disorder. Such observation is relevant to contemporary winter-cities.

**Keywords:** Little Ice Age, city-form, mind and the environment, existentialism, winter-cities

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## **1. Introduction**

In “The morphology of landscape” (1925) Carl O. Sauer had introduced the notion of cultural landscape as the imposition of culture upon nature. Defined by the shared myths, beliefs and behavioral standards, Sauer’s cultural landscape is manifest in human intervention in *natural* landscape. Technology, as one of the more important aspects of culture, has been changing our lived space, primarily through considerations of expediency related to the human body, while bodily experiences have been changing accordingly and, in turn, have often driven advances of technological change. Landscapes modified by human action, as an aspect of culture, thus impact culture itself, whereby the feedback interaction

between culture and landscape as a progression in time, defines much of the history of civilization. In a later geographic inquiry extending Sauer's notion into psychoanalytic aspects of landscape, David Lowenthal had pointed to environmental causes to behavior as well as judgment (Lowenthal 1994). Calls for the emphasis of phenomenology of lived experience as a primary humanistic concern in geography have been made in recent years from several quarters (e.g. Simonsen 2013).

A decade after Sauer's essay Walter Benjamin, considered still today the foremost exponent of humanism in urban thought, put forward the notion of continuous and mutual impact between the built environment and humans within it. In his psychoanalytic survey of urban edifices and spaces of Paris and Berlin in the early twentieth century, the *Arcades Project* (1933/1999), Benjamin argued that the composite of city and the minds within it ought to be seen as a force behind the rise of modernity.

While Benjamin's *Arcades Project* addressed the interaction between the urban environment and *minds* within it, Maurice Merleau-Ponty, some thirty years later, in his phenomenology of lived space focused on the link between the built environment and the *body* (1962:440). Yi-fu Tuan, more recently, made a note of a cerebral impact reflected in geomantic myth in the East, as a projection of generic pattern of parts reflected in a larger whole within the environment (Tuan 2001: 100). And without the need to draw on simplistic views of environmental determinism, Gilbert LaFrenière has provided a comprehensive overview of the history of environmental change as it had influenced the emergence, as well as the decline of civilizations, not to mention the reverse impact of modernity on the environment (2008:41–72, 261–300).

In an inadvertent affirmation of the more specific outlook of mind-city interaction, Erwin Panofsky (1957) showed that a factual impact of the built environment upon mind is evident in the case of Gothic architecture and scholastic thought. Panofsky's observation relates not only to the architecture of gothic edifices as the source of impact upon mind, but mainly also to the structure of monastic spaces, i.e. to the logic and expediency in the configuration of buildings, and voids within and between buildings. Panofsky's example, however, is important for yet another reason: high scholasticism marks the eve of the Little Ice Age (LIA) in northern Europe.

A less-known, but well-documented example of city-form impact upon mind, during the LIA in northern Europe, is the case of early application of geometry to scientific reasoning, by Johannes Kepler (1571–1630) in Prague. Based on astronomical observations of the orbit of Mars made by his mentor, the astronomer Tycho Brahe, Kepler made a discovery that modified the Copernican conjecture of planetary motion round the sun, confirming its fundamentals. But prior to his discovery, for years Kepler was unsuccessful in fitting circular circumference, as assumed by Copernicus, or any other curve to the planetary orbit of Mars round the Sun. It was only in 1608 that it dawned on him that the orbit is elliptical, and Tycho's observational record had confirmed this. Ultimately, Kepler in his

treatise, *Astronomia Nova* (1609) introduced the first two of his three laws of planetary motion, the first law stating that each planet moves round the Sun located in one of the two foci of an orbital ellipse circumscribed by the planet. In *Astronomia Nova* Kepler rescued the Copernican heliocentric system from oblivion, thus setting the direction of the ensuing scientific revolution (Cohen 1994:92–93).

An argument has been put forward that the perceptual stimulus which led Kepler to his first law, after so many years of unsuccessful attempts to fit a curve to the orbital record of Mars, was the shape of the Italian Chapel in the Old Town of Prague, near Kepler's residence. The Italian Chapel, still extant today, is disposed upon an obtrusively elliptic plan, and it is this chapel's ovaloid structure that is thought to have been an architectural model that ultimately triggered Kepler's astronomical discovery (Horský 1990:189–190). The strikingly harmonious elliptic structure of the Italian Chapel, only a few yards from Kepler's residence on the same street, provided a sharp contrast to the maze-like Romanesque environment of the Old Town. The elliptical plan of the Italian Chapel was the very first one, at the time, to be introduced anywhere north of the Alps (Kaufman 1999:289).

As against the clearly efficacious link between the Renaissance environment and Kepler's first law of planetary motion, the impact of LIA on Kepler was devastating. In the wake of frequent storms and hail that had left crops and agricultural land laid to waste, witchcraft accusations against women, said to be causing such weather anomalies, ran rampant in central Europe (Behringer 1999). At Leonberg, Duchy of Württemberg, southern Germany, in 1620 Kepler's mother, Katharina, was imprisoned, following accusations by another woman that Katharina had made her sick with an evil brew. It was only due to the vast effort of Kepler that his mother was released in 1621. But the emotional and financial strain on Kepler took its toll. Kepler set aside his other astronomical investigations, and focused on producing his "harmonic theory" of the universe, *Harmonices Mundi* (1619), where his third law of planetary motion had been introduced, along with a mixture of false assumptions regarding cosmological properties of Platonic solids. Kepler died in Regensburg, Germany, in 1630, aged 58, following an arduous journey to collect a debt of 12,000 florins (Connor 2004). Always of firm mind he endured many personal tragedies, among the worst being the death of his first wife, Barbora, who died in 1611 of complications from typhus and what was said to have been "melancholia." The emperor Rudolph II, Kepler's patron, died the following year, also from "melancholy" after having been stripped, due to his mental disability, of all imperial powers (Rattle 2011:52–54).

## **2. Urbanization and cerebral dispositions during the LIA**

The belief in associating mood disorder with inclement weather has been commonplace for many generations, its likely origins being the LIA, largely

considered as the period, 1350–1850. In 1514 Albrecht Dürer produced a famous engraving entitled, *Melencolia I*, where rainbow in the background of the picture suggests previously rainy weather. In the plays of William Shakespeare mental disorder was frequently depicted (Dalby 1997). In 1621 Robert Burton published his masterpiece, much admired as a literary satire still today, *The Anatomy of Melancholy*, a treatise on topics close to as well as far off the subject of melancholy. The great interest in the book, published in six editions in the course of Burton's life is in itself a likely testimony to the acuteness of this affliction in England in the midst of the LIA.

Throughout the LIA mental illness was apparent not only in Rudolf II, but also in over thirty other European monarchs, the vast majority of them north of the Alps (Rattle 2011). Some of the most prominent mentally ill monarchs were King Charles VI of France, known as Charles the Mad (1368–1422; Tuchman 1978: 514–516), King Henry VI of England (1421–1471; Tuchman 1978:586), Queen Joanna of Castile, known as Joanna the Mad (1479–1555; Gómez et al. 2008: 9–13), Tsar Ivan IV of Russia, known as Ivan the Terrible (1530–1584; Pavlov and Perrie 2003:2–3), Tsar Fyodor I of Russia, known as Fyodor the Bellringer (1557–1598; Rattle 2011:55–57), King Charles II of Spain, known as Charles the Bewitched (1661–1709; Rattle 2011:82–84), Tsar Ivan V of Russia, known as Ivan the Ignorant (1666–1696; Rattle 2011:85–87), Queen Maria I of Portugal, known as Maria the Mad (1734–1816; Rattle 2011:116–117), King Christian VII of Denmark (1749–1808; Rattle 2011:128–132), King George III of the United Kingdom (1738–1820; Rattle 2011:119–121), and King Ludwig II of Bavaria (1845–1886), known as Mad King Ludwig (King, 1996:252–255).

Similar to royalty in the Middle Ages, mental disorder in urbanizing Europe between the seventeenth and the nineteenth centuries, had occurred while many people were increasingly able to seek warm shelter during days of cold or unpleasant weather. In doing so they had deprived themselves from exposure to even the modicum of available sunlight, in contrast with Europe of earlier historic times when population, mostly rural, had spontaneous exposure to sunlight or daylight even during cold days (Whited et al. 2005:51–72). Urbanizing Europe in the second half of the LIA would have been also different, in this regard, from North America which during this time was still mainly rural (McIlwraith and Muller 2001:121–132).

The hardship that the LIA inflicted upon millions of Europeans north of the Alps has been recently documented in Brian Fagan's, *Little Ice Age* (2000). In only two years, 1693–4, some ten percent of the French population “perished from famine and attendant epidemics” (p. 155), and during “the sudden cold of 1739–1742 many died of hypothermia and hunger-related disease” (p. 157). Fagan's noticing that “rural crime rose as bands of brigands intimidated farmers and robbed them” (p. 161) could be seen as yet another reason to late eighteenth century's urbanization.

But the LIA coincides also with half-a-millennium span in which the Scientific Revolution had led to the advent of the two industrial revolutions. As a contiguous

time period the LIA was arguably one of the most prolific in the history of civilization. Indeed, what may appear as an adverse effect of inclement weather and urban shelter is far from an unambiguous verdict. City-form during the LIA had fulfilled a very constructive role in the formation of ideas, not just in the case of Kepler. Another striking example is that of René Descartes, the seventeenth century's founder of modern philosophy and coordinate geometry, inspired by orthogonal plans of European new towns (Brodsky Lacour 1996:32–37, Akkerman 2001). Biographic evidence as well as Descartes' personal accounts of his thought processes suggest that he suffered from bouts of mental disorder, and that his affliction may have been caused, triggered or exacerbated, precisely, by indoor habitat during cold weather. Yet Descartes' mental condition and his whereabouts in Europe north of the Alps show similarity with other leading intellectuals who had emerged in the same geographic region in the course of the late LIA, or till the second half of the nineteenth century. The emergence in northern Europe of Existentialism, often referred to as the philosophy of despair and anguish, had almost precisely marked the end of LIA.

As illuminating as Descartes' account is regarding the impact of Renaissance planned new towns upon mind, it is only one, albeit striking, case of evidence to this effect. The very development of geometry in ancient Egypt was due to the need of a uniform, repeatable procedure for land measurement along the Nile following the river's seasonal inundations, in order to assess and maintain record of land ownership (Fowler 1990:230). This resulted in rectilinear planning in ancient Egypt and Greece, which in turn may have had an impact on the belief in the Four Elements in early Greek science (Akkerman 2000). Other than the well-known Panofsky example from the Gothic, city-form of the later LIA seems to have had analogous effect on the minds of people within it.

Fragments of biographic and literary evidence presented in the following suggest that the complex amalgam of city-form and weather in the late LIA played a major role not only in the anguish of mental disorder among the numerous pioneers of the modern thought, but also in their outstanding intellectual achievements. Such a configuration of peril and opportunity carries a meaningful message to contemporary urban planning.

### **3. Streetscapes of high LIA: from Cartesian doubt to coordinate geometry**

In an account in his *Discourse on Method*, Descartes recalls his intense meditation, known to have occurred on November 10, 1619,

*[...] as the onset of winter held me up in quarters in which I spent the whole day shut up in a room heated by an enclosed stove, where I had complete leisure to meditate on my own thoughts. Among these one of the first I examined was that [...] ancient cities which have gradually grown from mere villages into large towns are usually ill proportioned, compared with those orderly towns which planners lay out as they fancy on level ground. Looking at the buildings of the*

*former individually, you will often find as much art in them, if not more, than in those of the latter; but in view of their arrangement—a tall one here, a small one there—and the way they make the streets crooked and irregular, you would say it is chance, rather than the will of men using reason, that placed them so.*

Descartes assigns the “crooked and irregular” streets to “ancient cities” contrasting them with “those orderly towns which planners lay out.” Descartes’ account, a vivid evaluation of the progressively intensifying urbanization in Western Europe during the second half of LIA, manifestly favors the planned new towns for their order and for their streets, in particular.

A few paragraphs following the report of his reflection in the stove-heated room, Descartes vows

*to comprise nothing more in my judgment than what was presented to my mind so clearly and distinctly as to exclude all ground of doubt.*

The concept of *clear and distinct* ideas is introduced by Descartes in his *Meditation on First Philosophy*, written several years after the *Discourse*. Similar to his likening of “crooked and irregular” streets with the intricate arguments of scholasticism, Descartes’ admiring reference to “orderly towns which planners lay out” suggests a like analogy with “clear and distinct ideas.” Such a forceful use of urban paradigms in the seventeenth century attests to the impact the unprecedented European urbanization had on mind.

Descartes’ location at the time of his acclaimed stove-heated room reflection of autumn, 1619, is known to have been in the south of Germany. There are two places where Descartes’ meditation may have taken place, both within the historic region of Swabia: at Neuburg an der Donau (Sasaki 2003:149–150) or in a village near Ulm (Gaukroger 1995:105). It is this biographical detail of Descartes’ whereabouts on that cold autumn day of 1619 that places his discovery of coordinate geometry and systematic philosophy within a defined urban context. Both Ulm and Neuburg are near Freudenstadt to the west, a new town, planned and laid out by Heinrich Schickhardt for Frederick I, Duke of Württemberg in 1599 (Fleming et al. 1991:391). It was, most likely, Freudenstadt that Descartes had in mind when he recalled “those orderly towns which planners lay out as they fancy on level ground.” The plan of Freudenstadt, with its streets perfectly straight in an orthogonal pattern, conspicuously resembles the grid of the ancient board game, Nine Men’s Morris, which has been known since the Middle-Ages through the German-speaking countries as Mühle (Mill). The town street’s one end is clearly visible from its other end. The simplest urban metaphor to Descartes’ notion of “clear and distinct” would be, precisely, the streetscape of a planned new town, in all likelihood, Freudenstadt (Akkerman 2001).

The new town of Freudenstadt, in the duchy of Württemberg, is some 80 km to the south of Leonberg where, about the time of Descartes’ reflection, witchcraft investigation against Katharina Kepler had been completed in preparation for her trial (Connor 2004:259–274). The oft violent struggle of the Church against the emergence of scientific thought is thus curiously exemplified in Württemberg where one of the cruelest of medieval superstitions took place while the duchy was

inadvertently also becoming the ground from which Scientific Revolution had been launched.

It is in Book II of his *Meditations on First Philosophy* where Descartes exclaims, “I am therefore I exist” (*cogito ergo sum*), thereby introducing one of the pillars of modern thought. Noteworthy is Descartes’ reflective account where he asserts that all his perceptions of the world can be put in doubt, as the existence of the world itself can be doubted, and as even his own body and its functions can be doubted to exist, in contrast with the act itself of doubting, or thinking:

*It further occurred to me that I was nourished, that I walked, perceived, and thought, [...] but, if it be true that I have no body, it is true likewise that I am capable neither of walking nor of being nourished. Perception is another attribute of the soul; but perception too is impossible without the body; besides, I have frequently, during sleep, believed that I perceived objects which I afterward observed I did not in reality perceive. Thinking is another attribute of the soul; and here I discover what properly belongs to myself. This alone is inseparable from me. I am--I exist: this is certain.*

The methodical doubt, articulated in this passage, is remarkable not only for its celebrated insight but also for the examples Descartes chose for scrutiny in his mental exercise. Walking and nourishing one’s body were presumably so vivid in Descartes’ mind that he chose those, and no others, as illustrations for his thought experiment. It was the lived space of the urban environment that had a critical impact on Descartes’ mind. The consistency in the reference to walking through the city in examples throughout his reflective accounts (e.g. *Meditations on First Philosophy* 175, 282, 363), is too striking to be dismissed as a random illustration. His notion of clear and distinct ideas has come to him, conceivably and credibly, through the walking experience of contrast of a planned new town, such as Freudenstadt, set against the background of Romanesque towns across Germany and France.

#### **4. Place and mind in the late LIA: Kant and Euler, the Königsberg connection**

Descartes’ repeated urban or architectural references throughout his writings point to urbanization as perhaps the most conspicuous outward social feature of the LIA. Also after Descartes it was the ever intensifying urbanization that had eventually led, thrust by the very same Cartesian mathematics and science it had inspired, to the First Industrial Revolution of the 1750s. Yet Descartes’ celebrated musing insinuates the other, sinister hallmark of LIA: the prevalence of mood or mental disorder. Descartes’ ensuing mind-body dualism that came to typify all Cartesian philosophy and science has been said to betray mind-body dissociation, known as depersonalization disorder (Withers 2008). Such a condition would be also consistent with the account of Stephen Gaukroger, Descartes’ biographer, who writes that in 1614 Descartes moved to a house outside Paris and “shutting

himself off to the outside world, he suffered a nervous breakdown in 1615” (Gaukroger 1995:62).

The mind-body dualism, as advanced and articulated by Descartes, found the ultimate challenge in a renowned critique of the eighteenth century philosopher and geographer, Immanuel Kant. Within the context of LIA research this might be considered something of a fortuitous coincidence. Kant was born and lived his entire life in Königsberg (now Kaliningrad) the former capital city of Prussia, founded in the fourteenth century by the Bohemian King Ottokar II on the shores of the Baltic Sea. Although Kant died of a mental disorder, dementia, he lived a fairly long and extremely prolific life, through which he came to be recognized as the leading philosopher of his time (Fellin and Blè 1997). This reputation has not left him to this very day.

The rejection of Descartes’ mind-body dualism was rooted in Kant’s revolutionary outlook that space and time are nothing but forms of perceiving, projected by the individual mind upon the *real* world, which is beyond space and time. On Kant’s outlook, any perceived thing, as we know it, is never the *thing-in-itself*. The thing-in-itself is perceived by mind through its two and only forms of perception: space and time. Any perceived occurrence, therefore, is a synthesis of the mind’s forms of perception and the thing-in-itself. But since we cannot perceive of the thing-in-itself directly, any notion of a *body* already entails the mind’s forms of perceiving. Descartes’ notion of mind-*body* dualism, therefore, is according to Kant entirely false or meaningless. Kant’s insight that space and time are not objective and universal, but are the mind’s “forms of intuition” (*Formen der sinnlichen Anschauung*, or literally, “forms of perceptual observation”), was his own revolutionary philosophical breakthrough. Space and time, accordingly, are the mind’s frameworks, prior to any experience, and all perception occurs within these frameworks only. It is also for this reason only that the world, or any of its different constituents, says Kant, cannot be perceived in any immediacy, but merely through space or time, the mind’s means of perceiving. An axiom or a statement of geometry (at the time known only as Euclidian) and of arithmetic, therefore, is neither analytic nor experiential truth, but in Kant’s outlook is a synthetic – a-priori judgment, i.e. a statement whose predicate does not follow from its subject, nor from experiential observation: a synthetic – a-priori statement follows solely from the introspective contemplation of attributes of space or time (BonJour 1995:192–194).

When Kant was a young boy at Königsberg, the city’s people approached the Lord Mayor of nearby Danzig (now Gdansk, Poland) with a geometric brainteaser: how to find a contiguous walk that would cross once, and only once, each of Königsberg’s seven bridges that connected to the city’s two river islands. The mayor wrote to Leonhard Euler, arguably the greatest mathematician of the time, presenting to him the riddle. Euler, who at the time resided at Saint Petersburg in the employ of the Imperial court of Russia, proved that the Seven Bridges’ Riddle had no solution, and in doing so Euler inadvertently founded a new branch of mathematics, known today as graph theory (Gribkovskaia et al. 2007).



Saint Petersburg was planned on an orthogonal grid by Domenico Trezzini in 1716, and similar to Königsberg, it was connected with bridges over a series of small islands on the Baltic shore. Trezzini's plan had never been fully executed but perhaps was sufficiently interesting to Euler who engaged also in cartography at the Imperial Russian Academy of Sciences. In his own account Euler is said to have related that his eyesight problems began in 1738 with overstrain due to his cartographic work and that by 1740 he had lost sight in his right eye (Heine 2009).

Euler's colleague at the Academy of Sciences was the French astronomer Joseph-Nicolas Delisle (1688–1768) who produced the first map of the known North Pacific. Euler's own very presence in Petersburg too, along with his cartographic work, could be the reason why he took up the Seven Bridges Problem as a legitimate challenge. The reflective thinking about one's own walks might appear unusual, but it seems to have been an aspect of lifestyle that has emerged from some built environments, the two Baltic cities included. What had made the passion for walking of Königsberg's people of such significance to the history of mathematics, evidently, was their subsequent reflecting on their walking experience as a geometric quandary. Only a few decades later, Kant, Königsberg's most famous son, in fact, had been known for his own walks, his neighbors winding their watches in accordance to Kant's precise timing of his city strides (Soccio 2007:313). There could be little doubt that Kant's daily walking exercise had delayed the onset of dementia till his relatively advanced age.

In the case of both Descartes and Kant, the link with geometry appears to have been through the experience of the *lived* space of their own built environments. Descartes offers a fairly explicit testimony on the link between observation of linear street grids in Renaissance new towns, and the coordinate geometry which he pioneered. Kant, at the time when the Seven Bridges Riddle was posed to Euler, in 1735, was 11 years old, and growing up in Königsberg he would have been likely aware of the Riddle. Kant's argument about the rules of geometry (or arithmetic) is that they are synthetic – a-priori, i.e. emerging from the mind's reflective thought in conjunction with its forms of perceiving, rather than being analytic truths or a-posteriori observations. The notion that mind is the origin of all synthetic – a-priori statements is perhaps Kant's most significant insight. The clearest analogy to such a notion is person traversing a street and observing objects from different angles. Or to paraphrase Merleau-Ponty (*ibid*), the moving pedestrian is always the center of all her street observations.

Kant's fundamental stance that the point of origin of all thought is the mind and the human condition of the individual, is also the cornerstone of modern Existentialism. At the latter part of LIA, and towards its closure, such a stance appears to have been indicative of the significance attached not only to the *universal* forms of perceiving, space and time, but also to the *subjective* mental conditions of the perceiving individuals.

### 5. Mental disorder during late LIA urbanization and the rise of Existentialism

In the second half of the eighteenth century and toward the end of LIA German Romanticism had emerged. Melancholy had been one of the formative features of German Romanticism, most prominently exemplified in the tragic play *Faust* or the winter poem, *The Erlking*, by Johann Wolfgang von Goethe, himself known to have suffered from depression and possibly bipolar disorder (Holm-Hadulla et al. 2010). German Romanticism in science, at about the same time, had been best represented by *Kosmos*, a 4-volume treatise by the founder of modern geography, the explorer Alexander von Humboldt. Addressing himself to the questions of variety in empirical world amidst universality of natural laws, and change in nature amidst uniformity of concepts *about* nature, von Humboldt sought to resolve them by suggesting that all empirical investigation must undertake the essential premise that universality is “an inherent necessity [,] the very essence of nature” (1845:34). Ultimately, von Humboldt hoped for, “perhaps too bold a plan – the hitherto imperfectly seized idea of a Physical Geography thus gradually coming to assume the shape of a Physical Cosmography” (1845:ix).

Alexander von Humboldt was a contemporary of the philosopher Georg W. F. Hegel, the two were in fact neighbors in Berlin during the years 1827–1830, and may have even commented on each other’s work (Herneck 1971). Hegel in his book, *The Phenomenology of Spirit* (1807/2009:256–266), introduced the foundations of his Idealism, the notion of the Absolute Spirit. The spirituality of the natural world, of which von Humboldt spoke in *Kosmos* has been seen as an empirical parallel to Hegel’s Absolute Spirit (Pinkard 2000:209–210).

But whereas for Humboldt Nature was entirely independent of human mind or spirit, for Hegel the relation between the perceiving or observing individual and his world was quite different. Hegel rejected Cartesian dualism of body and mind, as well as Kant’s notion of mind’s projection upon the world, advancing his own outlook where individual mind is integral *within* the world. Hegel thus rejects any separation of the perceiving individual mind from the world being perceived. The attempt of mainstream science to objectify observation as detached from the observer, to Hegel, is alienation. Mainstream science separates the observer and the observed, and thus alienates the observer from the world (Rae 2012).

Following his death and throughout the first half of the nineteenth century Hegel’s outlook grew progressively popular in many quarters, including a group of intellectuals, the Young Hegelians. Initially a member of this group, Karl Marx had attempted to synthesize German Idealism with the tangible effectiveness as well as social impact of an industrial revolution in progress. Elsewhere, however, Hegel’s convoluted writing style and terminology, as well as outright accusations of ambiguity in his writings, led to resentment against, and rejection of, his thought, the fiercest such criticism having been launched by the Dane Søren Kierkegaard (1842/1967:80–87). The unprecedented urbanization throughout northern Europe during the eighteenth and nineteenth centuries had resulted in

severe social and economic imbalances, most famously reported by Friedrich Engels' *The Condition of the Working Class in England* (1845). Against the lack of shelter, or other unmet basic needs of the growing numbers of the urban poor, described in novels such as *Hunger* by Knut Hamsun (1888) or *Poor Folk* by Fyodor Dostoevsky (1846), the foremost among the ardent observers of the urban environment, Kierkegaard and Friedrich Nietzsche, had emerged on a background that deemed Hegel's notion of the Absolute Spirit irrelevant, and religious proclamations of the Church vacuous or outright fraudulent (Löwith 1964:147–161, 371–375, Levi 1989:5–22).

Particular source of distress to Kierkegaard were the poor of Copenhagen. Deprived of comfortable or warm shelter indoors, many of them spent days and nights as vagrants in streets (Kierkegaard 1845/1988:479–480). But Kierkegaard, along with other millions of Europeans of the late LIA, was able to seek shelter much easier than the impoverished folk in cities. Comfortable daytime shelter of middle-class or prosperous Europeans, however, deprived them of sunlight, particularly at higher latitudes during the cold and short days of autumn and winter. The likely outcome, depression, had been a prominent trait amongst northern European people of this period, and in the case of Kierkegaard, a defining moment of the European Existentialism he founded.

During the nineteenth century, the close of LIA, significant rise of insane asylums occurred in northern Europe alluding thus also to a possible higher prevalence of mental disorder. Whereas the turn of the century saw only a few hundred individuals in asylums in England and France combined, “by the late 1890s and early 1900s, this number had risen to the hundreds of thousands” at which time also “German speaking countries housed more than 400 public and private sector asylums” (Shorter 1998:34). In his novel *Crime and Punishment* (1866) Dostoevsky alludes repeatedly to the mental disorder widespread throughout St. Petersburg, the site of his plot. The city's main lunatic asylum was painted all yellow, and yellow is also the predominant color throughout the novel (Catteau 1989:523, note 48).

Anguish at the bottom of the socioeconomic ladder had been compounded by the material suffering of poor families and individuals without a home. The physical distress must have been particularly pronounced during the cold winters throughout cities. To the passionate mind, the misery and placelessness in a winter city, on the background of political conflicts or Church's promises of salvation, would attain a conceptual counterpart in notions of absurd and in critiques against emotional or intellectual deceit. It was upon the questioning of one's own place and condition as a subject in the lived world, that during the late LIA in Europe north of the Alps, Existentialist philosophy had emerged. Declaring the longing for universal or objective truths as largely irrelevant (Dreyfus 2009), modern Existentialism had arisen mainly as a focus on individual despair, hardship and helplessness, and the common individual's concrete surroundings and circumstances.

The early outlook founded on the rejection of Hegel's notion of the Absolute Spirit, transmuted into an Existentialist viewpoint emphasizing intrinsic individuality, i.e. *individual* spirit, and human condition. A concurrent stance by Karl Marx and his followers also rejected Hegel's notion of the Absolute Spirit, repudiating at the same time the Existentialist viewpoint as well. Instead, Marx had introduced an absolute *materialist* outlook that had endorsed social change through revolution. Hegel's intellectual alienation at the end of LIA had turned into alienation expressed in dejection, anguish and view of the mainstream as a mindless crowd. While such aspects of alienation became features of Existentialism, the advocacy of a violent overthrow of ruling elites by the suffering masses of the working poor came to be seen in Marxism as an inevitable law of human progress.

Association between depression and violence has been broached for some time now (e.g. Beck 2000:40–70, Latzman and Swisher 2005, van Praag et al. 2004: 238–253). Alterations in brain of the levels of serotonin, a hormone secreted with sun exposure, have been linked to depression (PLoS 2008) as well as to violence (Brown and Van Praag 1991, Krakowski 2003). Mental disorder in northern Europe at the end of the LIA, depression among Existentialist writers in particular, ought to be seen within this context as one aspect of historic evidence, the other piece of which is the abundant attestation of increasing violence in Europe, leading to WWI.

As a perceptual medium city-form, its streetscapes, edifices and urban voids, are source of both opportunity and peril. During the high LIA Descartes and Kepler brought about the founding of modern science from within contrasts of their own lived space. Coordinate geometry founded by Descartes had molded much of the ensuing mathematical science, and with it also urban planning itself through to the twentieth century. At the close of LIA increasing prevalence of mental disorder, likely connected to continuous shielding from sunlight during prolonged cold seasons, had been accompanied by despair and violence. Philosophies that coated despair and violence had emerged in the wake, as in affirmation of an epochal mind-environment transaction.

## 6. LIA and contemporary winter-city juxtaposed

“No one would argue today that climate change ‘caused’ the French Revolution,” says Fagan in his *Little Ice Age*, and continues: “This kind of environmental determinism, with its simple cause-and-effect arguments, is long vanished from serious discussion and with a good reason” (p. 58). But considering causes of social and economic stress, “we delude ourselves if we do not assume [that climate variability] is among the most important” (p. 103). So too, even though long winters and rapid urbanization in northern Europe were not the sole causes to increased prevalence of mood disorder, and to the ensuing violence towards the turn of the twentieth century, seen as successively changing configuration of the

built environment and minds within it, city-form and weather of the late LIA has likely played a cogent, albeit unacknowledged, role. The concurrence of the increase in mental disorder in intensely urbanizing northern Europe at the end of LIA, with the nineteenth century rise of Existentialism and Marxism, in their respective embrace of anguish and rage, was thus hardly a random coincidence.

The reverse impact violence had on city-form was exemplified in the redesign of Paris at the end of the LIA. In the 1850s Baron George-Eugene Haussmann, the prefect of the *departement* of Seine, had masterminded the demolition of the historic center of Paris to make place for wide boulevards renown in the city still today. The professed justification for such an act of wanton urban destruction was the need for sunlight and public health, which were indeed absent in the narrow and tortuous medieval streets of mid-nineteenth century Paris. The overriding reason for Haussmann's action, however, was his patrons' demand to suppress continuing political violence that had emerged against the government precisely from within the poverty stricken districts of central Paris. "Haussmann launched Paris into the whirlwind of great expenses. Cities imitated Paris, individuals imitated Paris," remarked Emil Zola in his 1872 novel, *The Kill*, a literary account of property speculators and the extremely rich who emerged on the heels of Haussmann's rebuilding of Paris (as quoted by Parkhurst Ferguson 1994:118). The twentieth century's totalitarian regimes have drawn quite heavily on the approach initiated by Haussmann (Colton 1998:326–9). Often viewed as an urban planning success also in liberal societies, Haussmann's approach to urban redesign has been imitated many times over, its admirers in North America having ranged from the City Beautiful movement to proponents of misguided urban renewal projects that put elevated urban freeways through dilapidated neighborhoods (Harvey 2006).

The ghost of Haussmann still hovers over much of the street and road design in North American cities built for automotive, rather than pedestrian, access. Automobile access in North America, in winter-cities in particular, has effectively eliminated exposed pedestrian street movement. The impact on the minds of people deprived of sunlight exposure may well have brought back the very problem continual shelter was to address, only with greater severity.

City-form of the late LIA has increasingly provided shelter to people during inclement weather, and the increase in prevalence of mental disorder had been likely one of the results. It is well known that both Kierkegaard and Nietzsche knowingly fought their mental disorder by walking – Kierkegaard in the streets of old Copenhagen (e.g. letter 150, 1847/1978:214), Nietzsche in the Alps, or in the streets of his favorite city, Turin (Krell and Bates 1997:203). But it was also in Turin where Nietzsche, upon encountering physical violence against an innocent animal, the flogging of a horse, fell into an irreversible manic-depressive psychosis followed by dementia, which eventually killed him (Chamberlain 1998: 209).

The rise of modern Existentialism ought to be looked at, precisely, within the complexity of city-form during the late LIA, as appears to be readily alluded to by the bitter, sometimes raging, reflections of Kierkegaard observing the urban crowd

against the anguished self, in *The Crowd is Untruth* (1848/1962), for example, or Nietzsche's apocalyptic cursing cast against the city, in *Thus Spake Zarathustra* (1885/2007:107–108). Analogously, but with an entirely different outcome, the Romanesque city-form juxtaposed against the emerging Renaissance planned urban environment had provided perceptual stimulus to the minds of Kepler and Descartes. Automotive city-form after Haussmann seems to have been gradually loosing perceptual stimulus, on the one hand, while increasingly dispensing almost a continuous shield against the open sky, on the other hand. The attempt to delineate the ensuing mind-environment transaction is of more than passing curiosity.

The complex compound of city-form and weather calls for attention its impact on minds within the contemporary winter-city, specifically. The retrospective reflection, offered here, on the drawbacks of urban shelter against sunlight exposure during the LIA, but also the significance and benefits of open-air walking, clearly point to deficiencies in contemporary winter-cities, in North America, in particular. Whereas European city-form, compact and largely conducive still today to outdoor street walking, had emerged centuries before the advent of the automobile, outdoor pedestrian movement in North American cities has been deliberately minimized over the past century due to city-form designed for automobile access. In many winter-cities exposed pedestrian movement downtown has been reduced to a virtual nil due to sheltered skywalks. Much has been said on the ill-effect of reduced walkability on physical health (e.g. Andrews et al. 2012). But recent findings revealing current incidence of mental disorder in North America to be higher than in Europe (Mersch et al. 1999, Bromet et al. 2011), along with the considerations of the present study, may point to environments hindering outdoor pedestrian movement as possible major culprits behind maladies such as the seasonal affective disorder (cf. also Hahn et al. 2011). Indulgence in a continual shield against the winter sky in the North American winter-city seems to offer some of the explanation to this trend.

The exceptionally gifted individuals, personified by the likes of Descartes or Kierkegaard, seem to have fought their mental affliction with city walks, a measure that was likely fecund also in their remarkable accomplishments. Contemporary winter-cities in North America do not provide in their streetscapes such a mitigating opportunity against weather-related mental or mood disorders. The problem could be endemic in northern latitudes, as evidenced, for example, in the September 2012 lead article in *MacLean's*, Canada's most read weekly magazine, suggesting that depression in young adults in Canada is approaching an epidemic level. Contemporary focus of urban geography and planning on walking in the city could not have come too soon. But for North American cities along and north of the 45th parallel, where seasonal changes in daylight length are pronounced, the challenge is yet to be tackled.

## 7. Summary and conclusion

In affirming feedback between mind and the built environment, Erwin Panofsky (1957) showed a transaction pattern between Gothic architecture and scholastic thought. Panofsky's observation relates not only to the architecture of gothic edifices as the source of impact upon mind, but mainly also to the structure of monastic spaces, i.e. to the logic and expediency in the configuration of buildings, and voids within and between buildings, as guides to the structure of an argument. Voids between buildings, significantly, are associated with weather and with sunlight exposure, specifically. Within the nexus of mind, built environment and weather Panofsky's study, thus, attains particular importance: high period of scholasticism has marked the eve of the Little Ice Age in northern Europe.

The LIA is the source of the belief, commonplace for many generations, associating mood disorder with inclement weather. The belief associating dejection with lack of sunlight appears to have found support in contemporary research. Increasing incidence of mental disorder during later LIA, in urbanizing Europe between the seventeenth and the nineteenth centuries, could be attributed to the wider access to warm shelter during days of cold or unpleasant weather, the direct consequence of which had been deprivation from sunlight.

But what may appear as an adverse effect of inclement weather and urban shelter is far from an unambiguous verdict. The LIA coincides also with half-a-millennium span in which the Scientific Revolution had led to the advent of the two industrial revolutions. As a contiguous time period the LIA was arguably one of the most prolific in the history of civilization.

In the latter half of LIA the complex amalgam of city-form and weather played an increasing role not only in the anguish of mental disorder among the numerous pioneers of the scientific revolution, but also in their outstanding intellectual achievements. Kepler's torment had been directed towards the saving of the life of his mother accused of creating severe weather anomalies through witchcraft, while his intellectual breakthrough grew from his immediate built environment. An argument has been put forward that the perceptual stimulus which led Kepler to his first law of planetary motion was the elliptic shape of a chapel across his Prague residence (Horský 1990:189–190).

Similarly, comparing "crooked and irregular" streets with the intricate arguments of scholasticism, René Descartes' admiring reference to "orderly towns which planners lay out" suggests a like analogy with his ground-breaking concept of "clear and distinct ideas." But Descartes' celebrated intellectual breakthroughs too are intertwined with the other, sinister hallmark of the LIA: the prevalence of mood or mental condition. Shutting himself off the rest of the world Descartes had suffered mental breakdown in 1615, and his ensuing mind-body dualism that came to typify all Cartesian philosophy and science has been said to betray mind-body dissociation, known as depersonalization disorder (Withers 2008).

There is sufficient evidence to show that a mitigating factor against mood disorder during the late LIA, has been the city walk. In the case of both René

Descartes and Immanuel Kant, furthermore, the experience of the *lived* space of their own built environments had thrust Descartes into his discovery of coordinate geometry, and Kant into his discernment of synthetic – a-priori concepts. Søren Kierkegaard, in the nineteenth century, had specifically referred to the therapeutic power of walking. But Kierkegaard, along with other millions of Europeans of the late LIA, was able to seek shelter much easier than the impoverished folk in cities. Comfortable daytime shelter of middle-class or prosperous Europeans deprived them of sunlight, particularly at higher latitudes during the cold and short days of autumn and winter. The likely outcome, depression, had been a prominent trait amongst northern European people of this period, and in the case of Kierkegaard, a defining moment of the European Existentialism he founded.

Association between depression and violence has been broached for some time now (e.g. Latzman and Swisher 2005). Alterations in brain levels of serotonin, a hormone secreted with sun exposure, have been linked to depression (PLoS 2008) as well as to violence (e.g. Krakowski 2003). Mental disorder in northern Europe at the end of the LIA, depression among Existentialist writers in particular, ought to be seen within this context as one aspect of historic evidence, the other piece of which is the abundant attestation of increasing violence in Europe, leading to WWI.

Such an observation is ominous for contemporary North American winter-cities. While people in Europe's winter-cities of the late LIA inadvertently attained modicum of sunlight by wandering or purposefully walking through city streets, no such opportunity is easily available in the automotive cities of North America. Descartes or Kierkegaard had fought their mental affliction with city walks, a measure that was likely fecund also in their remarkable accomplishments. North America's winter-cities, built for automobile access, have no inviting streetscapes to offer to pedestrians, let alone a perceptually stimulating environment. The shield against solar radiation that has been gradually built through sheltered skywalks, underground passageways and automotive transportation has progressively reduced to a virtual nil sunlight exposure during the winter to people in North American cities along and north of the 45th parallel. The same built environment that shields people from sunlight exposure is also one that constitutes a contributing cause to mood disorder. Although more research is required to substantiate an association between mood disorder and urban violence, there could be little doubt that reversing automotive and sun-sheltered city-form onto a pedestrian, open-air streetscapes, in North America's winter cities in particular, might be one of the more important objectives of urban planning in this century.

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