Chapter The Cube of Cubes Twenty-One

The owner of the Heart becomes a six-faced mirror: through him God looks upon (all) the six directions.¹

Prophecy, penmanship and geometry – this trilogy of concepts served us to outline the scope of our study in the introductory chapter. If, having reached the end of this long journey, we ask ourselves whether a single concept has emerged which underpins all three in equal measure, the answer must be 'justice'. Prophecy bears witness to God's justice in the ordering of the cosmos and establishes principles of justice applicable to the community of believers. Geometry is but the most abstract, and as such the purest, manifestation of cosmic justice in the visual domain. And Arabic penmanship found itself tasked to give expression to justice both with respect to content and form. Content-wise it does so first and foremost by recording the Qur²ān, and with it the principles of justice revealed to the Prophet. The Qur³ān in turn calls upon the scribe to write 'by recourse to justice' (Qur³ān 2:282).² In the form of the Proportioned Script, the Arabic alphabet itself came to be governed by principles of justice in the guise of geometric laws through which all letter shapes are proportionally related and derived from a single source.

The centrality of justice as the concept which links the spiritual message of prophecy to the script as its visible medium, and to geometry as its abstract embodiment, can be illustrated by Ahmed Moustafa's triptych entitled *Naming Infinity – One Hundred Minus One,* with which we have chosen to conclude our study (see Fig. 21.6 below). The geometric form it takes, as well as the varied appearance and function of writing in its design, integrate into one coherent structure a number of themes we have encountered at crucial points in our argument. In the coming pages, our discussion focuses on these themes in

Rumi, 2001, 54 (Mathnawi V, 874):
 صاحب دل ءاينة شش رو شود
 حق ازو در شش جهت ناظر بود
 On this see Vol.1, 75.

particular, notwithstanding any other observations and associations which viewers might detect in a work which was originally intended to be contemplated on its own terms, without the need for explanatory guidance.

Its title is derived from a prophetic *ḥadīth* and a Qur[°]ānic passage. In the latter, David is faced with the following juridical challenge:³

Has the story of the litigants reached you who surmounted the walls of the sanctuary? As they came upon David he shrank back in fear of them. They said: 'Fear not! We are [but] two litigants. One of us has wronged the other: so judge between us with justice, and do not deviate from what is right and show us the way to rectitude. This is my brother: he has ninety-nine ewes whereas I have only one ewe - and yet he said "Make her over to me", and forcibly prevailed upon me in this dispute.' [David] said: 'He has certainly wronged you by demanding that your ewe be added to his ewes! So do many kinsmen wrong one another, except those who believe [in God] and do righteous deeds: but how few they are!' And [suddenly] David understood that We had tried him, so he asked his Lord to forgive him his sin, and fell down in prostration, and turned to Him in repentance.

Some classical exegetes have interpreted this encounter as an allusion to David's desire to seize another man's wife, in addition to the many wives he had already acquired.⁴ That a deeper and more universal meaning may here also be conveyed is suggested by the fact that the same interface between the numbers 99 and one is encountered in the following well known *hadīth* in which the Prophet declared:⁵

God has ninety-nine names, one hundred minus one, for he is singular and loves singularity.⁶ Whoever enumerates them enters Paradise.

The *hadīth* led to the selection of the 99 'most beautiful names' (*al-asmā*² *al-husnā*) from among the many epithets with which God is described in the Qur²ān.⁷ The question arises why both the *hadīth* and the Qur²ānic passage, in which David's sense of justice is put to test, focus on the mathematical equation 100 - 1 = 99, and what meaning may thereby be conveyed.

Having for long pondered over the issue, Ahmed Moustafa was surprised to find a guide to the answer in the geometric properties of the cube. His reflections were prompted by the special virtues of this Platonic solid which make it a perfect spatial representation of both singularity and distributive justice. All its dimensions are exactly equal: the six sides share one measurement, 3 Qur'ān 38:21-25:

وَهَلْ أَتَدَكَ نَبُوا ٱلْحَصِّمِ إِذْ نَسَوَّرُوا ٱلْمِحْرَابَ ٢

- 4 See e.g. az-Zamakhsharī, 2008, 3/366ff
- 5 See Ibn Māja, 1952-1953, *ḥadīth* no. 3861:

حدثنا هشام بن عمار. حدثنا عبد الملك بن مجد الصنعاني. حدثنا أبو المنذر زهير ابن - 3861 مجد التميمي. حدثنا موسى بن عقبة. حدثنا عبد الرحن الأعرج عن أبي هربرة ان رسول الله صلى الله عليه و سلم قال أن لله تسعة و تسعين اسما. مائة إلا واحدا.

إنه وتريحب الوتر. من حفظها دخل الجنة﴾

- 6 The Arabic term witr literally means 'odd' or 'uneven' with respect to numbers.
- 7 For details see El entry Asma al-husna?



so do the eight angles and the twelve diagonals. But how to get from this affirmation of oneness and justice to the number 99?

Among the numbers repeatedly mentioned in the Qur³ān is the number 1000 and its multiples which is frequently used to elucidate the phenomena of creation in their scope and amplitude.⁸ It is the cube of ten, a number which has since antiquity been given a unique status $(10 \times 10 \times 10 = 1000)$. The Pythagoreans considered the ten to be the perfect number because it was seen to contain within itself the separate attributes of its constituent numbers.⁹ The Qur³ān literally associates perfection with the number ten when it states the words 'this is a perfectly completed ten' (*tilka* ^cashratun kāmila, 2:196). It follows that a cube measuring $10 \times 10 \times 10$, and

hence made up of 1000 smaller cubes, must have a special status among cubes, in parallel to the special status of ten among numbers.

Figure 21.1 – Cube divided 10×10×10 closed and opened along three of its diagonals.

Let us then examine the features of such a cube (Fig. 21.1). We notice for a start that each of the corners of the cube can be made to form part of a pyramidal shape. Its base is contiguous with three of the cube's diagonals which together form an equilateral triangle. If the cube is opened along one triangular set of diagonals, 100 of the smaller cubes come into view. Upon closer inspection, however, we find that one of these 100 cubes does not in fact belong to this particular group, but to another group which appears when the large cube is opened along a different set of diagonals. This is due to the fact that the twelve diagonals and the eight corners

8 It figures in the following 13 verses: 2:96, 2:243, 3:124, 3:125, 8:9, 8:65, 8:66, 22:47, 29:14, 32:5, 37:147, 70:4, 97:3.

9 Waterfield, 1988, 10-11.



Corner Cubes

of the cube relate according to the ratio 3:2; hence there are only two corners to every three diagonals (Fig. 21.2). As a result, each group of small cubes exposed by opening the large cube in this manner consists of 99 components: 100 cubes minus one corner cube which belongs to another group.¹⁰ An inverted numerical relationship results between the number of small cubes in the upper and lower segments of the opened cube: the upper equals 45, the lower 54 cubes, resulting in the total of 99 (Fig. 21.1).

The notion of a visible set of cubes which hints at the existence of an invisible counterpart brings to mind once more the Qur²ānic polarity between the realm of the Unseen and the seen (*al-ghayb wa ash-shahāda*), the former known only to God, the latter restricted to human sense perception.¹¹ The association appears to disclose a deeper message in the dispute which David was asked to resolve: the litigant who aims to possess the 100th ewe represents the visible world which seeks sole dominion by claiming for itself that which belongs to the Unseen realm, a claim which David's dispensation of justice rightly rejects. This interpretation would also explain why David felt he had been tested when having to pronounce a judgement on the matter. An analogous conclusion arises with respect to the above-cited *hadīth*: the 99 attributes of divine perfection are those knowable to man, while the 'minus one' points to other sets of attributes which are beyond human comprehension. The geometric properties of the cube appear to show that in both cases the notion of '100 – 1' is there to hint Figure 21.2 – Corners and diagonals of cube divided 10×10×10.

10 Since there are eight corners there are eight different possibilities of opening such pyramidal segments, depending on which corner is chosen as the starting point. For a detailed explanation of the geometric reasoning see Moustafa's introduction to al-Ghazāli's text on the attributes of divine perfection (al-Ghazālī 2007, 8-24).

11 See above, 572.





Figure 21.3 – Cube divided 10×10×10 with 28 letter shapes positioned along three sides. at the existence of a transcendental reality rooted in the unknowable power of God.

The cube divided tenfold not only casts an unexpected light on the numerical symbolism discoverable in the above-cited texts, but has a bearing also on certain numerical features of the Arabic alphabet to which reference has already been made. Each set of three sides marking the three dimensions of the cube comprises 28 cubical slots, whose number thus equals the number of letters in the Arabic alphabet. Figure 21.3 displays the letters positioned accordingly, together with the numerical value assigned to them which goes up to 1000, the same as the number of smaller cubes which make up the large cube divided $10 \times 10 \times 10$. Remarkably, the number 28 also figures in the combined length of the two diagonals which cross each of the six faces of the cube. Since the cube measures ten units per side, each diagonal equals $\sqrt{2 \times 10} = 14.14 \propto$ units, hence each pair of diagonals has a combined length of 28.28 \propto units (Fig. 21.4).

When the cube is opened, further numerical correlations with the Arabic alphabet come into view. The triangular set of diagonals in the lower segment frames a group of 28 small cubes arrayed in seven layers. An inversely positioned and similarly framed group resides in the upper segment. As indicated in Figure 21.5, the two triangular sets of 28 cubes are framed by two sets of 22 cubes. In the correlation between these two numbers we encounter once more the proportional relationship between the Mother-Square and the Mother-Circle which we found to be composed of 28 and 22 dots respectively. Figure 21.4 – Side of cube divided 10×10×10 with length of diagonals.

The pyramidal structure formed by the opened cube has 19 steps, the same as the number of distinct shapes, or 'heterographs', of which the alphabet is composed with the inclusion of *lām-alif*. The Qur²ānic associations of that number have been pointed out above, with particular reference to the parallel between the 19 'guardians of hell-fire' mentioned in sura 74:30-31 and the guardianship function of the letter shapes in their capacity as visual transmitters of the message of scripture.¹²

Having found the numbers 28, 22 and 19 meaningfully embedded in the structure of the cube divided tenfold, the question may well be asked whether the other numbers we have defined as key integers of the alphabetic system may be similarly identified: seven, 14 and 29. To explore this we may resort to the same technique that at-Tayyibī used to clarify the structure of numerous Arabic letter shapes. As frequently observed, he illustrated them in combination with their own inversion, shown upside down, or back to front. If by analogy we apply a similar inversion to the operative equation 100 - 1 = 99, the result will be 98 + 1 = 99. The single digit, or 'singularity', to which the prophetic *hadīth* draws attention as a divine preference is hereby added to an even number rather than subtracted from it. That number, however, is the product of two of our key integers, the seven, which determines the area of the paradigmatic alif of the Proportioned



Script, and its duplicate: $7 \times 14 = 98$. The one digit to be added to that sum in order to produce the 99 cannot but recall the *lām-alif*, the ligature which the said *ḥadīth* designates as the 29th letter of the alphabet. If that number is subtracted from the 99, we encounter sevenness again: 99 - 29 = 70.

Last but not least, it is of some interest to point out that the sets of 28 and 99 cubes we have identified within the opened cube divided $10 \times 10 \times 10$ recall an analogy developed by Ibn ^cArabī in his *Futūḥāt*. There he compares the 'perfect servitude' of the lunar month, whose unwavering progress is governed by the 28 phases of the moon, with the servitude of the human worshipper whose life is to be governed by the 'mansions of the Figure 21.5 – Opened cube cdivided 10×10×10, showing two sets of 28 small cubes, bounded by two sets of 22 small cubes.

12 See above (chapter 20).

Figure 21.6 a-c – Triptych Naming Infinity – One Hundred Minus One by Ahmed Moustafa 2013 CE / 1434 AH. divine names that number ninety-nine'.¹³ To substantiate the analogy, Ibn ^cArabī then points to the numerical correspondence between the four heptades of the lunar month and the four basic elements in their sevenfold combination which constitute the human body according to the alchemical theories current at the time.¹⁴ As so often in his thinking, so here his aim is to link the divine, the cosmic and the human realms into a meaningful configuration – one that appears to be mirrored by the properties of the cube.

We may conclude that the cube divided tenfold not only allows an insight into the symbolism of 100 - 1in the above-cited Qur³ānic parable and *hadīth*, but, in doing so, also encapsulates multiple associations with all the key integers of the Arabic alphabet, including those specifically relevant to the Proportioned Script. From a faith-based perspective, this correlation between the Arabic letter shapes as bearers of divine revelation and the cube as primordial symbol of oneness and justice may be taken as striking evidence of what we called above 'cosmic homogeneity'.¹⁵ This is even more the case if Ibn ^cArabī's analogy with the lunar cycle and the divine names is taken into account. A similar realisation is at the root of Ahmed Moustafa's triptych shown in Figures 21.6 a-c to which we must now turn.

13 Ibn 'Arabī, 1999, 3/328-329.
14 On this see above, 586 and Vol.1, 126, n7.
15 See Vol.1, 32.





It shows the opened cube displayed three times in a metaphysical landscape governed by the phases of the moon. The 99 smaller cubes face the beholder, each bearing one of the 99 names of God, as though affirming thereby the principle of equitable apportionment and distributive justice.¹⁶ In the midst of this stillness there is movement. Its springs from the lone 100th cube which has here been set apart from the rest. As it opens in unison with the phases of the moon, another set of smaller cubes come into view which also number 100 - 1. By analogy, we are made aware that this cube is liable to be similarly opened in order to reveal a yet smaller set of inner cubes. As the singularity of the 100th cube unfolds into the multiplicity of infinite self-proliferation, it confirms by geometric logic the meaning of the 'minus one' stated in the *hadīth*. Contained therein is the gate to the ineffable and limitless.

The accompanying phases of the moon, from new to half and full, convey the rhythm of lunar time, as the heavenly body passes through its 28 mansions, a number we found equally integral also to the edifice of the opened cube. In the composition, it is highlighted in the 28 small cubes framed by the three exposed diagonals coloured in ochre. A harmonious conjunction between space and time, between the structure of the edifice and the phases of its cosmic setting, is therefore brought about. The number 28 is latently present also in the constituents of the alphabet which cover the entire surface of the three panels. This additional numerical parallel is the most crucial, for through it time and space are conjoined with language and hence given a voice – a voice which here resounds with the names of God.

The unfolding of difference in the affirmation of union is conveyed also in the colour scheme of the three panels. In keeping with the lunar phases, the sky assumes the primary colours blue, yellow and red, while the shadows cast by the edifice assume the respective complementary colours orange, purple and green. The three colours of the sky mirror the three sides of the cube visible to the stationary eye of the beholder. The three sides of the cube which are hidden from the eye are paralleled by the hidden merger which produces the three complementary colours: orange is composed of yellow and red, purple of blue and red, and green of yellow and blue. The two extremes of the colour spectrum are reserved for the seminal cube itself. Like the Ka^cba, the outside is black, the colour in which all other colours are contained. The inside, however, is white, the colour in which all others are reflected.

The changing variety of colours is as though countered by the uniform shape of the shadows which are cast in the same direction in all three panels. The Qur²ān declares God as 'spreading the shadow' in response to the movement of the sun (25:45). The source of light which pervades these compositions, however, does not move.

16 The sequence of names follows that of al-Ghazālī's treatise on the subject. (see al-Ghazālī, 1971 and 2007). It goes back to a *hadīth* transmitted by Abū Hurayra of which two different recensions have been preserved. On this and the existence of alternative and additional names, see al-Ghazālī, 1971, 181-183. Its invariable position beyond the range of the canvas, and the unmoving shadow it casts, suggest that the origin of this light is not the sun but the Force to which the sun and all else owe their existence. The uni-directional prostrations accomplished by the shadows in the three panels hence appear as though acting in compliance with another Qur³ānic verse:¹⁷

All that are in the heavens and the earth bow down to God willingly or unwillingly, as do their shadows in the mornings and the evenings.

The polarity of form and colour in the three compositions also extends to the Arabic writing which is as omnipresent in them as the light which sweeps across them from right to left, a direction which parallels that in which the Arabic script is written. In the foreground, the following verse appears in three rows of golden lettering which converge towards a hidden vanishing point:¹⁸

Say: invoke God or invoke the Most Merciful, however you invoke Him, His are the most perfect names.

Like 332 other verses of the Qur⁵ān, so this one is introduced by the imperative 'say' (*qul*), whose repeated occurrence seems designed to confirm that the Prophet's

words were not his own, but revealed to him and uttered at the behest of a higher power. Through the agency of the Prophet, the imperative is vicariously addressed to the community of believers in their multitude over time. As if in compliance, the composition repeats the phrase manifold times. It appears also underneath the golden lettering of the rows, but coloured in green and turned back to front, so that the direction of writing moves from left to right, and hence towards the source of the light, as though impelled towards the One to whom 'they shall be returned' (Qur³ān 3:83). In the contrast between the straight horizontal strokes and the rounded loops and curved terminal arcs of the letter shapes, we recognise the characteristic features of the Proportioned Script as analysed in the previous pages. The same type of cursive writing also adorns in golden lettering the black vestment of the large cube, where it conveys in a ceaselessly repeated pattern the Islamic declaration of faith: 'there is no god but God and Muhammad is the Prophet of God' (lā ilāha illa l-Lāh Muhammadun rasūlu l-Lāh).

In its pliancy and dynamism, the proportioned cursive writing in the foreground and on the exterior of the large cube stands in diametric opposition to the angularity and static solidity of the script on the small cubes in the interior (see detail, second panel in Fig. 21.7). It gives expression to the 99 divine names, together with the formula of eulogy: 'great is His glory' (*jalla jalāluh*). The

17 Qur'ān 13:15: وَبِقَوِ يَسْجُدُ مَن فِي ٱلسَّمَنوَ بِنِ وَٱلْأَرْضِ طَوَعًا وَكَرْهَا وَظِلَدلُهُم بِآلْغُدُوَ وَٱلَّا صَالِ عَنْ 18 Qur'ān 17:110:

قُلِ آدْعُواْ ٱللَّهُ أَوِ آدْعُواْ ٱلرَّحْمَنِنَ أَيَّا مَّا تَدْعُواْ فَلَهُ أَلَامَهُمَاءَ ٱلْحُسَنَى same type of angular writing also fills the sky of the three panels with a multiple, chorus-like rendering of the throne verse in Qur²ān 2:255.

The two contrasting forms of the script found in the composition exemplify two different manifestations of the writing system which we have come across throughout our analyses. The static, angular form exhibits qualities that recall the geometric core of the letter shapes: rigorous mathematical precision designed to give seemingly unmediated expression to cosmic laws. In the composition this form fittingly dominates the heavenly realm and gives the divine names the hue of eternal endurance. The pliant and dynamic form, on the other hand, results from the articulation of the letter shapes by means of the pen; it is imbued with the 'moisture' (*rutūba*) of life communicated to it by the human hand, and its proportions aim to replicate the harmonious gait of organic bodies in motion. In the three panels, this form supplies the gilded greenery of the earth and serves to express the Qur³ānic utterance addressed to mankind: to call upon the Lord in the plenitude of His names.

The contrasting expressive range of the types of writing on the three panels provides a concluding illustration of a crucial feature of the Arabic writing system whose investigation has from the beginning resided at the heart of our inquiry. This is the two-

pronged signifying power with which it has been endowed. For when used as a medium of artistic expression, the Arabic letter shapes function as signs on two quite different levels, which may be termed semantic and mimetic respectively. The semantic function relates to the literal meaning conveyed by the letters themselves; the mimetic function, on the other hand, stems from the fact that the script in the range of its contrasting manifestations is to be perceived as an image of the cosmos in its contrasting diversity and its inner homogeneity. It is a type of mimesis which does not aim to imitate or reproduce the sensible surface appearance of reality but the internal patterning which governs its spatial coherence and the living breath which powers its pulsating motion. In the previous pages we have seen how, in the design of the Arabic letter shapes and in their transformation from core to articulated form, 'represented geometry' forges this expressive power in order to create an abstract beauty which is not readily identifiable with physical objects but seems to reach beyond them.

The mimetic potential of the Arabic script explains why the masterpieces of Arabic penmanship can be contemplated and 'understood' as aesthetic objects, irrespective of the semantic meaning the signs convey. The universal dimension of its expressive range is grounded in the ancient roots of the intellectual tradition

which has given rise to it and whose unitary vision transcends the differences of language, culture and religion. We found in the Proportioned Script an attempt to give the tools of written expression their optimal form by subjecting them to principles of justice. As such it appears, from a wider historical perspective, as though prompted by the Aristotelian insight into the equivalence between justice and geometric proportion. That cosmic harmony is thereby to be reflected, we found to be formulated in Platonic philosophy and its adaptation and recasting in Islamic garb. As for the all-important search for unity, manifest in the derivation of all letter shapes from a single origin, the earliest formulation of its aesthetic objective can be found in Plotinus' reflections on beauty. For him, the search for unity in artistic manufacture is a search for 'Ideal-Form' whose effect once discovered he describes as follows:¹⁹

Where Ideal-Form has entered, it has grouped and co-ordinated what from a diversity of parts was to become a unity: it has rallied confusion into cooperation: it has made the sum one harmonious coherence: for the Idea is a unity and what moulds it must come to unity as far as multiplicity may. And on what has thus been compacted to unity, Beauty enthrones itself, giving itself to the parts as to the sum: when it lights on some natural unity, a thing of like parts, then it gives itself up to that whole (..). This then is how the material thing becomes beautiful – by communicating in the thought (Reason, Logos) that flows from the divine.

If this ancient spiritual heritage, refashioned in a new, Islamic guise, is one reason for the aesthetic appeal of the mimetic range displayed by the art of Arabic penmanship, the other resides in the scientific principles dictated by the laws of geometry which underpin its practice in the manner we have described. While the laws themselves elude the understanding of all but the most expert observers, the sense of order and coherence behind the multitude of forms and their asymmetric balance is immediately perceptible and captivating to the senses.

The three panels with which our work concludes can be said to illustrate both the time-honoured origin of the spiritual tradition underlying the art of Arabic penmanship and the rigorous implementation of its scientific principles. The compositions are, in effect, meditations upon the conceptual point of origin of the writing system: the dot, cast into the three-dimensional form of the cube. Divided tenfold and opened, it turns into a skyward-oriented edifice which evokes the religious architecture of the Ancient Near East: the Egyptian pyramids and the ziggurats of Babylonia. Geometric logic shows that the cube, the Islamic symbol

19 Plotinus, 1991, 47-48 (Ennead I.6.2).

Chapter Twenty-One

Figure 21.7 – Three details from the triptych Naming Infinity – One Hundred Minus One by Ahmed Moustafa 2013 CE / 1434 AH. of centrality and unity, latently contains within itself these representations of earlier faiths, by fusing them together and transcending them towards a new realm of meaning. The three-dimensional landscape of the panels is based upon the same laws which govern the signs of writing that pervade the sky, the earth and ascending steps of the central structure. Their multiple polarities of form and colour represent a universal visual language whose message is intended to speak to all eyes. •



