

## Design, the Decoration of Culture?

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**Abstract:** *Interior designers have tended, like architects, to determine three-dimensional space using geometry by manipulating representations of material substances or building work. Geometry without substance is of thought only and only has one quantity; number. As such design becomes the manipulation of representations with the traditions of geometry. One of those traditions is the understanding of geometry as pure static Cartesian abstraction impurely expressed in substance. Design has tended to do this for a number of reasons, one of which is to engage more fully with the design of built form and another is to distance itself from decoration. This paper explores the issue and asks three questions:*

*Is the repetition of Enlightenment geometry a necessary condition for architecture and design?*

*If it is, does material substance become merely an excessive characteristic of pure concepts conceived as pure abstract geometry?*

*Is culture becoming so dependent on geometry that to make geometry a pure abstraction is to understand material substance as excessive?*

*These questions are reformulated through the investigative process of the paper and are asked in a different form as a conclusion.*

**Keywords:** *design; decoration; design theory*

### Introduction, the awful truth

In the development of design during the 20th century, its emergent practical reliance on geometry has been long. What is not so well studied is the way that geometry has been used to separate design itself from other divisions of practice such as decoration.

Geometrical determination of form has been the way that design of many kinds has established a difference, and at the same time, an authority in practice, apart from its role as 'drawing'. The blurring of the difference between geometry as the determinant of form and geometry's attachment to intellectual status is the basis of this distinction. It is indeed in abstract space that geometry takes on the role of indicating or signifying authority. In appealing to abstract geometry for authority at the same time as using it to determine form, there is an equally definite but implicit denial of matter, substance or material that transfers itself from the intellectual status of geometry to the design itself. And so design tends, in the

desire for intellectual authority from abstract geometry, towards disenfranchising itself from the material substance it is intended to inhabit.

At the same time and perhaps in parallel, western European thought is dominated by mathematical metaphors about space. This is convincingly explained and argued in a philosophical way by David Lachterman (1989) in the *Ethics of Geometry, The Genealogy of Modernity*. Lachterman (1989) argued that modern thinking about being and knowing has been mostly carried out with metaphors taken from mathematics, in particular geometry. He also argued that it is through the development of an understanding of the self-constructed, that the modern self-as-mind is formed in these metaphors.

Geometry is a way of thinking that has been a characteristic of western thought as long as attention has been paid to the question of thinking. There may indeed be physiological reasons for this, as some authors have asserted. Donald Hoffman (1998), for example, in *Visual Intelligence, How We Create What We See*, argued that it is through abstraction that the brain forms structures by which it uses memory to recognise the world, thus enabling action. In this model, abstraction requires an ordering principle, or, in their broadest sense, linguistic acts, which primarily use comparison or metaphor, in order to assemble abstractions.

Science, too, has come to rely heavily on geometry for the structure of its discoveries, theories and models. Biology uses geometry to understand genetic modelling. Physics and chemistry too have used geometry as the basis for understanding and philosophy has used geometric analogies, as have all humanities fields, for understanding being and knowing. In most academic disciplines geometric metaphors are used because they can give a clear critical distance in relation to a subject. The geometry of the structures of science takes a metaphoric quality in the same way that words have metaphoric meaning even when this is not the focus of the use of a word or sentence. Spatial metaphors for example ('high', 'deep', 'far', etc) become disguised by use, as does the ontological significance of the geometric structures of science, such as the geometry of organic chemistry.

Geometry, used as a metaphor, can determine concepts in all areas of study because it is deeply ingrained in western thought. It is through this ingraining that the effects of geometrical metaphors can also become ingrained and often invisible, even sometimes becoming invisible as a metaphor by taking on an iconic quality such as the 'double helix' of the human genome.

Geometry is also used to determine form in disciplines such as art, music and architecture and of course interior design and interior architecture. Instead of a metaphorical use though, geometry is used in building design, as a formal structure through which substances are organised, arranged and determined. In short, in design, geometry is the determinant of form: shapes are organised geometrically with lines that represent geometrical arrangements of material substance. The geometry of grids, squares, triangles, circles, domes, spheres and the perennial 'Bucky Dome', are represented, arranged and manipulated in drawings.

But it also seems that modern design has come under the influence of philosophers such as René Descartes (1596–1650), Gottfried Wilhelm Leibniz (1646–1716), Baruch (or Benedict) Spinoza (1632–1677), Immanuel Kant (1724–1804), Georg Wilhelm Friedrich Hegel (1770–1831) and many others not least notably including Jeremy Bentham (1748–1832). In this mode of practice, architecture uses geometry as an abstraction in regard to philosophical theories about such concepts as the metaphysical subject-object and the mechanical world of Isaac Newton (1642–1727). Bentham's Panopticon for example is an expression of the relationship between the seeing 'subject' and the passive 'object' of early enlightenment metaphysics. Even the suggestively symbolic work of French architect Claude Nicholas Ledoux (1736–1806) is a metaphoric use of geometry.

In the 20th century, there has been a highly sophisticated critique of this thinking but seemingly little effective practice in the 'creative arts' to reflect it. The ambiguity of the role of philosopher Jacques Derrida (1997) with respect to the design for the Parc de LaVillette project and the continuing adherence of architects to avant-gardist modes of practice are typical examples of the apparent inability of architecture and design to take up philosophy other than that of the Enlightenment.

Building design seems fixed in a repetition of the abstraction of Enlightenment mathematical sublime (Kant, 1987) of the Baroque, while philosophy, from which this concept came, has moved away. This is not to suggest that there have been no efforts by architecture to address contemporary philosophical issues. It is merely to say that there is a *necessity* in the determination of form in design due to its having a certain kind of 'being', that apparently necessitates a determinant use of geometry.

The questions in this paper are:

Is the repetition of Enlightenment geometry a necessary condition for architecture and design?

If it is, does material substance become merely an excessive characteristic of pure concepts conceived as pure abstract geometry?

Is culture becoming so dependent on geometry that to make geometry a pure abstraction is to understand material substance as excessive?

### **Architecture, design, decoration and status due to geometry**

It has been the job of architects and related professional groups, such as interior designers, interior decorators, drafters and so on, to deal with the representation of building design by using geometric techniques. This has been the case at least since Vitruvius (1960), who in *The Ten Books on Architecture* urged the teaching of geometry to architects. Building design is done by forming the geometric relations of building parts (materials included) and the organisation of the building work, in conjunction with other 'professionals' such as engineers. This is done by representing the geometric relationship of material substances, in drawings or models, in a range of 'media' including hand and ruled drawings and electronic digital media.

Within this process, varying degrees of reflective, critical and theoretical practice are also taken up. Critical thinking about design of all kinds increases the rigour of the process and forms an intersection between geometric metaphor of reflective critique ('critical distance') and determinate geometry of practice. The qualities of this intersection are revealed as 'authority' in the design, with architects at the top, interior designers below and interior decorators on the bottom, according to the degree as well as its kind, to which the conventions for practice in each design category make use of geometry.

Interior decorators conventionally tend to deal with surfaces and predetermined objects placed in predetermined space by others. Their main form of activity is *selection* and *purchase*, according to assemblies of *taste*. Geometry is manifest as a mysteriously determined context into which decorators insert selected things. This insertion may even exhibit a two dimensional geometry in the form of pattern.

Interior designers determine three-dimensional space using geometry by manipulating representations of material substances or 'building work'. At the same time, interior designers use sample boards to represent materials as part of the representation of their design, often to a 'client'. This causes a certain degree of connection to interior decoration at the same time as to architecture. When this twofold practice is dominated by a concentration in abstract geometry, a distance is implied between interior design and interior decoration. This domination then brings with it the abstract geometric metaphors of reflective critical and theoretical practices, especially the concept of critical distance. The emergence of ethics for

example, depends largely on the rigour with which critical distance is established in relation to practice.

Interior design remains in a state of hybridity against which these conflicting trajectories are balanced and within the needs of practice and education. The subject divisions within educational institutions reflect that conflict, as does the language in describing interior design. The following is an example of the distancing that institutions express:

How does your course differ from that offered by other leading Institutes and Universities in NSW?

[...]

- the course is about interior design, not interior decoration

[...] (UTS website)

It is through the correlation between geometrical metaphors and geometry as determinant of form, that architecture and design maintain their distance from decoration.

### **The cause**

Throughout the European Enlightenment, geometry is both a metaphor for thought, especially about being, and an approach to architectural design. Its discovery as a pure extensive abstraction was a radical change in the way that space was thought. As Michel Foucault (1926–1984) reminded us in 'The Limits of Representation': 'The last years of the eighteenth century were broken by a discontinuity similar to that which destroyed Renaissance thought at the beginning of the seventeenth; then, the great circular forms in which similitude was enclosed were dislocated and opened so the table of identities could be unfolded; and that table about to be destroyed in turn, while knowledge takes up residence in a new space - a discontinuity as enigmatic in its principle, in its original rupture, as that which separated the Paracelsian circles from the Cartesian order' (Foucault, 1970, p. 235).

This special, 'Baroque' characteristic of space is conceived as an infinite-in-number and that to reach this number is to reach an enlightened sensibility, or the 'sublime', as Kant (1987) described it in *Critique of Judgment* (pp. 103–114). Until the seventeenth century, geometry had been, as a general principle, within philosophy, the determination of the qualities of substance: length, breadth and depth. In this old, substantial version of geometry, its magnitude is still tied to the scale of substance, its number. In the 'Paracelsian circles' of time however, geometry is beyond matter and belongs to an outside-of-the-world, or to God.

In the Baroque, this outside-ness or *insubstantial* space moves from a space of faith to one of argument. In doing so it is parallel to the many attempts in enlightenment philosophy to argue for the existence of God as a matter of rationality rather than a matter of faith (see Descartes, 1998, pp. 26–27, p. 65.)

Geometry takes over the insubstantial abstract world in order that it can be inhabited by thought; a *geometry of the mind: Res Cogitans* (Descartes, 1998, pp. 57–70). This sets up a means of exchange between thought, now claiming the insubstantial and the natural world. So the interiority of the mind to which we have no access other than to our own, could be made present in the world through the attachment of thought to geometry on one hand and *substance* to geometry on the other.

Design, in this sense appears as thought represented in substance and is a process of self-constitution.

The special Baroque characteristic of geometricised outside space is the attachment of number to pure extension, as in Cartesian coordinate geometry. Descartes had separated substance from extension in its pure form and given it number as measure. Number could now be a thing in itself, not by necessity attached to the substantial manifestation of extension, the 'object' in the world of extension.

Geometry without substance is of thought only and only has one quantity, *number*. It has number according to the arbitrary location of an origin from which space is determined according to straight lines, known as the Cartesian coordinate axes; 'X', 'Y' and 'Z'; each at 90 degrees to the others, along which the number is marked at geometrically equal moments.

Number in a substantial sense has a dual meaning as both a location on a scale, with each number representing a successive position or order. Number, also in this substantial sense, has a volume in a single direction, in which consecutive numbers have consecutively more volume in one direction. When pure extensive geometry is formulated, the *quantitative* aspect of the meaning of number becomes one *without* substance. *Position* along an axis becomes predominant, and objects become determined firstly according to the position of their features located in relation to axes.

Substance and substantial qualities of number become secondary to the geometrical abstraction of the object as an assembly of locations ('contours', as they are known in several fields including digital media), as indicated by the image (Figure 1), the form has gone from one of substance to one of the geometry by which it has been described.

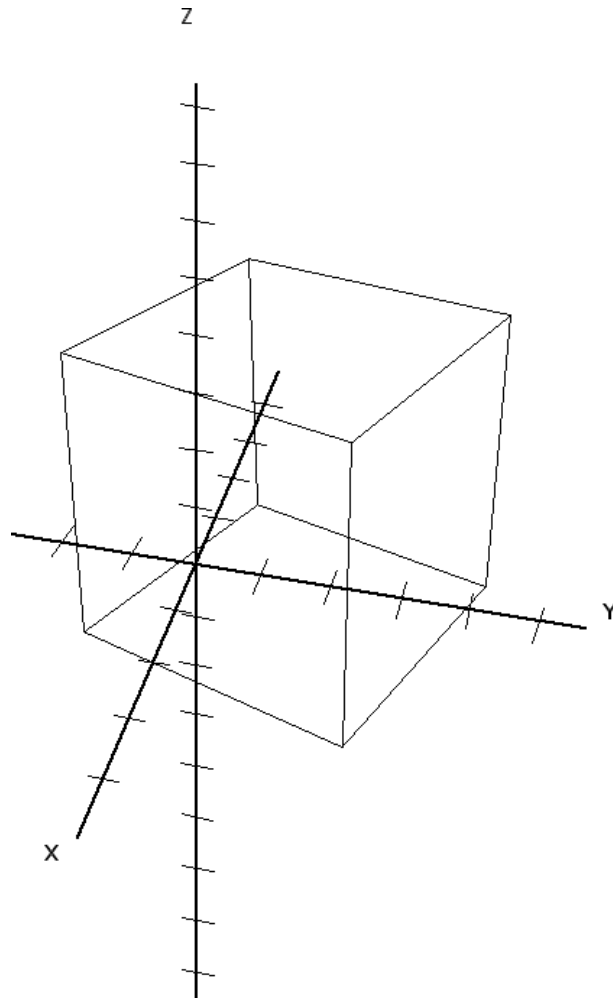


Figure 1: Cartesian objectivity  
(Drawing: Author)

Of course, pure extensive geometry is a concept to be *conceived* rather than *perceived* and can only be known paradoxically through representation in a 'medium'. Architecture or design that focuses on an appeal to *concept* rather than to *percept* relies on a medium to *represent* it instead of needing the built form in which it is *presented*. Through representational media, such as drawing, the concept to which architecture appeals can be known. Thus paper architecture is born and the vexing question of design medium shifts between building work and drawings and thence between geometric metaphor and formally determinant abstract geometry.

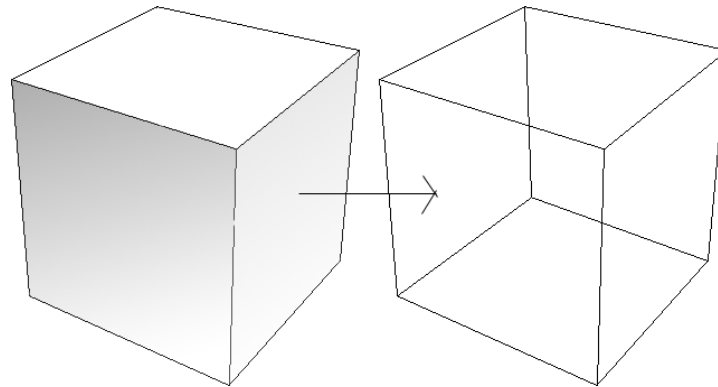


Figure 2: Substance removed  
(Drawing: Author)

Cartesian geometry is the finding of a measure for representation of objects. Cartesian geometry offers assuredly and reliably, as F. D. K. Ching and others (see Ching, 1987, 1996; Ching & Juroszek, 1998; Gill, 1973, 1979; Laseau, 2001) have demonstrated in texts on architectural and design representation, a critical distance. Within a pure extensive abstraction can be found the pure extensive object, so it seems. In fact, it seems that pure extensive object can only be reflected upon in a *representation*: an image to one's self as an object of thought, as a constructed representation in a 'drawing' and the consideration of the built design as a kind of drawing.

Even in text, the Cartesian axes and objects within them are a *representation*. In any case, the object is one that is a representation, *by necessity*. It is also one that intuitively is a structure of *translatable data*, set as a *critical distance*, established as accurate 'perspective' or 'orthographically', for *clarity*, as shown in Figure 3.

This idea really took hold in the 17th century, ensuring the primacy of Cartesian geometry of building design in the shift from Renaissance thinking to the Enlightenment in Europe. By representing an object as pure geometry and thereby at an accurate critical distance, its truth could be determined. The truth of space becomes a void in which objects are located, by their own geometric virtue and not by God's grace, despite Descartes' 'ancient belief' and all other disciplines that involve an examination of composite things are indeed doubtful; but that arithmetic, geometry, and other such that discuss only very simple and general things, and are not concerned with whether or not they exist in nature, contain a certain something that is certain and beyond doubt. For whether I am awake or asleep, two and three may be added together to make five and a quadrilateral has no more than four sides. It seems



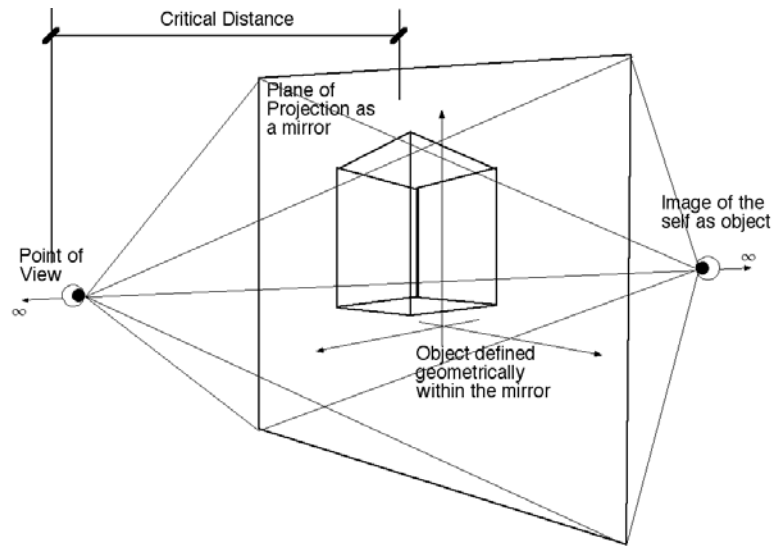


Figure 3: Geometrically represented objects as translatable data at a critical distance  
(Drawing: Author)

impossible that one could ever suspect that such clear truths are false. However, there is an ancient belief somehow fixed in my mind that God can do everything and that I was created by him...' (Descartes, 1998, p. 20).

It is through Cartesian representation that the focus of philosophical enquiry shifted from the *question of faith* to the *question of being*. This being is the being of things as found in geometric representations. This establishes a cultural shift that depends on the geometric representation for the rigour of its critical distance.

With the addition of the Transcendental Subject, abstract universal time and the concept of progress, the possibility of a *discovered* rather than a revealed universe emerges. When Newton and Leibniz apparently almost simultaneously invented calculus, it was a universe of geometry in motion, or in a more mechanical metaphor, a clockwork universe that they made possible. God was relegated to a surveillance role as the ultimate subject and the great clockmaker, despite the best efforts of philosophers to guard against this possibly heretical idea.

'Substance', in this scenario, is a thing of the past and the old scholastic philosophers of the medieval 'schools', thus giving modernism a way of finding its pure geometry; by breaking with substance and later, the past as the place in which that substance resides. The modern

man of the future (of the Enlightenment) was to be one of *mind* rather than one of body, one that acts upon and controls the body and its world through buildings such as the Panopticon, in which the geometrically metaphorical and the geometrically formal intersect.

### **Conceptualism, the retribution**

Instead of a world measured, measurement had become the world. 'Disciplines' of surveying and engineering could appear as abstract manipulations compared with the old fashioned 'engineer' who operated 'mechanisms' such as locks, levers, gates and the engines of trains. These new professions in the 17th and 18th century could dominate the manifestation of form due to their ability to use calculations; thought could become matter. New, pure plastic materials such as industrially produced iron, steel and eventually the universally named 'plastic' offered ways that translatable data of pure geometrically defined objects could appear in the world. These new 'modern' materials could embody the calculations of mechanical thought, becoming the mechanism itself.

The old materials, stone and timber become reminders of the natural world, tied to gravity and the uncivilised chaotic. Pursuits such as 'craft' separate themselves from *poesis* and take on a certain naivety that tries to deny the conceptual in work within art and design. The 'concept' is elevated to the Duchampian state it achieves in the 20th century and to which even the humblest design student must attend.

The concept or *thought* goes in search of a 'selection' or a transferable 'geometry', and it finds one in response to a function, a thought about nature. Thus the world of critical creative practice as an event becomes a discipline called *interior* design. But the *critical* concept is one in which critique is formed within a geometric metaphor, a bride stripped bare of her substantial bachelors. As Marcel Duchamp once said of himself in an interview, he can now 'out doubt' Descartes (Ades et al, 1999, p. 61). By 'out doubt', Duchamp is indicating that he can strip away more of the stuff that leads to doubt: *substance*.

It is 'disinterest', that Duchamp embodies so melodramatically, that *pollutes* the concept. This is entirely in line with the Kantian concept of disinterestedness, in which the substance of a body introduces distorting material interest, or *desires*, into the subjective judgment. Duchamp has equated visuality ('retinal shudder') with physical interestedness (Ades et al, 1999, p. 71).

The drive to exclude this polluting effect of the body-world of chaotic natural flesh from the purity of disinterested pure extensive geometry is vested in the drive to purify the expression of that geometry. In architecture and design this takes on a less neurotic form

than Duchamp's retinal shudder, with the stripping away of ornament, as in the saying, 'no noodles' attributed to Mies van der Rohe (Hughes, 1996) and 'ornament is crime', Adolf Loos (Conrads, 1964). In the late 20th and early 21st centuries, these have resurfaced in design due to a resurgence of Cartesian representation along with the enlightenment metaphors of being, in electronic digital representational technology.

As a consequence of the reductionist urge in search of disinterestedness, the question emerges as one of finding a way to express pure geometry. Issues of materials, colours, resolution of details become ones of reduction to geometry and the exclusion of the excesses of substance. In modern thinking, any substance bound in the final state of the object pollutes or obscures that geometry. The exclusion of this polluting effect becomes the messianic mission of 20th century artists (grids as shown by Krauss (1995)), architects (Bauhausian modernism), designers (Bauhaus again) and especially their teachers, who dispersed the approach through migration to the USA (Whitford, 1995). Substance is reduced to the rectilinearity of the Cartesian axes, excluding the fleshy, natural flows and distortions of uncivilised 'chaos'.

### **The problem**

The problem with pure extensive geometry is that even in the strictures of rectilinearity, under the electronically mechanised wing of great architecture, substance still pollutes and obscures the purity of the geometry, either as metaphor or as form. This appears, as an example, in the perennial problem of the resolution of joints in the working drawings of architects and engineers. Joint resolution is the adapting of the qualities of substance to the infinitely non-extensive intersection of the grid lines, in a representation. Substantial matter always undoes the pure intersection by needing to be actually *joined*.

Thus even the most resolute detailer cannot rid geometry of the intersection of matter, opting instead for the pursuit of elegant material formalism. From the point of view of the pure modern geometer, the 'concept' is ineluctably undone by the presence of the excessive material.

Thus the geometer-detailer *desecrates* the geometric intersection with matter. In a drive to find the pure geometry of a concept, design becomes an act of desecration.

### **In reality**

In reality, though, noone actually thinks like a pure geometer, do they? It is apparent to all designers and indeed most artists after the 1960s that they are actually dealing with the characteristics of substance as a *matter of concept*. The institutional character of divisions

of practice is not practice itself, nor is it the practice of discourse. The geometry of interior design, interior decoration and that of architecture really do overlap. It is only in the rigid representation of institutional geometry that they do not.

So, substantial material remains a central aspect of all practice in art, architecture and design. In some cases, especially in interior design, it is the sensuality of materials that actually underpins the drive to the minimal formalism of the late 20th century. In making art, Mark Rothko (1903–1970) asserted the primacy of the experience of for example, colour, as a *necessity*: ‘The picture must be [...], a revelation, an unexpected and unprecedented resolution of an eternally familiar need’ (Rothko, 1947, p. 561). Sol LeWitt (b.1928) even offers an *undoing* of pure extensive geometry, in his comments on ‘Wall Paintings’ of 2001: ‘Architecture and three-dimensional art are of completely opposite natures’ (LeWitt, 1967, p. 386).

It seems that substance, the qualities of materials such as hardness, softness, colour and so on, is saved from a modern perspective as the decoration of pure geometry by the unpalatability of such a lonely concept for Being as the *Cartesian Res Cogitans*. Humanity is inherently a part of nature, it seems.

### **The twist**

However, digital iterative technology (computing) has been able to model Cartesian space for building designers, as a perfect field of data, from which precise representations can be made. Modelling Cartesian Geometry has enabled the evolution in this space, of Enlightenment concepts of Being at an extremely fast rate, to the perfect mirror of nature. The mechanical attraction of gravity, time, light and many other qualities are now precisely modelled in computing and from these are made representations of designs. A precise pure substance is now possible as a representation in the modelling of architecture. In the computer, substance can meet at the perfect joint of the intersection of grid lines, but still only as a representation. The drive then is to make a *virtual* representation, one that is *more real than real*.

This will lead, if it has not already, to the tendency to regard virtual representation as more satisfying than the built form of the design. The culture of the computer is becoming a more effective medium for concepts than extended substance itself!

This signifies the completion of the institutional character of design (the distinct triangle) at the expense of the cyclical character of practice (the overlapping cycles).

## The pain

The three questions put at the beginning of the paper can now become reinterpreted as:

Do digital electronic media mean that all art, architecture and design will become the imperfect substantial version of pure extensive geometry?

Will design become a selection and assembly process of virtual objects through the Internet?

Will art, architecture and design suffer the fate to which decoration has been relegated?

In the resurgence of the Cartesian metaphor of subject and object inherent in the development of electronic digital representation, the design of buildings is done as if it were solely in the abstract geometry of the modern mind. Design is, in this way placed outside the world, in the interior space of metaphors and representation. It is conceived rather than perceived and as such any material substance is an excessive and imperfect version of its virtual conceptual form, which can never be found except through the specular stage-like window of the computer. Practice can then become one of selection, rather than arrangement, and the perceptual skills of design will also be excessive, decorative and expensive.

As long as geometry forms the basis of the language of building design and one in which concepts can be known then design will tend to become the *decoration* of culture, virtually.

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