THE SCIENCE OF URBAN PATHOLOGY: VICTORIAN RITUALS OF ARCHITECTURAL AND URBAN DISSECTION

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Introduction

The unhealthy state of Victorian cities, the grim and seedy atmosphere of the time, has been evoked by many historians of the era. From Dore's illustrations to the fiction of Dickens, the city had become personified as a complex interplay of unpleasant visions, smells and sensations. While descriptions of Victorian cities frequently dwelt upon the rapid growth of the population, the poor standards of living and the "dark satanic mills," a common feature of such descriptions was the poor quality of the air. The atmosphere of English and European Cities was frequently described as "foul," "dense" and "unhealthy." "Atmospheric pollution was a killer, and conditions in Manchester, Liverpool and London were at times absolutely intolerable" (Curl 92). H.G. Wells, in an *Experiment in Autobiography*, records his view that "history fails to realise what sustained disaster," "massacre" and "degeneration" of lives "was due to the housing of people in the nineteenth century" (Briggs 17). Robert Furneaux Jordan characterised nineteenth-century urban growth as "a tale of squalor, cruelty and death" (34). Victorian architecture and city planning was born amidst the "impenetrable forest of houses, railways and canal cuttings, cemeteries, gasworks and gas lamps" (Jordan 18). Victorian cities were overcrowded, polluted and increasingly reliant on the passage of people and produce along clogged, winding and narrow streets.

In *Victorian Cities*, Asa Briggs suggests that the Victorian fascination with the visual is a key to understanding how cities were studied and understood in the period. Both Briggs and historian Anthony Vidler have implied that a link exists between the way in which complex forms were visualised in the Victorian era and the methods used to treat or diagnose such forms. For Briggs, "one of the reasons why public health problems created so much interest in the Victorian age is that they were problems which were posed in visual terms" (146-47): pollution rendered the air visible to the Utopian Socialist[27] and the amateur scientist, who often viewed the city from above (either from a cathedral spire or from a balloon). Briggs maintains that the appalling living conditions present in Victorian cities were a sign of the lack of an holistic model; "the inability to plan and often even to conceive of the city as a whole" (17). Attempts to gain an holistic view were usually based upon achieving a visual distance from the city and then by observating the city as a single organism. By standing back from the problem and viewing it from a distance, or a great height, the social investigator was able to imagine that they could see the entire urban organism. Such Utopian Socialists,

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27 "The term Utopian Socialists was coined by Karl Marx to denote a group of social thinkers whose attitude was unscientific and Utopian according to the dialectic method because it based its hopes on the amelioration of the conditions of the working classes through individual benevolence and enterprise" (Rosenau 150).

Briggs claims, "were concerned neither to find out 'the truth about cities' nor to save time. They were seeking a new and more ordered vision" (53). Vidler supports this view in noting that the aerial view emphasises the geometry of streets and buildings over all other things. In this way the city may be viewed, however falsely, as an organism comprised of large structures (buildings) connected by way of narrow strands which seem to be in perpetual motion (streets).

Despite the unscientific nature of these observations, and the gross misunderstanding such methods promoted, the seductive power of these new visions resulted in a number of metaphorical models for describing the city. Various pseudo-scientific approaches to the study of cities arose in this period as did the revitalisation of one ancient symbolic form of city planning which was derived from an understanding of the city in terms of a giant human body. With the growth in city size and the rise in medical sciences, the study of urban space in the nineteenth century was increasingly defined through a range of organic metaphors, often formulated from the observations of amateur sociologists and planners, whose understanding of science and philosophy was frequently flawed. As Vidler records:

> Thus cities were landscapes—sometimes jungles or forests—and later, gardens or parks . . . they were bodies, healthy or sick, with characteristic symptoms of disease or fitness; they were sentient beings, however monstrous or deformed, with humors and psychologies that varied with the circumstances of their environment. And as these metaphors described the cities, so they prescribed remedies and forms for reconstruction. Nature should be tamed . . . bodies operated upon, humors therapeutically treated. (29)

Similarly, Christine Boyer has claimed that nineteenth-century urban theorists believed that the fabric of the city would promote a "wholeness of being." According to Boyer, the urbanist had become a "doctor of cities" who analysed the patient and then "interpreted the normal and pathological signs of the city" (17):

> Nascent planners of the nineteenth century set their gaze on the deviances and abnormalities that defined the pathological city. . . . In their attempt to heal the ills of the city, they disavowed its physical form, treating the space of the city like the body of a woman, who also in the nineteenth century was envisioned as a site of excess, of hysterias, of illnesses and exclusions. (18)

Operations upon the fabric of the city (the formation of streets, parks, etc) were presented, by the Utopian Socialists, as scientifically supportable as well as symbolically logical and meaningful. The combination of medical imagery and ancient geometric forms in a number of proposed theories have since been described as "urban pathology"; a pseudo-scientific conceit which was prominent in the late eighteenth century and enjoyed a brief resurgence in Victorian urban design.

The Rise of Urban Pathology

The use of metaphors not only allowed the planners and amateur scientists a means of visualising the complex interactions occurring within the city, it also carried an imperative which the general populace could understand. By first viewing the city as a living creature and later as a body, its relative health or sickness could be deduced using the conventional methods of medical diagnosis developed by Galen centuries before. Through observation of urban symptoms (pollution, crime and moral degradation), the Galenic methodology sought to diagnose illnesses and prescribe treatment. Therefore, the urban scientists were able to apply their amateur knowledge of medicine to the urban body through the power of their perceptions.

Observations of Victorian cities by amateur scientists and social reformers had perceived the city as a "bustling crowd"; a space "of movement" and not of monuments and places, as in the Renaissance ideal, but of flows and motion (Curl 19). Based upon such readings of the metaphorical urban body, Richard Sennet claims that eighteenth and nineteenth-century urbanists drew upon readings of the medical theories of William Harvey. Although Harvey's major work, *Exercitatio Anatomica de Motu Cordis et Sanguinis*, was published in 1628, its impact on amateur scientists and philosophers was not to be felt for at least another century. In *De Motu Cordis*, Harvey published the results of his research into the circulation of the blood and from these studies proposed a model for understanding the relationship between a healthy body and the positioning of the soul. The key to Harvey's theory was that the swift and smooth circulation of fluids within the body kept it in a healthy state both physically and spiritually; conversely, the lack of smooth circulation caused ill health. This paradigmatic change in the way in which the body was viewed occurred slowly in the medical sciences but it wasn't until 1776 that it came to be of metaphorical significance to the city. In 1776 Adam Smith published *The Wealth of Nations* in which he made an important comparison between the flow of blood in a body and the flow of money and produce in an economy. The better the flow, he maintained, the more successful the economy. In this argument Smith was effectively combining John of Salisbury's twelfth-century vision of the city as a body with Harvey's understanding of the causes of sickness. As Sennet records:

> Harvey's revolution helped change the expectations and plans people made for the urban environment. Harvey's findings about the circulation of blood and respiration led to new ideas about public health, and in the eighteenth century Enlightened planners applied these ideas to the city. Planners sought to make the city a place in which people could move and breathe freely, a city of flowing arteries and veins through which people streamed like healthy blood corpuscles. (256)

Bodily metaphors became more prominent in the late eighteenth and early nineteenth centuries, when Ernst Platner proposed that the skin needed both circulation of blood and oxygen through the pores for it to be healthy. The Enlightenment planners and urban engineers combined the medical imagery of Harvey and Platner to maintain

that the city must posses swift flowing traffic as well as smooth circulation of fresh air and water (Sennett 261-63). The focus, Briggs records, was on "the pure breath of Heaven" (28), an analogy combining the physical well-being of the body with the spiritual. From this point on, there was a revival of the view that the city could be described, literally, as a body. Thus, Sennet argues, "were the words 'artery' and 'veins' applied to city streets in the eighteenth century by designers who sought to model traffic systems on the blood system of the body" (65). In the works of urbanists such as Christian Patte, the medical metaphor of arteries and veins became a rationale for one-way streets. In the work of German urban designers in the late eighteenth and early nineteenth centuries, plans of the city were retraced to locate the heart of the body (usually the castle or centre of stewardship) in the manner of John of Salisbury. As the metaphor grew and took on more scientific overtones, the parks of the city became the lungs of the body. In both Paris and London planners created vast enclosed parks and squares to ensure the creation of oxygen and a supply that was untainted by the populace. The flow of pedestrians "through the city's street-arteries were meant to circulate round these enclosed parks, breathing their fresh air just as the blood is refreshed by the lungs" (Sennett 325).

In each of these visions of the city the metaphor of the body had become prominent in the interpretation of the city and its woes. However, it is in the area of treatment of the urban body that the metaphors became most attenuated. While the medical sciences were starting to advocate forms of treatment and exercise as a means of encouraging the formation of healthy bodies, such ideas were difficult to translate through the metaphor of city as body. For this reason, planners and Utopian Socialists sought more visual, geometric, and symbolic forms of treatment. The most easily visualised of all medical treatments were still dissections and amputations. Returning to the medical sciences, and the work of the Renaissance anatomist Andreas Vesalius, surgical modes of treatment proved to be not only easy to visualise but were also supposed to posses a strict and defined sequence which could be expressed as a geometric form and a notational system. Vesalian surgical treatments often seemed to have been carried out in a ritualistic manner. Accounts of such dissections and treatments were frequently formed around the clash of beliefs; a form of battle between those who supported and those who opposed the views of Galen. The act of surgery, while viewed with some suspicion by the common classes, was still regarded as suitable treatment for dramatic ailments. Thus, through the power of the body/city metaphor, the most obvious means of treating the problems in Victorian cities was not through complex social and political treatments, but surgery.

The most complete record of urban surgery in the nineteenth century may be traced in the works of the Baron Haussmann. Working within the metaphor of the city as body, Haussmann, with teams of surveyors and cartographers, first defined the fabric of Paris. In this way it was supposed that the extent and condition of the body, its symptoms and deformations, would be known. Subsequently surgical treatments were planned to ensure that, in Rykwert's words, the "thick and clotted" streets could be opened up (*Idea* 23). The lines of the incisions were traced on the cartographers' plans to form new streets and avenues. This "traffic surgery" sought to reconstruct a Euclidean geometry in the city by straightening streets, widening avenues and forming regular cross streets at right angles. By inscribing ordered geometry into the urban

body, it was hoped that the body would start to conform to an ideal, Vitruvian image (Figure 1).[28] As Vidler recounts:

> After the prolonged pathology, the drawn-out agony of the patient, the body of Paris was to be delivered of its illnesses, its cancers, and epidemics once and for all by the total act of surgery. "Cutting" and "piercing" were the adjectives used to describe the operation; where the terrain was particularly obstructed a "disembowelling" had to be performed in order that arteries be reconstituted and flows reinstated. (91)

In Emile Zola's novel *La Curée*, the character Saccard (a literary incarnation of Haussmann) is described as looming over the city of Paris like a vulture over the fallen body of a nameless woman. His plans for the city (body) are to be written on the urban fabric (flesh) with violent, surgical, inscriptions: "From the Boulevard du Temple to the Barriere du Trone, that's one cutting; then on this side another from the Madeleine to the Plaine Monceau; and a third cutting this way, another that way, a cutting here, one further on, cuttings on every side, Paris slashed with saber cuts, its veins opened" (124). In *La Curée*, Saccard's hand had became "a living knife" engaged in "urban surgery." The veins and arteries, the lungs and heart, were merely streets and avenues, parks and buildings. The pollution and crime, the moral and physical decay, were symptoms of an imperfect body. Just as the body could be rewritten through the agency of surgery, so could the city be reformed into a healthy space through the imposition of geometric order.

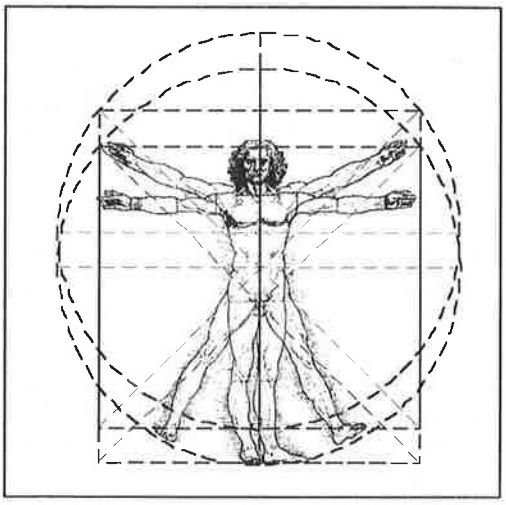

Figure 1. Da Vinci's Vitruvian Man

[28] All figures have been modified by the authors to display the geometric patterns present in each and to alter the projection and scale of plans. Figures 1 and 6 have been re-drawn by the authors. Figure 2 and 3, are based on those from Vidler (1986). Figure 7 is based on the figure from Lewis (1987). Figure 5 is based on Rosenau's reconstruction (1983).

While the presence of anthropocentric metaphoricity in city planning may be traced back to antiquity, there is a similar lineage in the geometry which forms the basis for urban surgery and planning. The ancient Greek traditions of architectural and urban form generation, as recorded by Vitruvius and later Alberti and Serlio, relied upon a manner of reading Euclidean geometry into the human body. Leonardo Da Vinci's famous sketch of Vitruvian man showing the body surmounted with the circle and the square is iconic of this belief that the human body possesses a divine geometry which provides a suitable pattern to form both individual works of architecture as well as entire cities. From the earliest treatises on architecture, a tradition has arisen of anthropocentric metaphors which delineate perfect architecture from ideal bodies. The geometry of the perfect body was believed to be able to produce a spiritually and physically healthy city. The spiritual dimension can not be ignored, since the decay in Victorian cities was envisaged not merely as a problem of pollution and overcrowding but also of moral degradation. For many Utopian Socialists, the physical well-being of the body was linked to its spiritual or political health. Although religious mores were central to a number of planned communities, the spiritual health of the inhabitants of the city was frequently seen in terms of a political agenda. From the first utopias of Plato and Socrates, there was a political program and a social structure which sought to produce healthy people both in mind and body.

Urban pathology was not merely limited to the idea that by cutting new streets blood flow would be encouraged; central to the strategies of most of the proponents was the concept that order may be embodied in the conjunction of pure geometries. In the utopian plans derived from anthropocentric metaphoricity, the geometry of the circle, the square and their lines of symmetry may be seen clearly in many works throughout history. A strong tradition of the city being viewed as a body may be traced from the primitive tribes of the *Dogon* and *Nambikwara* to the Roman planning of the *umbilicus* and *pomerium*, through to the plans of Abbé Morelly, Pierre Patte, Charles Fourier and Victor Considerant. As a consequence, many of the proposals made by such people display a geometric strategy derived from the overlaying of a circle, a square and their lines of symmetry. Moreover, the self-same conjugation of the circle, the square and their bisectors over the image of the human body may be traced in the last uses of urban pathology in the Victorian era.[29]

Although opposed and ridiculed by Pugin, the influence of Jeremy Bentham's Panopticon on the organicist metaphor and its geometry was profound. Almost all of the major plans for model towns that followed the publication of Bentham's Panopticon utilised the idea of geometry (and lines of sight) to inscribe order within the inhabitants of a space. The Panopticon marks a subtle shift in the metaphorical relationship between the body and the city. Previously, urban surgery aimed to construct a better body; after Bentham, geometry became a means of inscribing order in the populace. This shift in metaphor is relatively deceptive; it is the conceit of urban pathology that has been largely elided. The geometry is still the same, as is the attempt to control or order the human body. However, the catalyst for metaphoricity had shifted from

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[29] While other geometric constructs were prevalent in various disciplines, such icons typically embodied both a spiritual and a structural significance. For example, the *vesica piscis* is both a structuring form for a Gothic arch and a symbolic rendering of sacred geometries.

surgery to the geometry itself. Yet the geometry, previously the trace of the scalpel, was now lines of sight, walls and streets. After Bentham, the city was often seen in terms of the essence of geometric order expressed spatially as streets and buildings. The body in the metaphor was no longer singular, giant and symbolic; it was now multiple and real. Yet, despite these changes, the geometric form of the walls and streets was still the same as that outlined by Vitruvius and elaborated by Alberti in the Renaissance.

The conflation of the geometry of the street with the act of surgery was to reach its peak in the early years of the nineteenth century. Even though the body/city metaphor declined throughout the Victorian era it was still influential in utopian proposals up until the end of the century. Two utopian projects of the Victorian era typify the decline in acceptance of urban pathology, yet each contain distinct traces of its influence. Both Robert Owen and James Silk Buckingham proposed geometric urban plans based on a system of proportionally scaled space broken down by concentric divisions. While neither made explicit metaphorical comparisons between the form of their planned towns and the human body, each persisted in the belief that a city, constructed about rational, symmetrical, geometric forms, would be beneficial to the physical and spiritual well-being of its inhabitants. The model towns of Owen and Buckingham, each influenced in different ways by Bentham, represent the shift in metaphoricity and the end of urban pathology. Each of these proposals is part of the tradition of the Abbé Morelly in that geometry is the instrument of enlightened order and control. Traces of urban surgery and pathology can be found in the model towns proposed by Robert Owen and James Silk Buckingham. Both model towns exhibit only fragments of the organicist metaphor. Primarily, the vestiges of urban pathology may be traced in the geometry of the city streets and the belief that such forms would ensure a healthy lifestyle. In this way, the meeting point of the geometries of surgery (for remaking a healthy city) and inscription (for controlling the populace and forcing them to live healthy, moral lives) can be seen.

Robert Owen: Squares and Parallelograms

Robert Owen (1771-1858) was a prominent capitalist and organiser of production. His knowledge of both the machinery of production and its operators was extensive, as was his understanding of living and working conditions. Owen maintained that each and every person, "from the best to the worst, from the most ignorant to the most enlightened," could be made into a useful member of a community through the application of "certain measures, which are to a great extent at the command" of the government (qtd Morton 168). Owen believed that, through enlightened governance and control, a healthy character might be engendered within a community. It is this belief, that the people could be controlled and shaped by those in power, which most clearly links Owen to the tradition of urban pathology. Such an understanding suggested that the geometry of streets and the ordering of the community's lifestyle could result in the inscription of physical and moral health within the populace. This view may be traced back to those of the Abbé Morelly and Baron Haussmann, both part of the tradition of urban pathology.

Owen first tested his plans for social reform and control at New Lanark where he reduced hours and improved wages and conditions for his workers. In *The English Utopia*, A.L. Morton suggests that it was the financial profitability of New Lanark that convinced Owen to look at designing entire communities to expand the experiences he had there. In the years that followed Owen proposed a plan for a series of "Villages of Co-operation" which were intended, initially at least, as a means of providing work for the unemployed; however, government support was not forthcoming. It was the enthusiasm of his friends and employees which eventually convinced Owen that his plans had merit and that a geometric order must underlie his social reforms (Morton 169-70). While Owen's reforms in New Lanark were primarily social and often based on educational strategies, his interest in geometry as a means of controlling or shaping the human body has similarities to Bentham. Consequently, when Owen finally commenced design of an ideal community, he formed it geometrically using combinations of circles, squares and their division through lines of symmetry. Owen's "villages of unity and co-operation" were "based on squares, sub-divided into parallelograms, the line in the centre giving the site for the schools, the library, the lecture-room, the place of worship, the public kitchen and mess-rooms. The three sides were allotted to private apartments and the fourth to dormitories" (Rosenau 150).

During the following seven years, Owen developed the idea of "villages of unity and co-operation" and eventually published a proposal for "self-supporting home colonies." Vidler suggests it is significant that in the year of publication of the second edition of Pugin's *Contrasts* (and thus the growth in the popular espousal of the medieval revival), Owen continued to develop a city plan that relied upon ordered geometry, symmetry, and control. The ideal of the monastical community remained at the heart of Owen's plans; however, the similarities between Pugin and Owen remain at this idealised community level. Owen believed that new cities should be planned like ordered, machine-like operations; that streets should be straight and that cities should be set out according to a central ordering principle. Owen's "parallelograms" were to be controlled by "modern services"—chimneys were to take away the pollution and wide straight streets were planned to carry people to and from the factories and places of learning. Owen's "parallelograms" were to be formed in a "great square, some 1,650 feet long" comprising a wall of "four-story dwellings and closed at the corners with schools and colleges" (Vidler 63). At mid points along the wall, libraries, museums, studios, meeting places and lecture theatres were to be placed. From the four boundary walls, a series of four symmetrical projections (kitchens) entered the centre of the square, each surmounted by as 240 foot high smoke stack which acted simultaneously at night as an astronomical observatory and as light towers to ensure that the streets were safe and well lit. (Figures 2 and 3)

The images of Owen's planned city display the rigid symmetry and geometry of organicist city planning that was first clearly recognised by Vitruvius. Miles Lewis argues that the geometry of Owen's "Squares of Co-operation" was not central to his aims since it was "not exhibited in the major Owenite communities of New Lanark in Scotland, and New Harmony in Indiana" (122). Lewis maintains that neither town was built specifically for Owen: New Lanark was an already existing industrial community and "New Harmony being the former Rappite settlement" was purchased by Owen in 1825 (Lewis 122). While Lewis is correct in noting that neither was designed by Owen

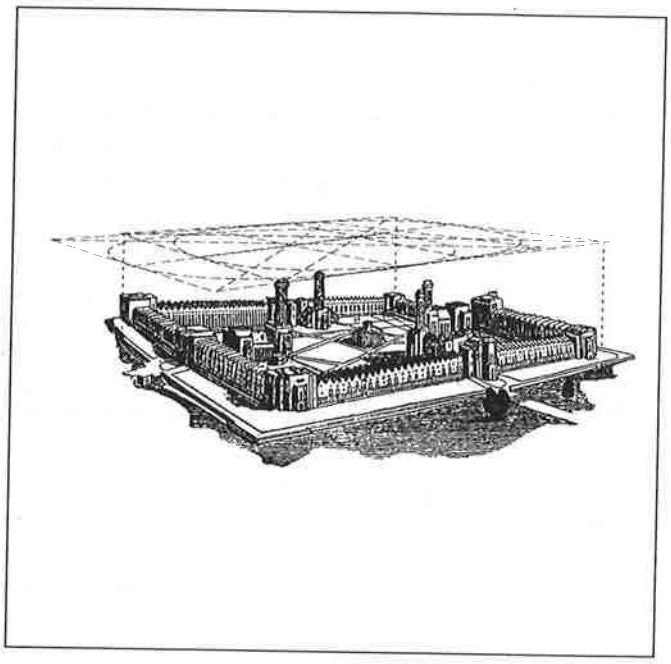

Figure 2. Robert Owen's "Villages of Co-operation"

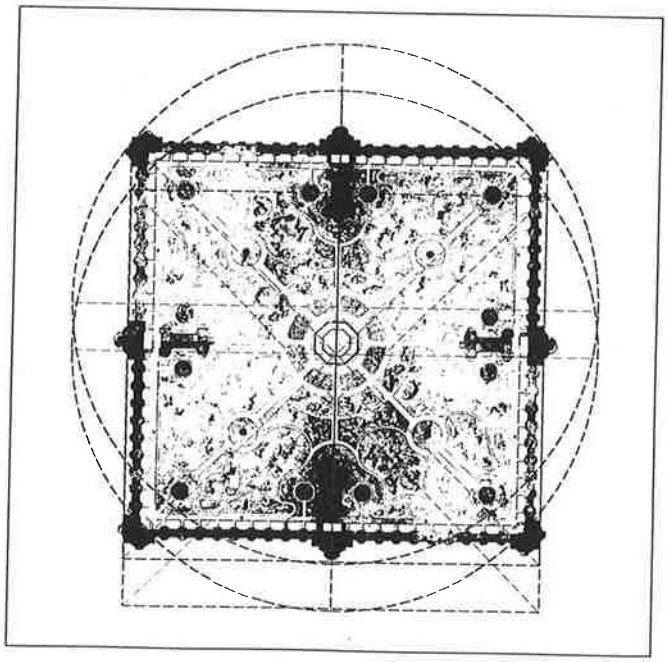

Figure 3. Robert Owen's "Villages of Co-operation"

and thus neither represents any particular geometric impulse or agenda, the fact that Owen's plans were never fully realised means that it is difficult to determine whether they possessed symbolic geometric form. As Mumford, Rosenau and Morton each note, it was Owen's experiences at New Lanark that lead him to develop a more refined model of a utopian city. Furthermore, it is notable that Owen was not personally responsible for later communities based upon his ideas. Yet many early Owenite communities were clearly based closely on his ideal plans and symbolic geometric forms. As Joseph Rykwert records of the Owenite community at New Harmony in the USA:

> The program demanded a propylaeum for an abandoned utopia. The town of Harmony was founded by Georg Rapp, a German social reformer and prophet of the second coming, who took his followers from Germany to Pennsylvania in 1803, and on to Indiana in 1815, where they farmed some 30,000 acres. But they proved restless, and he moved them back to another Pennsylvania site in 1825. The site and buildings were sold to the Welsh social reformer Robert Owen, who renamed it New Harmony. A grand new communal building was designed by Stedman Whitwell, an English architect, and partly built. A number of teachers and assorted sages were transported to the settlement by Owen's associate, William Maclure, in a specially designed boat, the operation being called the "Boatload of Knowledge." In fact Owen abandoned the experiment after three years and returned to Britain because of money and personal difficulties. (*Meier* 19)

At first glance, the published plans of Stedman Whitwell for the American Owenite community seem to have been traced directly from those of Owen. The original plans for the community not only conformed to Owen's geometry but had been developed in very minor ways to reinforce the traces of the geometry. It is notable that, while the original Owen pictorial projection of the "Squares of Cooperation" seems identical to the Whitwell design, there are differences in the style of axonometric projection. Thus, it is unlikely that the Stedman Whitwell scheme was traced or copied directly from Owen, rather that it was interpreted in some way. In the interpretation process the character of the architecture shifted slightly as did the height and scale of some portions of the planning, but the city layout—its streets, walls and geometry—is identical. The fact that Owen and his followers kept striving to achieve his ideal plan, although it was never completed, suggests that the geometry was of importance. Furthermore, given a lack of any completed city, the drawings and descriptions must be seen as accurate records of Owen's intent. (Figure 4)

Helen Rosenau has argued that a further Owenite style community, founded by Robert Pemberton, uses part, but not all, of Owen's geometrical and social agenda. Pemberton's so-called "Happy Colony" was a series of ten districts planned for New Zealand (Figure 5). Each district was to be of twenty thousand acres and there was to be central, circular networks of streets and buildings with radiating streets set out symmetrically. Rosenau records that the formation of the geometry was visually

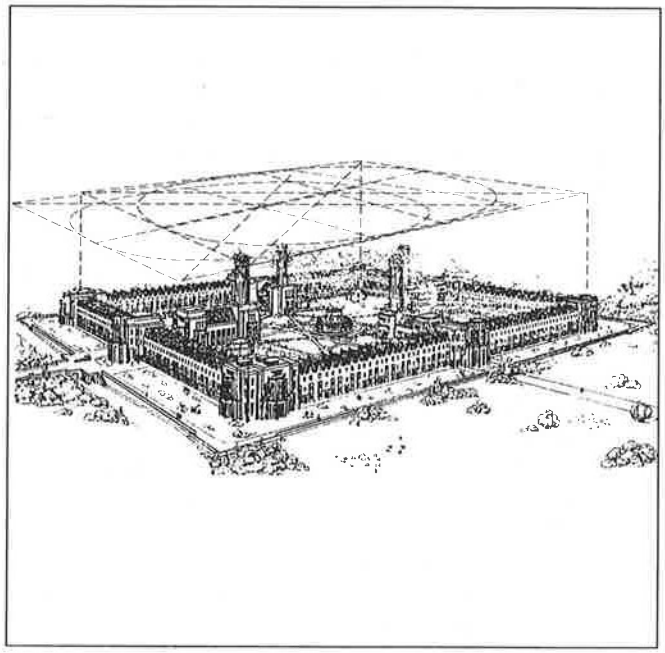

Figure 4. Steadman Whitwell scheme for New Harmony

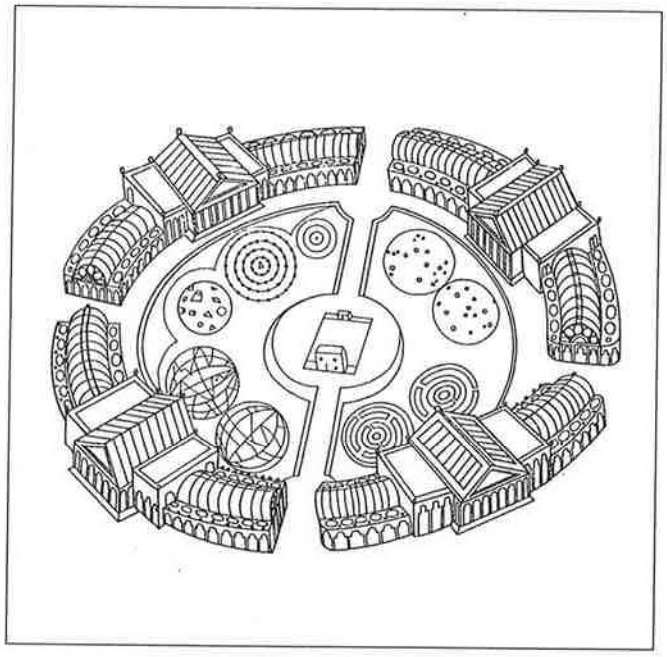

Figure 5. Robert Pemberton's "Happy Colony"

derivative of earlier works rather than conceptually similar: "The circular plan was based on Chaux, by misunderstanding the perspective view in Ledoux's work suggesting a circle, although in fact the design is oval. Pemberton admired radial shapes, because 'all the grand forms in nature are round' and because they allowed free circulation" (Rosenau 158).

The centre of Pemberton's settlements, the first of which was to be named Queen Victoria Town, was to be a farm. Surrounding the farm were to be four colleges and the streets in the inner circle were to be marked with terrestrial and celestial maps and statues depicting historic events. Subsidiary buildings were to be placed along the radial routes in a manner, Rosenau suggests, reminiscent of Owen's planning and predating Ebenezer Howard's Garden City planning of the late nineteenth and early twentieth centuries. Notably, Pemberton's plan was not intended to be in the tradition of Owen and, despite distinct social similarities, the geometries by which their cities were generated differ markedly. In Robert Owen's "Squares of Co-operation" and in Stedman Whitwell's plans for New Harmony, the geometry is distinct and central to the overall order of the city. In Pemberton's settlements the geometry is almost as an afterthought. The organic quality of circular forms and the radiating roads seem to be equal in significance to the maps and statuary; both being designed for the purpose of instilling order in the populace. The distinction between Owen's communities and that of Pemberton's is in the geometry of the incision. Owen's geometry was intentional and critical to his social agenda (and in this way is linked to the tradition of urban pathology). Pemberton's, by contrast, was not central to his proposal.

James Silk Buckingham : Nested Squares and Lines of Bilateral Symmetry

Described by Lewis Mumford as "the philistine counterpart of John Ruskin" (124), James Silk Buckingham (1786-1855) was an influential social reformer and land owner. Like Robert Owen, Buckingham had a thorough understanding of commercial and industrial matters, and a great enthusiasm for simplistic dogma and blunt logic. His utopias were not representative of the value of the artisan, the soldier or the craftsman, rather they reinforced and built upon the beliefs and values of the bourgeoisie.

Despite the curious social agenda which Buckingham adopted, the degree to which he linked the health and sanity of the populace to the physical form of the architecture and streets of the city was unprecedented in Britain at the time. While heading a parliamentary commission into the state of cities and their inhabitants, he observed a singular lack of amenities in most English cities. He noted in particular the lack of sewerage, fresh water, storm-water drainage and ventilation. He also extrapolated a relationship between the lack of fresh air and the general state of ill-health and immorality in the community. In Buckingham's influential publication, *National Evils and Practical Remedies,* he noted that "premature deaths at all ages daily take place, and the very race itself becomes stunted and degenerated, from imperfect growth and development, arising from architectural" and urban deficiencies (qtd Vidler 64). Buckingham traced the cause of social unrest and moral degradation directly to the state of the city and its buildings (Curl 60). In this manner Buckingham continued the lines of thought which supported belief in urban pathology and street surgery. Buckingham argued that architectural and urban models were the key to social reform

and that a change in the architecture and the geometry of the city would result in a change in society itself.

Mumford records that Buckingham had none of the brilliance and social originality of Fourier and little of "Ruskin's critical inquiry into what composed a good life" (126). Instead, he was concerned with perpetuating current values. His approach to designing a utopian society was based upon his own limited social values and his endeavours to see that these values were nurtured and protected in a model society. With this aim in mind, Buckingham suggested that a "model town association" should be formed for the purpose of building a new town. This town, to be called Victoria, was to be well sited and planned using a strict system of geometry (Figure 6). The town was to be serviced so as to ensure adequate drainage, water supply, ventilation and lighting. Possessing "every other elegance and convenience," Victoria was to be the first of a national series of seven square cities, each designed to cater for a populace of no more than 10,000 (Mumford 126-27). Rosenau notes that the city plan was designed to ensure that its inhabitants would lead a "virtuous life and to practice temperance." Each person was to hold a stake in the success of the venture; they would be "shareholders, and men, women and children were to shoulder work according to their strength and abilities" (Rosenau 158).

The city of Victoria was to be built in the open countryside within a square, each side being approximately one mile long. Within the square were seven concentric smaller squares (delineated by streets) as well as a series of major avenues which divided the main square along lines of bilateral symmetry. The avenues, named Fortitude, Hope, Concord, Peace, Unity, Justice, Faith and Charity, linked all areas of the city and provided a constant reminder of the values of its designer. The buildings within the city were formed in a hierarchy with the larger buildings towards the centre and the smaller ones in the outer sections of the city. The inner-most square was to be made up of public buildings, while the outermost four rows were for housing; notably the housing was also graded to ensure that the poorest "shareholders" occupied the perimeter of the town. In the middle square there was to be a large open space with an octagonal tower at its centre. From the spire of this 300 foot high tower, an electric light was to shine on the streets below ensuring that all spaces were rendered safe through the power of illumination. The tower was to contain a series of apartments at its corners with connecting passageways so that the inhabitants could enjoy the air above the city (Briggs 71).

Miles Lewis has noted that the design of Victoria, while redolent of Vitruvian geometry, possesses great similarities to J.V. Andreae's Christianopolis of 1619 (Figure 7).[30] Whether or not Buckingham understood the geometric lineage of his proposal or not is unknown, however, it is clear that he linked the form of the city, its streets, avenues and buildings, with the physical well-being of its "shareholders." Buckingham's city was part of the tradition of Morelly, Patte, Fourier, Considerant and Bentham, in that he linked the physical and spiritual health of the city to a greater metaphor involving the ordering power of geometry. Briggs suggests that Buckingham's city, Victoria, was an "ingenious plan" which well catered for the whimsy of an era which favoured "model" proposals. Buckingham, Briggs claims,

[30] These include a plan of concentric squares and a similar elevational hierarchy.

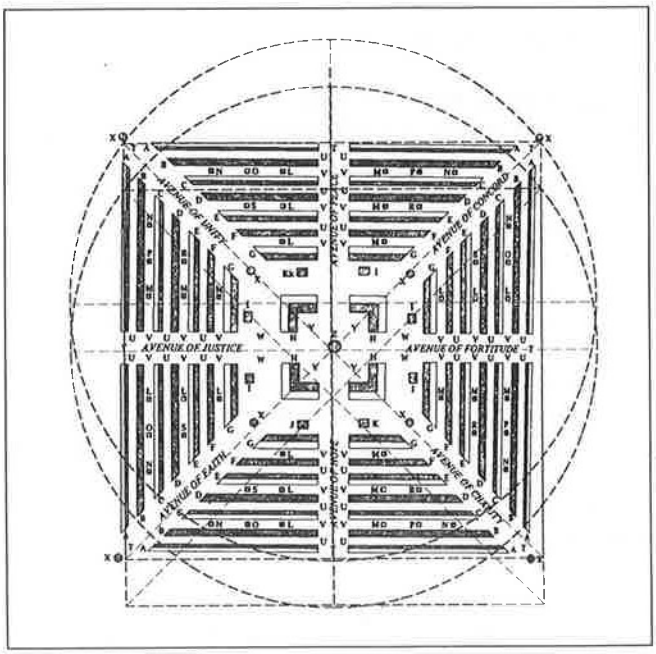

Figure 6. James Silk Buckingham's "Victoria"

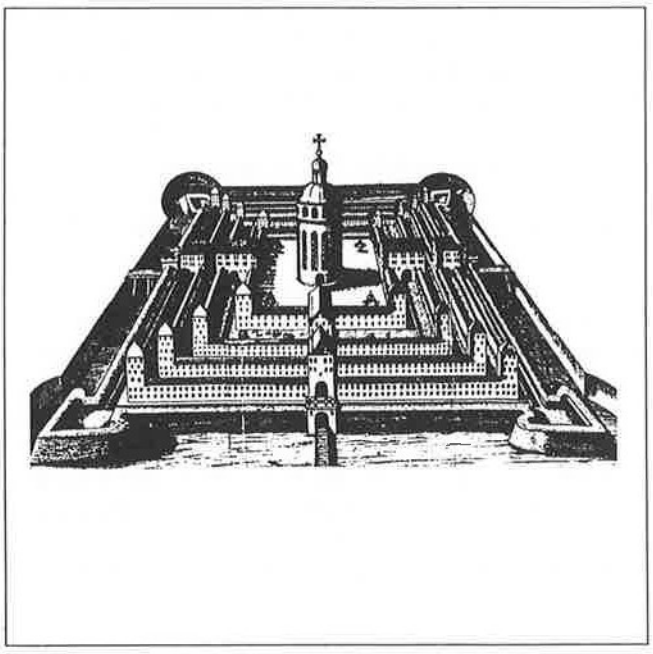

Figure 7. J.V. Andreae's Christianopolis

sought "what he could not find in the actual cities of early Victorian England—'the greatest degree of order, symmetry, space and healthfulness'" (Briggs 71). It is the combination of geometry and health which suggests that Buckingham's Victoria may be part of the metaphorical tradition of urban pathology. While Buckingham's geometry is not explicitly described as a knife cut, in the manner in Haussmann, and the city is not a giant body in the mould of the Saint Simonions, Buckingham was still reliant on the inscription of geometry on the collective body of the people.

The mandala-like Euclidean geometry of the circle superimposed on the square, and various associated lines of symmetry, which underpinned the majority of the works of the urban pathologists, may be seen clearly in the works of Owen, Buckingham and their followers. Nevertheless, the geometry was slowly being disassociated from any link with metaphorical sickness in the urban body. The order of the circle and the square, the skewed *vesica piscis* of town planning, went into steady decline after Buckingham. In much the same way, the artistic licence granted the amateur planner (and urban pathologist) slowly declined with the rise in a genuine understanding of the problems of the city. Traces of urban surgery, while appearing intermittently since the Victorian era, have primarily been polemical and not diagnostic. Geometry was no longer used as a means of re-writing the health of the city or erasing the rights of its populace in such a way again. Metaphorical urban surgery, which reached its peak in the mid eighteenth century, slowly declined throughout the following years until, by the end of the Victorian era, it had ceased to have significance.

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