

Mark Gilbert
a universe of syntax
Essay, 2006

First Published in Continuously (Pustet Verlag, Salzburg, 2007)

Published posthumously, Johann Sebastian Bach's *Die Kunst der Fuge* contained 18 individual pieces, all of which are variations upon a single theme. Although there remains some disagreement as to whether the work was originally scored for keyboard instruments, it has been variously played upon cembelo, piano, and the organ. There have also been arrangements of the work for string quartets, for chamber orchestras and, most famously by Hermann Scherchen, for the symphony orchestra as well. Consisting of 14 fugues and 4 canons, *Die Kunst der Fuge* is a masterwork of counterpoint, inversion, superimposition, augmentation and diminution. Less well known than the arguably more charming Goldberg Variations, *Die Kunst der Fuge* wrought the most out of its simple motive, showing that a small universe of musical possibility could be produced through the transformation of single musical figure.

This astonishing work of tonal and rhythmic interrelation was made possible by a conjunction of musical and mathematical evolution that took place during the 17th century. Without the development of the equally tempered musical scale by the Dutch mathematician Simon Stevin, the construction of such complexly layered harmonic figures would have never been conceivable. The musical tunings previously used in Renaissance music were derived from Pythagorean geometry and algebra and attempted to divide the scale using whole number fractions. While they did produce pleasing tones over the most part of the octave, the thirds and sixths of this scale were noticeably sharp. This was no insurmountable problem for the melodic polyphony of modal renaissance music or for the univocal monody that emerged in early baroque composition. But only through the use of Stevin's relationship of $^{12}\sqrt{2}:1$ did it become possible for a clavier to be "well-tempered" over the full length of the octave and therefore capable of playing such harmonic and tonal polyphony.

Now, somehow it seems that the division of the octave into twelve equal and polyphony-capable intervals was something that musicians and mathematicians could have earlier and more easily accomplished, but this expectation overlooks the meaning that pre-cartesian culture invested in proportion itself. As Robin Evans further argued in his book *The Projective Cast*, renaissance culture considered proper proportion not only to be an attribute possessed by all beautiful things – be they music, architecture or men – it also believed proportion to be the quality that connected beautiful things to the transcendental order of the divine. In a world consisting of platonic forms in Pythagorean proportion, the divine was understood to be the harmony of the cosmos; one image of this order, for example, was Dante's Nine Spheres of Heaven. Pythagoras is said to have discovered that the division of a vibrating string in the proportions of the diapason (1:2), diapente (2:3) and diatesseron (3:4) produced the most beautiful sounds. The idea that proportion defined the geometrical forms of the ideal cosmos, *and* regulated the tones of musical harmony, was taken as "evidence that exact ratios underlay our perceptions of beauty in all things". Even in 1619 Kepler spoke of this harmony as the *music of the spheres*, which - being the geometrical relations between the sun and the planets - was considered to be a property of the heavenly bodies themselves. As the experience of these ideal proportions was believed to be the agent of universal beauty, it is easy to see why the abandonment of the Pythagorean tone scale would have been considered a distressing digression from the higher order of the divine.

If Bach might have felt that his well-tempered proportion of $^{12}\sqrt{2}:1$ was no longer directly connected to the cosmic order, he may have considered the combinatorics of composition to be a true path to the transcendental. According to the musical historian Manfred Bukofzer, the early-baroque adaptation of the monody from out of the tradition of classical Greek theatre represented a new conception of what musical tones might represent. Instead of being a revelation of the cosmic order, it was a direct and physical embodiment of human emotion. The baroque concept of *Affekt* claimed that a musical idea or motive should be associated with a single feeling; hence, the superimposition of multiple musical subjects, which

was typical of renaissance music, would only have served to confuse the expression of the emotion being conveyed. Ideally, a musical piece should contain one, at most two motives, and these should forcefully express the emotion to which they have been linked. The exploration of the emotional potential of the *Affekt* was to be pursued through the formal elaboration of its musical motives. The idea was that the varied articulation of a musical theme would reveal the full range of the emotion that it embodied.

From this point of view, Bach outdid himself with *Die Kunst der Fuge*. While our modern sensibilities may fail to distinguish the precise emotion that his motive once wanted to convey, we certainly perceive the expanse of musical space that the collected work encompasses. The sense is that each atom of this musical offering, each variation of the single figure itself, implies the vast expanses of combinative possibilities of which it is part of and in which it is contained.

So, while the experience of the music may not bring us closer to the cosmic order or expose the whole range of a single human emotion, it does provide a sense of something larger than the piece itself. The musical figure provides a basic form that, when subjected to the methods of transformation immanent to the syntax of the fugal form itself, offer a glimpse of the transcendent potential for making new yet related forms. The fascination lies in our perception that each variation is undeniably unique yet closely connected to *each and every* other elaboration upon the original theme. Furthermore, we perceive that the potential for further unique variation is not exhausted by the set of executed manifestations that has been presented for our ears. We may not have the faintest idea how to compose these virtual variations ourselves, but the wonder of this musical game is that we innately understand that its rules allow for an incalculable number of further iterations of its form.

An expanse of transformational possibility is inherent to any systematic repertoire of forms. Vilém Flusser names these systematic repertoires *codes* and attributes a number of characteristics to them. First, they have forms which represent something else, just as the motive of a baroque fugue is intended to represent a single emotion. Second, they have a set of rules or syntax that orders the combination of their forms, in the same way that a fugue has a system of rules for constructing its composition. The sum of all possible combinations of the forms within the limits of the rules is termed the “competence” of the code, whereas Flusser defines the sum of all possible meanings that the code can convey as its “universe”.

Whereas the idea that a code of systematized form can express a universe of meaning seems in some strange way to return us to Pythagoras’ cosmic ambitions, Flusser’s concept of codes does raise interesting questions about how formal transformations generate these vast realms of wonder. If, for example, the “universe” of a system is the pool of possible meanings contained within its code, how large can this universe be when the formal repertoire of the system is based upon a single motive? It hardly seems possible to attribute the wonder aroused by these variations simply to the emotions encoded in its abstract musical figure alone. Yet the concept of the *Affekt* states that this form should be the code’s only reference to anything at all. It is much like thinking that the infinitely complex conjugation of a single word could articulate a vast realm of expression. Could the syntax of a code really conjure this much meaning out of a single referential form, or is there something more going on here?

If we deny the notion that the musical subject refers to any definable emotion (which is not really a huge leap in the dark, since few of us would really attach any definite feeling to the elementary motive of *Kunst der Fuge* anyway), does this in any way diminish the wonder that we feel in the face of this music? Put another way, when a designer takes an abstract, non-referential figure and systematically explores it through formal articulation, is it not possible that the wonder we feel is the recognition of the universe that these transformations reveal? If the initial figure conveys no meanings on its own, does this mean that the formal system has no meaning for us at all? It seems that there must be systems of formal codes that are able to communicate without having any referential signifier at all.

This being the case, it would seem this system would not be expressed through its repertory of references but through the structure of the syntax itself. Systems of this type rely directly upon concrete perception of the forms themselves. We are moved by how these forms perform, not by what they mean; their mode of

expression is the performative, rather than the symbolic. The universe of meaning is the syntactical competence of the system itself, which is to say, the possible transformations of the form is the expressive possibility of the system itself. The transformation of the initial figure is able to transcend the muteness of the simple form itself; the composition of these transformations is capable of producing the sort of wonder that we feel when confronted with the work of Bach. The effective composition of form fascinates because it allows us to grasp the sublimity of the system; as in *Die Kunst der Fuge*, each articulation of a variation implies the whole realm of possibility that the syntax contains. We perceive that each moment is a part of something bigger than itself. It may not connect us to the universal beauty of the divine, but it does transport us into a modest little cosmos of its own.