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Understanding the Chinese City

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Quantity Control

Quantity regulation is spacing regulation; quantity control has a defining role to play in the forms of cities. Characters of cities are, in one important way, quantitative; the densely packed buildings of the urban centres in Hong Kong contrast strongly with the expansive orders of Tiananmen Square in Beijing. The ways of life in cities can be deeply influenced by the distributions of quantities. But the distributions of quantities in cities are not easily accounted for, as they seem to result from complex forces compounded together in response to diverse circumstances. Wealth and prosperity determine quantity distributions, as do famine, pestilence, plague, and war; power and privilege formulate their own ranked and hierarchical quantitative scales. The Chinese tendency to control quantities through systems of resident registration (*hukou*) orders quantities of people in cities in one way, the Western tendency to legislate quantities such as building regulations organizes quantities in cities in another way. Quantities are often 'out of control' in cities: migrants, slums, favelas, sprawls, as they trace the demand of the capital which tends to concentrate in cities. However, despite the complexity of quantity distributions, there seem to be consistent strategies that can be articulated; there are quantitative features that are 'in control'. In this sense, quantity regulation is intellectual; the number of things in cities results from deep philosophical contemplations. Chinese cities, as they respond to various external influences throughout their long history, seem to have maintained a series of numerical schemes that are grounded in intellectual understanding of the natural and human worlds. In conception and substance, these numerical schemes differ from those found in the Western city fundamentally; the Chinese numerical schemes – *yin* and *yang*, five elements, twelve temporal markers, sixty-four hexagrams – are often used in combination, which is very different from the notion of a singular numerical order – the One, duality, trinity, dialectics, harmonic proportions – espoused in Western thinking. The material consequences of this difference in cities as buildings take shape in response to these numerical schemes. It is clear that Chinese cities

today are heavily influenced by rule-based planning and building regulations, but it is also worth emphasizing that the Chinese numerical schemes have not been displaced; they contribute to the character of Chinese cities as they appear and as they are experienced. Perhaps the most important feature of the Chinese city in relation to quantities is that more is more, and less is less; the moral and aesthetic legitimacy of quantities seems to be distributed across a wide spectrum of numbers, attributing a unique significance to quantities of each order of magnitude. If normative urbanism is managerial in relation to classification, possession, distribution, and movement of quantities, and to mediations between different stakeholders in the city, then this part of the book is about the agreement on quantity regulation before management. It is about the numerical footprints of cultures, and the way in which the city becomes one of the most important material measures of these footprints. Few quantities and their locations are innocent of ideas; they form structured surfaces that impose orders of things onto human and non-human centred entities. To unfold this complex condition under the term of density – still perhaps the most widely used description of quantities in cities – seems to be inadequate, as the notion of density hovers above the orders of things in abstraction.

From Two to Abundance

There seem to be two instincts about quantity. The first is the idea of possessing and displaying more than necessary: abundance. Abundance is important to life promotion and preservation; human communities have always valued the ability to gather resources many times more than is necessary for subsistence. The magnificent displays of resources – contrived through fashions – have been a consistent key to the construction of power and prestige; they have certainly been central to the formulation of social classes. It is clear that the desire for abundance is common to all cultures, and that power and resource distribution in the geopolitical context have always been inextricably linked together to produce a string of empires in history, from the Roman and the Han to the British and the American. These empires may indeed be seen as forced and unequal systems of distribution of resources, brought to reality through geopolitics and war. It should also be clear that cultures impose structured surfaces on the condition of abundance to form different orders of things, through quantity regulation. The same desire for abundance can be subject to different

quantity regulation – different orders of things – which will have a decisive influence on how abundance is manifested in cultures, resulting in distinctive urban features.

In the Chinese order of things, abundance seems to be grounded in what may be described as the fertility principle: fertility is the ultimate source of unlimited additional quantities. Perhaps the most stable form of the fertility principle in the Chinese order of things is expressed as a productive binary: the *yin* and the *yang*; it is understood as the source for all possible things. This productive binary contains endless variety: the sun and the moon, the male and the female, the hot and the cold, the strong and the delicate, the dense and the sparse, and so on, are all derivatives of the first productive binary. This may appear to be similar to the formulations of duality in Western philosophy, but it differs in two important ways. First, this productive binary in the Chinese cultural context is expressed as a thing-based feature rather than a logic-based definition. Thing-based features cut through many categories that may seem to be illegitimate for Western philosophy to conceive. Second, while duality tends to define an antithetical relationship, pitching one against the other until one is eventually overcome by the other, productive binary assumes a legitimate and mutually dependent existence. The Chinese square word for abundance, *feng*, is made from symbols of cereal crops and beans; it suggests a strong bond between the meaning of abundance and agriculture. This single Chinese character symbolically unites abundance with agriculture through the fertility principle; the central tenets of Chinese governance never seem to have deviated from the substance of this symbolic union, even when narratives have shifted with time. This, subtly and decisively, formulated many moral and aesthetic frameworks in relation to the quantities of people and things in cities.

Spatial orders, and by implication chance narratives of the future, were established in early Chinese culture in a set of numbers derived from the *yin* and *yang* binary: four primary and four secondary directions, with each direction represented by a combination of three lines, or a trigram. A solid line represents the *yang* and a broken line represents the *yin*; with two layers of trigrams forming hexagrams, they come to sixty-four different combinations. The use of these sixty-four conditions is not limited to spatial characters; the hexagrams are used to explain almost all events in nature. This is the order outlined in the classic text *Book of Changes* (*Yi Jing*). These sixty-four hexagrams are annotated

with descriptions that attempt to capture chance meanings in the sequences of *yin* and *yang* lines; Carl Jung described these hexagrams and the accompanying notes as ways of thinking through synchronicity (Chinese) rather than through causality (Western), indicating a possible 'method of exploring the unconscious'.[1] Temporal orders are in one way grounded in the four seasons,[2] and in another way grounded in five sets of numbers of twelve, popularly marked by twelve animals, representing twelve earthly branches (*zhi*), totalling sixty in number. The latter scheme has the virtue of marking generational divides, as sets of twelve years. These are used in combination with ten celestial stems (*gan*) to name each of the sixty temporal markers with two characters. But by far the most extensively referenced numerical scheme has been that of five. The productive binary of *yin* and *yang* is overlaid with five elements: metal, wood, water, fire, earth. They form the basis for an understanding of the human body as being made of five vital organs and senses, heaven as consisting of five planets, music as being constructed through a pentatonic scale, food as having five basic flavours, and colour as being made of five essential colours. Each element possesses a double role, simultaneously stronger and weaker than other elements, thus being productive and destructive at the same time: for instance, wood is stronger than earth but weaker than metal; wood is produced by water but produces fire, etc. In various combinations, these numbers influenced almost all material productions in China; from the orientation of buildings on sites to the distribution of wood and earth in buildings, these numerical schemes played decisive roles in traditional constructions.[3]

John King Fairbank and Merle Goldman thought that, compared with many other societies, the numerical schemes gained 'unusual currency in China and dominated thinking for an unusually long time'.[4] The persistence of these numerical schemes seems to be indicative of a framework of quantity control with deep intellectual roots.[5] It is perhaps the underlying fertility principle behind the numerical schemes that gave rise to their lasting and pervasive legitimacy in China. The eleventh-century scholar of the *Book of Changes*, Shao Yong (1011–77), mused that 'There is a thing of one thing. There is a thing of ten things. There is a thing of a hundred things. There is a thing of thousand things. There is a thing of ten-thousand things. There is a thing of a million things. There is a thing of a billion things.' [6] Each quantity, in this formulation, achieves a unique importance that is commensurate with that quantity; one

might be tempted to describe this as numerical empiricism, but it is perhaps more fitting to describe it as a thing-based thought. Taken as such, the traditional Chinese numerical schemes may be seen as ways of understanding the world as being made of things: things can be events and moral principles, objects and subjects, natural processes and human practices.[7] 'Neither God nor Law' – Marcel Granet admired this Chinese unwillingness to build a transcendental world as 'resolutely humanist' in his masterful and sympathetic *La Pensée chinoise*.[8] In this cultural framework, ethics, aesthetics, and governance are not grounded in transcendental worlds, but in the number, nature, and propensity of things.[9]

The Chinese quantity regulation has a full spectrum; it ranges from two to abundance. It begins with two as the smallest number (*yin* and *yang*), but it has no limit to the largest number, except for the idea of abundance (*fengsheng, fanrong*) or completeness (*quan*), which is often judged to be sufficient in relation to specific conditions. Daoists work with small numbers; the Chinese literati tend to be influenced by this tendency to think through the fertility principle with fewer quantities. The paintings of the Ming scholar Wen Zhengming are compelling examples of this end of the spectrum of quantities. In his depictions of the literati garden Zhuozheng Yuan (1531), he used very few things and features to represent the garden as he saw it in the Ming dynasty, as well as the ideal nature as he imagined it. Each of his thirty-one painted scenes reiterates the productive binary in its many aspects: word and image, soft and hard, solid and void, close and far, human and nature (Figure 1.1). These were achieved through an exemplary economy of means in the distribution of things on paper; they are highly valued as literati art. Under the influence of Western art, we tend to discuss Wen Zhengming's art in terms of abstraction and minimalism, but this is misleading. The carefully controlled display of elements in literati paintings is neither abstract nor minimal; it is figural and sufficient. At the other end of the spectrum of quantity regulation, we can probably use *nianhua*, or Chinese New Year peasant paintings, as examples of abundance in larger quantities.[10] These paintings visualize greater ranges of colours, forms, symbols, and square words (Figure 1.2). Instead of focusing on essential elements, as in the paintings of the literati, *nianhua* presents a saturated collection of all: abundance in abundant display. The fertility principle is manifested more explicitly through fertility symbols (usually baby boys); their connections with the notion of abundance are immediate and accessible.

Figure 1.1 Terrace of Mental Distance, the Humble Administrator's Garden (Zhuozheng Yuan), by Wen Zhengming, 1531

Figure 1.2 Peasant painting from Yangliuqing, Tianjin

The Chinese language is filled with expressions of large numbers that indicate the significance of abundance: encyclopaedia is described as a book of 100 subjects (*baike*), diversity of views as those of 100 families (*baijia*), antiquity as 1,000 years old (*qiangu*), and years of longevity as 10,000 years (*wanshou*). The expression of 10,000 things

has acquired a stable meaning for the largest inclusivity (*wanwu*). Intellectual achievements in this context are not primarily measured through 'views' which, despite their ability and promise to amplify amazing details, are often considered to have been derived from one perspective (*pianmian*) and therefore flawed; instead, the intelligent mind would strive for multiple accounts of a situation aiming to achieve a complete comprehension (*quanmian*). The intellectual landscape in China is crucially influenced by this method of conceptualizing the nature of knowing. In seeking the completeness of knowledge, the imperial administration gathered with great tenacity and righteousness large and complete collections of books. Among the well-known imperial book collections, the Song-dynasty *Taiping yulan*, or *Imperial Inspected Encyclopaedia of the Taiping Era* (977–983, 1,000 volumes), the Ming-dynasty *Yongle dadian*, or *The Great Canon of the Yongle Era* (1403–08, 11,095 volumes) and the Qing-dynasty *Siku quanshu*, or *The Complete Library in Four Branches of Literature* (1773–82, 36,381 volumes) are some of the best examples. In their sizes and methods of classification, these collections represent a very distinct tradition of managing quantities of information which differs fundamentally from that of the Western encyclopaedia. It was the imperial ambition to achieve completeness, as indicated by the words 'great canon' (*da*) and 'complete library' (*quan*) in the titles, that brought them legitimacy and authority. This is, as we can see in today's world of multi-media publications in China, still a much-desired status; the link between completeness and largeness on the one hand and legitimacy and authority on the other remains a very powerful one.

This relatively evenly distributed quantity regulation leads to an evenly distributed spacing regulation; we can perhaps describe this visual feature as spreading, an approximately even placing of spatial components. It is particularly interesting to note various well-known paintings of 100 things: the Tang-dynasty painter Wei Yan (eighth century) left us an extraordinary painting of 100 horses; the Italian Jesuit Giuseppe Castiglione (1688–1766) also painted a version of 100 horses for Qianlong Emperor. Both Wei Yan and Castiglione distributed their 100 horses evenly across the painting surfaces. Castiglione's spreading technique is particularly interesting because he had to rebel against his European landscape painting methods. Within the Baroque painting tradition that he learned in Rome, spreading would likely have been seen as a fault in composition, one of five important aspects of painting at the time. Here, Castiglione became a Chinese painter by depicting, with relatively equal emphasis, 100 horses spread along a very long scroll. From paintings

to buildings, this spreading principle remains effective. The imperial Chinese city features the spread of courtyards surrounded by single-storeyed buildings. Although the concentric hierarchy of power maintains their own magnitudes of quantities, within each magnitude spreading seems to be the most consistent way to display quantities. While logic-based Western organization of quantities demands the display of the most representative of type, the thing-based Chinese organization of quantities insists on the equal significance of each variety.

Taken as a whole, the Forbidden City in Beijing (Figure 1.3) can perhaps be seen as the epitome of numerical schemes. Built between 1406 and 1420, and with numerous minor renovations and changes made through its 490 years' usage as China's imperial court, the Forbidden City embodied the numerical schemes in their most elaborate and strict manifestations. The imperial regulations of the Ming dynasty, like its laws, were exceedingly detailed; it reflected the tradition of buildings as the embodiment of Confucian rites which remained largely unchanged in principle since the second century (Han dynasty).[11] The axis of the Forbidden City took its origin from the star positions in the northern sky, while the placement and the naming of the large range of buildings referred to ancient texts such as the *Book of Changes*. Prominent among the numerical schemes, the productive binary of the *yin* and the *yang*, the sixty-four hexagrams, the five elements, the twelve temporal markers, form an intricate web of carefully determined quantities. *Yin* and *yang* are indicated by many binary functions and names of buildings along the 8,000 metre axis, such as beginning/end (*qiankun*), sun/moon (*riyue*), spring/autumn (*chunqiu*), civil/military (*wenwu*), left/right (*zuoyou*).[12] Out of the *yang* numbers (odd numbers), five and nine are most valued; five is the mean and nine is the biggest. Further value of nine comes from the fact that 'nine' is the homonym of 'longevity' in Chinese. Five is highly valued because of its ability to function as the most powerful correlative number between the human body (five organs), the earth (five elements), and heaven (five planets). The imperial ruling quarters, the official halls, and the residential halls of the emperor are laid out as two groups of three halls (three in relation to nine), and the number of gates of the Forbidden City is nine; nine dominates decorative designs. The shape of the roofs, the height of podiums, the coloured paintings on timber structures, the number and sizes of beams and timber brackets are all determined by this set of numerical schemes. The concubine quarters of the Forbidden City are arranged as six (a *yin* number) on each side of the axis, forming a distribution of twelve concubine quarters which

matches the number of temporal markers; this encapsulated a temporal regime of the emperor in relation to his imperial concubines. The sons of the emperor lived in quarters determined by the number five (again, a *yang* number). An example of a complex strategy of location would be that of civil and military offices: the civil office is located at the east of the axis for its association with the element of wood and the temporal marker of spring, to capture the energy of germination and growth, while the military office is located on the west side of the axis for its association with the element of metal and the temporal marker of autumn, to capture the energy of aggressiveness and termination. This is far from an exhaustive account of the numerical schemes of the Forbidden City,[13] but they can perhaps be seen as an indication of the crucial importance of numbers in the design and layout of buildings in Chinese imperial courts, of the various numerical schemes indicating cosmological orders, and of the intellectual conception of unique and distributed significance of the orders of quantities.

The Forbidden City features a spacing regulation that may be described as 'axial spreading', a numerically determined distribution of quantities along a long axis that reflects a distributed importance of each order of quantities. While the plan shape of the Forbidden City may resemble some examples of the European Baroque planning, axial spreading is fundamentally different from the 'scopic regime' that gave rise to the planning of Rome by Sixtus V and Dominico Fontana, or that of Versailles by Louis XIV and Jules Hardouin-Mansart, which tested the city and garden of vistas premised on the idea of scopic distance and the power and control that it implies.

Figure 1.3 The Forbidden City, Beijing

If the Forbidden City epitomizes carefully regulated numerical schemes, the Chinese market place perhaps represents an unregulated, but legitimate, notion of abundance. Market streets flourished during the Song dynasty (960–1279) at an unprecedented scale, even when the Song imperial court was deeply engaged in reformulating and imposing Confucian rites; commercial spaces poured out from previously confined quarters to form a new kind of Chinese city: that of maximum quantities. The Chinese imperial conception of commerce had always been ambivalent. Merchants were the lowest among the four categories of people: scholars (*shi*), peasants (*nong*), artisans (*gong*), merchants (*shang*). The rise of the market place in the Song dynasty may be seen to be compelled by the imperial court's need for commerce in response to the military threats of the Khitans, the Jurchens, and the Mongols in the northern Eurasian steppe.[14] Following a century of Mongol rule (1279–1368), the Ming dynasty re-established perhaps the strictest social order, and discouraged trade in the early stages of the dynasty. The market place nevertheless flourished again in the late Ming (first half of the seventeenth century) to surpass that of the Song dynasty. In the absence of a strict imposition of rites – resulting perhaps from both an imperial neglect and an imperative of trade – market places in Chinese cities seem to have operated with many numerical schemes simultaneously without an overarching and dominant framework such as that of proportion. An extraordinary painting by Zhang Zeduan (1085–1145) entitled *Along the River during Qingming Festival* depicts, in the form of a long scroll, detailed scenes of a market place in the twelfth-century Song capital city of Bianliang (Kaifeng). While the imperial Confucianism demanded buildings as observance of rites, the market place gave rise to material abundance through its multitude of numerical schemes all competing for prominence and influence.

How does abundance – with all its intellectual conceptions and numerical schemes vividly demonstrated in imperial Chinese cities – appear in today's cities in China? In many ways, and despite the extensive use of contemporary typologies, materials and technologies derived from the West, Chinese cities remain vigorously engaged, implicitly and explicitly, with numerical narratives of the past. Perhaps the greatest difference between the numerical schemes in contemporary Chinese cities and those in the past is that they lost their status as grand narratives; they nevertheless sustain a powerful position as fragmented small narratives. In certain spheres of Chinese life such as health care, the traditional numerical schemes of the five elements still anchor Chinese medicine and the Chinese corporeal preservation regimens. In Beijing, along the imperial axis of the Forbidden City, two

important additions were made in the twentieth century. The first was constructed at the tenth anniversary of the founding of the People's Republic of China in 1949; this included Tiananmen Square and two of the ten grand projects – the Museum of Revolutionary History and Great Hall of the People flanking the imperial axis – built to celebrate this occasion. The second was built for the 2008 Beijing Olympic Games; for this event, two central venues – the Olympic Stadium and the National Aquatic Centre – were again laid out to straddle the imperial axis (Figure 1.4). The twentieth-century additions extend the numerical schemes of the imperial city: the past and the future, the emperor and the people, the square and the round, the blue and the red, the aquatic and the terrestrial all conspire to invoke an ancient sensibility of the productive binary. Whereas the names of the architects responsible for these monumental structures may escape the attention of the general population in China, the significance of the forms and locations of the buildings certainly hold an immediate and strong power deeply rooted in China. When cities such as Shenzhen and Guangzhou build their grand new city centres in Futian District (Figure 1.5) and in Zhujiang New City, their urban visions may be partially inspired by Baroque Rome and Parisien Beaux-Arts planning, and Soviet Socialist Realism, but they are, more importantly, products of ancient schemes of quantities based on the productive binary, brought out through the technique of axial spreading.

Figure 1.4 Olympic Village, Beijing

Figure 1.5 Shenzhen city centre, Shenzhen

If the Forbidden City serves as the epitome of ordered Chinese numerical schemes, Hong Kong stands as an exemplar for the city of maximum quantities, resulting from a multitude of competing numerical schemes all seeking their materializations to the greatest extent possible. It is with good reason that Zhang Zeduan's painting – and not those of Wen Zhengming who would have dismissed the Song commercialism as a low life form – was on loan to Hong Kong when the city celebrated the first ten-year anniversary under Chinese sovereignty in 2007. Hong Kong is perhaps a city that most resembles the spirit of the Song-dynasty painting in today's China. Hong Kong is a city of abundance in abundant display, a visual character similar to that in *nianhua*. Hong Kong's abundance is not limited by absolute numbers, but by standards of hygiene and safety as a human settlement. Most Chinese cities develop along the spectrum of quantities, with the Forbidden City and Hong Kong as its extremities.

The Just Right

The second instinct in relation to quantity seeks, in its ideal formulations, not abundance but the just right. The moral and aesthetic judgement on what is not enough and what is too much is

not easily made in the Chinese city; it all depends. In the Western city, it is possible; at least in a string of foundational texts in architecture – Vitruvius's *Ten Books on Architecture*, Palladio's *Four Books of Architecture*, and Le Corbusier's *Towards a New Architecture* – the importance of the right amount of things in the right dimensions is clearly legislated. In architectural practice, creating the just right quantities – in terms of both amount and relationships – is a highly valued skill; like the Chinese numerical schemes, this Western sensibility has a deep intellectual connection. Perhaps the first and most illustrative work of this tradition is Plato's *Timaeus*, although the central doctrine contained in this book is widely disseminated through a range of works. In relation to the Chinese conception of the productive binary, the most important intellectual difference is Plato's conception of the third; the third, in the form of the mean, has a precise and identical relationship with both the first and the second: 'It is not possible to combine two things properly without a third to act as a bond to hold them together.'[15] When Plato speculated on a model of the universe as consisting of 'on one hand an intelligible and unchanging model and on the other a visible and changing copy of it', he thought the third condition, a 'receptacle' and a 'nurse of all becoming and change' (*chora*), must be imagined.[16] Unlike the two distinct states (*yin* and *yang*) in the Chinese imagination, Plato postulates three forces (being, space, becoming), with the third force operating on a separate and more powerful plane. Unlike the Chinese elemental thinking on the five elements of interconnected equal status and importance, Plato considers water and air as proportionally in the middle of fire and earth as 'the third conditions'; if two is the smallest number for abundance in the Chinese conception, three would be the smallest number in Plato's understanding of a dynamic condition. It allows 'proportion' – precise, constant, irreducible numerical schemes – that frames and bonds all things like a set of master keys. Proportion can be mathematical, geometrical, and moral. Proportion is the first great iteration of *chora*. 'The best bond is one that effects the closest unity between itself and the terms it is combining; and this is best done by a continued geometrical proportion.' 'So by these means and from these four constituents the body of the universe was created to be at unity owing to proportions; in consequence it acquired concord, so that having once come together in unity with itself it is indissoluble by any but its compounder.'[17] Speculating on the things that make up the universe, Plato suggests that 'these things were in disorder

till god introduced measurable relations, internal and external, among them, to the degree and extent that they were capable of proportion and measurement'.[18]

The Chinese notion of *qi* comes close to the notion of *chora* in its capture of an invisible form of vitality, but the similarity quickly ends. Q*i* exists in all numerical schemes of quantities in the Chinese cultural tradition: the *yin* and *yang* (two), the elements (five), the biggest yang number (nine), the temporal order (twelve), the hexagrams in the *Book of Changes* (sixty-four). Q*i* is elemental while *chora* is mathematical; *qi* is distributed while *chora* is reductive; *qi* is vital while *chora* is enlivening. The account of *qi* is perhaps most vivid when it is applied to the human body; the intake and discharge, the up and down of the various different types of *qi* within the body link it to environmental elements and justify analogous medicinal interventions to regulate the body in relation to its *qi* balance. The account of *qi* in the environment, often seen in the practice of *fengshui*, demonstrates a traditional connection between the notion of *qi* and the constructed environment. The Confucianist 'doctrine of the mean' may also appear to be similar to *chora*, but it is far from mathematical; it is an ethical doctrine of moderation rather than an epistemological doctrine of the precise middle ('one exceeding one extreme and being exceeded by the other by the same fraction of the extremes'[19]). The Platonic numerical sequences outlined in *Timaeus*, 1:3:9:27 and 1:2:4:8, do not go beyond 27;[20] this speculation on the material constitution of the world through small integers exemplifies the nature of Western knowledge as classificational, categorical and typological. Knowledge hinges on the formulation of a set of master keys; it is premised on the notion that the large is understandable through the small, the large is constructed with the small in numerical relationships. Alberti claims that 'Nature is composed of threes all philosophers agree'.[21] While each element, each colour, each sound, each order of magnitude within the numerical schemes in the Chinese order of things possess *qi* and therefore values are placed in the fullness of these elements, resulting in distinct formal, colouring, and musical features, the Platonic *chora* demands proportion between forms, colours, and sounds. Western arts deviate from this point to proceed on a very different path; the dilution and mixing of colours in the search for proportional relationships in the mixing behaviour of colours would have been seen in the Chinese conception of colours as having weakened the *qi* of the five colours.

In Renaissance Italy, the intellectual and artistic circle of the Medici family in Florence was very enterprising with the discovery of Plato's *Timaeus*. Giorgio Vasari was scornful of the excessive amount of architectural detail in Gothic architecture, denouncing it as lacking in proportion. Raphael depicted Plato, in *School of Athens*, as holding *Timaeus* in his left hand; Raphael's painting is exemplary in visualizing the idea of proportion as the universal bond through careful composition, and through the depiction of architecture as if it is that very well-proportioned universal bond that nurses knowledge and beauty. Vasari and Raphael, in words and images, crystallized a long period of searching for ideal architectural forms based on proportion. Alberti's notion of *concinnitas*, a force that 'molds the whole of Nature' as the true source of beauty, reproduces Plato's 'receptacle' and 'nurse' metaphor.[22] 'The greatest glory in the art of building is to have a good sense of what is appropriate. For to build is a matter of necessity; but to build something praised by the magnificent, yet not rejected by the frugal, is the province only of an artist of experience, wisdom, and thorough deliberation'.[23] Perhaps the most important aspect of this revival of Platonic numerical order is its moral implication; 'propriety', as the 'just right conduct' – for instance courage as the proportional middle between cowardice and rashness – of the cultivated members of society, can probably be seen as a parallel quality to the just right numerical order. We can find this moralization of conduct in Baldassare Castiglione's *Il Cortegiano* in 1528. As early as Vasari's *Lives of the Most Excellent Painters, Sculptors and Architects* in 1550, this coupling of proportion and morality served as one of the central convictions in theorizing art and architecture. *The Painting of the Ancients* by Franciscus Junius in 1637, *Characteristicks of Men, Manners, Opinions, Times* by Shaftesbury in 1711, *Aesthetica* by Alexander Baumgarten in 1750, *Critique of Judgment* by Immanuel Kant in 1790, progressively developed the idea of taste – a crucial ability to sense the beauty in correct proportions in the arts and in human conduct – as a quality of good cultivation. If the European eighteenth century is one of politeness,[24] then this politeness is materialized in the legislation of quantities in art and architecture – a spacing regulation of politeness, so to speak. European colonization of other parts of the world since the extraordinary Portuguese navigation in the 1590s around the Cape of Good Hope to the west coast of India, brought the European notion of taste to influence other cultures. This moral discourse based in a set of numerical schemes of the just right is far from being a normative framework in relation to quantities; on the contrary, like so many

cultural features in the West, the cultivation of the just right appears to be an artificial construct of scarcity against the natural tendency to desire abundance.

If proportionality can be understood as one of the most crucial manifestations of *chora*, then foundational architectural texts in the Western tradition by Vitruvius, Alberti, Palladio, and Le Corbusier are crucial moral battles against excessive and miscalculated quantities, be they Roman eclecticism, medieval Romanesque mixtures, or French Beaux-Arts amalgamation of styles. All the writers of these treatises take the moral high ground of abstinence; they offer prescriptive methods in the form of proportional schemes that guarantee good taste. The proportional schemes are, as Alberti maintains, ways of the just right so that nothing can be added and nothing can be taken away without making the design worse.

The construct of the proportional mean enables two kinds of dependent states: less and more. It also creates one moral principle: less is more. There seems to be a dialectics of quantities between less, more, and the just right. When it is less, it presents an aesthetic of artificial scarcity and a moral will to abstain from the allures of abundance. We find this in early Christian architecture, in Cistercian churches, and in Classicism. Today, we find it in minimalist designs and starving fashion models: the sterile environment and malnourished bodies certainly do not convey any sense of fertility or life-promotion; they seem to represent life's martyrdom in the battle against abundance, an impulse – simultaneously Platonic, Christian, and modern – to control quantities severely, as if to intensify the aesthetic potential of the moral power of quantity control within an environment of abundant provisions. It is, as Mumford observes, the principles of life promotion rooted in agriculture which the Western city subverts and abandons.[25] When it is more, it is manifested as a willed excess, a rebellious eruption of repressed desires for more. Much of the critique of the Baroque resulted from the condemnation of the state of too much and its associated moral decline: licentiousness, looseness, promiscuity, decadence, etc. Much of the enjoyment of the Baroque came in the form of guilty pleasure. In eighteenth-century Europe, for those who sought cultivation in classical antiquity which governed both the aesthetic state of things and the moral state of human beings, the Baroque exhibited a lack of taste. Chinese influences on Western art in the eighteenth century, *chinoiserie*, injected a bold and liberating imagination of quantities which placed the Western order of quantities under stress.

The New *Chora*: Machine, Language, Data

While *chinoiserie* may be playful, it did not pose a real challenge to the Western quantity control strategy rooted in proportionality. It was the rise of Western science that first mounted a devastating attack on proportions. Francis Bacon (1561–1626) was perhaps the most notable among them. In an essay called 'Of Beauty', Bacon dismissed proportional ideals as the best way to achieve beauty. Referring to the proportional methods of Dürer and the legend of Zeuxis having painted a cult beauty of Helen by combining the five most beautiful girls in the body of one, Bacon wrote:

> A man cannot tell whether Apelles or Albert Durer were the more trifler; whereof the one would make a personage by geometrical proportions, the other, by taking the best parts out of divers faces, to make one excellent. Such personages, I think, would please nobody but the painter that made them. Not but I think a painter may make a better face than ever was; but he must do it by a kind of felicity (as a musician that maketh an excellent air in music), and not by rule.[26]

Instead, Bacon suggested that 'There is no excellent beauty that hath not some strangeness in the proportion'.[27] Bacon's comments on beauty were not incidental; they were part of an ambitious knowledge reform programme. He argued that at the heart of the Renaissance pursuit of beauty was a fundamental misconception of the form and objective of knowledge. The Renaissance was misguided by a vanity of the mind to pursue 'delicate knowledge', while the true meaning of knowledge lies in its empirical dimension and its usefulness. The Renaissance love of beauty, Bacon wrote,

> grew speedily to an excess; for men began to hunt more after words than matter; more after the choiceness of the phrase, and the round and clean composition of the sentence, and the sweet falling of the clauses, and the varying and illustration of their works with tropes and figures, than after the weight of matter, worth of subject, soundness of argument, life of invention or depth of judgment.[28]

The 'weight of matter' is significant; it is the notion of external truths that captured the imagination of Bacon and that of a generation of scholars in Europe who contributed towards the 'scientific revolution' by focusing on facts and functions. In France, Claude Perrault (1613–88) considered some of the proportional schemes practised in Greek architecture as 'arbitrary', and turned his

translation of Vitruvius into a critique, while in England, Christopher Wren (1632–1723) thought proportional schemes to be 'customary', a habit of time rather than a truth; both denied their role in the production of good architectural designs.[29]

How did the tradition of working with proportions in art and architecture survive this onslaught? It was held together temporarily by the ingenious framework of the European Enlightenment, through works such as those of Shaftesbury and Kant. Their argument was that the beautiful, the good, and the moral are different manifestations of the same power; this power is Plato's universal bond understood as a moral imperative. The goodness of nature as a whole compels human beings to formulate their moral and aesthetic practices – still largely inherited from the Renaissance Platonic enterprise – according to good judgement, one that is able to recognize the just right as a mark of good taste.[30] Shaftesbury defended the Renaissance, and argued against the scientists whom he regarded as having been too pedantic with empirical details. Instead, proportion is a shadow of virtue and evidence of manner and taste, qualities essential to a human ideal in the character of the virtuoso, an eighteenth-century answer to Castiglione's courtier in Renaissance Italy. Fragile as it was, this moral and aesthetic enterprise – manifested in the eighteenth century as a culture of politeness – was crucial to the rise of the economic middle class, which made good use of this immensely rich cultural tradition as a mark of class distinction.[31] Here, the Platonic *chora* shifted from mathematical precision to a 'moral sense' which found its physical forms in, among other features, proportionality.

In the middle of the twentieth century, two important publications concerning proportion appeared: Colin Rowe's 'The Mathematics of the Ideal Villa' (1947)[32] and Rudolf Wittkower's *Architectural Principles in the Age of Humanism* (1949);[33] in revealing the deeper mathematical roots of proportions and broader application of their rules in designs, and in tracing the decline of proportions since the rise of Western science, these essays can be understood as obituaries of proportion. Wittkower suggested that the decline of proportion was due to the increasing importance of the psychology of creativity, affirming that the seventeenth-century critique of proportion was the starting point of its decline.[34] However, Wittkower perhaps misjudged the successor to proportion. The triumph of science since the seventeenth century was not accompanied by the surge of the psychology of creativity, but by the rise of facts and functions in design. Three metaphors seem to have appeared to suggest

new ways of understanding *chora* in design. The first is the functional machine, a notion that influenced early twentieth-century modern architecture, but it can be traced back to its use by Thomas Hobbes in relation to a social form that was deeply inspired by seventeenth-century science; this appeal to the causality of the mechanical – as that of materials and forms – gained tremendous power in the first half of the twentieth century. The second is language, a metaphor for architecture through the idea of an invisible force that produces meanings; this mapping of design onto syntactical rules and semantic conventions provided an attractive ontology for architecture. From shape grammar and space syntax to semiology and deconstruction, the linguistic metaphor energized the theory of architecture for much of the second half of the twentieth century. The third is data indexing; this is most dramatically demonstrated by one of the greatest data spectacles of our age – the Google Search – in which indexed data and the fast feedback loop have pushed the management of data into an aesthetic project. Now, it seems, data are able to reconstitute all human activities: sociality now becomes mappings of movements of data in social media, viability of society becomes consumer confidence index, quality turns into graphs of data indicating customer satisfaction. Algorithm seems to have the power to contend for the status of the new *chora*.

As contrasting as architectural publications can possibly be, Richard Padovan's *Proportion* (1999)[35] and Rem Koolhaas's *S,M,L,XL* (1995)[36] could nevertheless be seen as two sides of the same coin in relation to the design heritage of proportioned quantities. Padovan defends proportion on the ground of our 'natural' intellectual behaviour, resulting from both empathy and abstraction, two modes of functioning of the human mind: projecting its intellectual conception onto the environment, and understanding the environment through rational schemes of abstraction. Koolhaas internalizes the shock of a Western architect by the apparent disregard of its tradition of quantity management in other parts of the world (Singapore, Pearl River Delta), and turns the Western heritage of quantity management on its head. Between these two kinds of assertions, the power that Plato described as the universal bond finds its successive forms: the mechanical, the linguistic, the parametric, and the ecological. What is common to all of them is the assumption of a singular overarching logical/numerical framework that regulates, distributes, aestheticizes, and moralizes. They emerged as alternatives to proportion as the most fundamental framework of quantity regulation, but more importantly,

they appear as reconstitutions of many of the central features of the Platonic *chora*.

The quantity regulation of the Chinese city, with which we began this chapter, is different in fundamental ways from that of the Western city, and must be contextualized within Western numerical strategies in order to place both the Chinese city and the Western city within a larger critical framework. The seemingly endless parade of quantities in the Chinese city – from the productive binary to complex and grand numerical schemes, from politics to community, from food to medicine, from ornaments to buildings, from the late Ming dynasty to the twenty-first century – is potentially disorientating without a set of master quantities; we must see that the parade of quantities is the parade of all orders of things (*wanwu*), with the nature of each order of magnitude manifested in the display of quantities. In resisting abstraction in the idea of master keys, the parade of quantities in the Chinese city conveys meanings in material ways and produces the city through distributed material orders. With each additional appearance of a thing, even when it is identical to a previous appearance – a common practice in the use of Chinese square words – meanings change. In the Chinese city, the twos, the fours, the fives, the eights, the nines, the tens, the twelves, the one hundreds, the one thousands, the ten thousands, continue to have their persuasive power in the realization of projects, both as real estate speculation and as grand constructions symbolizing culture and nation, both as the way in which building materials are used, and as the way in which cities are laid out. These quantities exist as both original quantities and those making a second appearance following their first appearances elsewhere, as acts of confirmation, solidarity, emulation, tribute, and respect; this is in line with similar practices in calligraphy, literature, painting, and gardening. Shao Yong's speculation on the nature of the number of things stops at the thing of a billion things, which he considered as the order of magnitude of a human being ('isn't the human being the thing of a billion things?'); if he is be taken as a start, what would be a city of a billion things? To follow Shao Yong's thoughts, this city of a billion things would be an amalgamation – without abstracted master quantities – of countless orders of magnitude of quantities, all moving and changing with their propensity, all seeking their materialization to the greatest extent possible. This would be a city of immense complexity. This would be an important understanding of the Chinese city, not so much when it is in the form of the Forbidden City with strictly regulated quantities, but when it is in the form of Hong Kong with its complex

amalgamations of economies and ecologies, of systems of languages, transportation, habitation, and consumption, of narratives of past, present, and future. This is a way to understand the fast-growing Chinese cities today, when many of them have, with or without intention, traced the path of development of Hong Kong, an exemplar city that combines orderly life with a high concentration of buildings and people, and that incorporates all external influences into its existing orders of quantities. This is the city of maximum quantities.

Notes

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