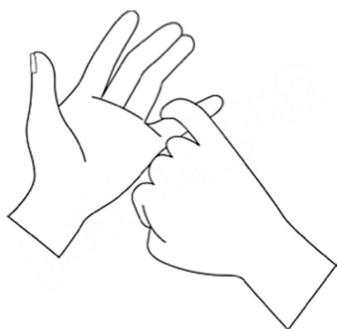


## Chapter 4: Developing a pictorial semiotics of diagrammatic art

“The Science of Unclear Thinking”

C.S. Peirce<sup>130</sup>

1



emiotics allows us to examine the basic components and structures of diagrammatic art works in detail, and provides the tools to develop a deeper understanding of the paradoxical nature of the subjective - objective resonance found within these works. This approach provides a broad system of analysis, and is capable of incorporating the great range of media and forms taken by diagrammatic art.

Chapter four applies American philosopher-scientist Charles Sanders Peirce’s overlooked concept of tone/tuone to diagrammatic art in order to develop a clearer understanding of the semiotic mechanisms at work in the Romantic-Objective nature of these artworks. The diagrams of science act to minimise Peirce’s *tones* and *tuones* in order to achieve high levels of legibility and coherence. A comparison is made between the use of diagrams in science/mathematics and their use in fine art

Whereas chapter five makes a comparative study of diagrammatic art in order to map out the contemporary terrain, chapter four presents selected works by three artists who have investigated what occurs when tone minimisation is followed towards its idealist conclusions: Sol LeWitt’s wall drawings and his series of prints *Six geometric figures*, Benar Venet’s *Equation paintings* and Marcel Duchamp’s *Unhappy Readymade*. Representative works by these artists are positioned in *Chart 1* in the immediate vicinity of a circular, Heideggerian clearing - an event horizon drawn around a void to represent an ideal, metaphorical and unreachable position of perfect objective austerity.

In various ways, these art works highlight the collision of Platonic *type ideals* with the real world environment. They also provide excellent examples of the theorist Jaques Bertin’s *monosemic image*, as tone-minimised diagrammatic art works that flirt with the extremes of astringent and colourless objectivity to create a refined poetics - an approach that all three artists abandoned to some extent in their later works.

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1 Letter S, British Sign Language (BSL)

## 4.1 Semiotic codes and Peirce's tone/tuone

Semiotic codes are one of the most fundamental concepts in contemporary semiotics. The underlying idea is borrowed from information theory, where the term code refers to precise sets of rules for the correlation of signals. In the field of semiotics codes are understood as "...procedural systems of related conventions for correlating signifiers and signifieds in certain domains... provid[ing] a framework within which signs make sense: they are interpretative devices which are used by interpretative communities".

131

The *aesthetic code* is the semiotic system used to describe sign production and interpretation within the domain of the arts, where creativity (and thus deviations from rules) must be accounted for. Within Umberto Eco's theory of codes, innovative art gives rise to new rules and thus acts to change, or *override* the original rules of the aesthetic code.<sup>132</sup> This process results in a semiotic surplus of information on the level of both content and form, which acts to open up a work to multiple interpretations.<sup>133</sup> The aesthetic code "celebrates connotation and diversity of interpretation, in contrast to the logical and *scientific codes*, which seek to suppress these values".<sup>134</sup> [emphasis added]

The scientific code aims at creating imagery which works within a single level of semiotic communication, and the texts, charts, graphs, diagrams and mathematical codes of science are specifically designed to minimise any openness to misinterpretation.

In order to understand how this is possible and to investigate in more detail the objective-subjective resonance of diagrammatic art works that adopt the language of the scientific code as part of their aesthetic code, we must first consider the work of the American philosopher, logician, mathematician, and scientist Charles Sanders Peirce. Peirce's highly influential work on semiotics and logic has provided a foundation for a great deal of research being done in the fields of diagrammatics and diagrammatology today.<sup>2</sup>

Peirce lived through a time of tremendous change and development in the sciences and human knowledge, and his investigative stance avoided rigid nineteenth century notions of the structural finality and integral determinism of nature's laws. Instead Peirce preferred to take a view of science as empirical, but also as fluid, open and revisable. Peirce's polymathic and often pioneering writings in several fields led Bertrand Russell to write that "beyond doubt ... he was one of the most original minds of the later nineteenth century, and certainly the greatest American thinker ever."<sup>135</sup> whilst Karl Popper considered him "one of the greatest philosophers of all times."<sup>136</sup>

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2 See: Stjernfelt, F (2011) *Diagrammatology, an investigation on the borderlines of Phenomenology, Ontology and Semiotics*, New York, Springer.

Central to Peirce's thought is his theory of signs or *semeiotic* (Peirce's own spelling), a project to which Peirce continually returned throughout his life. Peirce emphasised the importance of his semeiotic to his life's work to one of his correspondents, Lady Welby, in a letter written in 1908 when Peirce was approaching his seventies:

...it has never been in my power to study anything, — mathematics, ethics, metaphysics, gravitation, thermodynamics, optics, chemistry, comparative anatomy, astronomy, psychology, phonetics, economics, the history of science, whist, men and women, wine, meteorology, except as a study of semeiotic. <sup>137</sup>

To Peirce "...the entire universe is perfused with signs, if it is not composed exclusively of signs", and his goal was nothing less than to classify these myriad sign relations precisely and comprehensively, and to characterize all the possible modes in which we recognize and represent the world around us. <sup>138</sup> Peirce lists a disparate array of examples classifiable as signs, including images, pictures and diagrams, but also:

...pointing fingers, symptoms, winks, a knot in one's handkerchief, memories, fancies, concepts, indications, tokens, numerals, letters, words, phrases, sentences, chapters, books, libraries, signals, imperative commands, microscopes, legislative representatives, musical notes, concerts, performances, natural cries, in other words, anything able to create mental images which emanate from something external to itself. <sup>139</sup>

For Peirce there cannot be anything which in principle cannot be a sign, and a Peircian pan-semiotic universe does not consist of a dualism of two exclusive things - signs and non-signs. Thus Peirce's semeiotics is fundamental distinct to that of Ferdinand de Saussure's two part *dyadic* model of signs, consisting of a *signifier* - the form that a sign takes, and the *signified* - the concept it represents. Rather, Peirce formulated a three-part *triadic* model as his starting point:

- *Sign (representamen)* - the material or immaterial form that a sign takes (similar to Saussure's signifier)
- *Interpretant* - an idealised particular effect which the sign has upon its interpreter (similar to Saussure's signified, except that it is itself a sign in the mind of the interpreter)
- *Object* - that to which the sign refers (a category unique to Peirce's model)

Peirce then further divides each category in to its own triadic subcategories:

- Signs (representamen) are divided in to: *Tones, Tokens, and Types*
- Objects are divided into *Icons, Indexes, and Symbols*
- Interpretatants are divided into *Rhemes, Dicisigns, and Arguments*

Peirce proposed that every sign appears as a bundle of different categories of signs, and that the three trichotomies give rise to ten *classes* of signs, or, in even more complex combinations and subcategories, to sixty six or even 59,049 potential classes.<sup>3</sup> Peirce's semeiotics is an idiosyncratic system combining abstract notions with concrete logic and the a-priori with the empirical, in an attempt to incorporate all of reality.

In Peirce, as in no other semiotician, there is a ruleless dialectic between a desire for absolute, categorical order (down to the 59,049th case) and the equal, and incommensurate, interest in happy phenomenal chaos (geometrical planes, stuck doors, and the 'feeling of red').<sup>140</sup>

Thus for Peirce, the universe considered in its entirety is a sign, "a vast representamen, a great symbol (...) an argument", and in so far as it is an argument, it is "necessarily a great work of art, a great poem (...), a symphony (...), a painting."<sup>141</sup>

The potential scope of Peirce's unfinished system of classification is as vast as it is complex, and is composed of a terminology which underwent a constant process of revision over the course of his thirty year investigation, leading to a confusing array of apparently inter-related words.<sup>4</sup> Despite these complications, Peirce's work does provide a scaffold of terms and guiding patterns of thought with which we can attempt to understand diagrammatic, Romantic-Objective art. It allows us to gain some insight as to why the artists considered in this thesis are instinctively drawn to a skeletal, diagrammatic approach, and how this is best understood in modern terms when considered as the interrelation of key aspects of the aesthetic and scientific codes.

Between 1906 and 1908 Peirce introduced his triad of terms: tone, token and type to describe the functionality of signs, a distinction that allowed him to differentiate between three types of signs: the *qualisign* (tone), *sinsign* (token) and the *legisign* (type). The *qualisign* is a tone or quality that is a sign, the *sinsign* is an actual, singular thing such as a fact, event or state etc., and a *legisign* is a sign which is a law, rule or convention.<sup>5</sup>

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3 In his correspondence with Lady Welby, Peirce describes his expansion of the list of trichotomies to ten, capable effectively generates some 59,049 ( $3^{10}$ ) classes, but which, subject to restrictions in the way they interconnect, he renders down to sixty-six classes of signs. (Collected Papers: vol.8, para.344)

4 For a speculative discussion of Peirce's unfinished system of classification see: Sanders, Gary. (1970). Peirce's sixty-six signs ?, Transactions of the C. S. Peirce Society 6, p.3-16  
Also: Weiss, Paul & Burks. (1945) Peirce's sixty-six signs, The Journal of Philosophy 42 (1945), p.383-8.

5 Peirce also renamed the trichotomy: *Potisign* (referring to the notion of potential, or positive possibility), *Actisign* (referring to the act of experiencing 'here and now') and *Famisign* (in reference to a familiar habit of use), before later re-instating his original terms. See: Peirce, C. S. (1998). The Essential Peirce: Selected Philosophical Writings Volume 2 (1894-1913), The Peirce Edition Project, Ed. Bloomington, IN: Indiana University Press

Peirce illustrates the relationship of token to type with an example from linguistics:

A common mode of estimating the amount of matter in a ... printed book is to count the number of words. There will ordinarily be about twenty 'thes' on a page, and, of course, they count as twenty words. In another sense of the word 'word,' however, there is but one word 'the' in the English language; and it is impossible that this word should lie visibly on a page, or be heard in any voice .... Such a ... Form, I propose to term a Type. A Single ... Object ... such as this or that word on a single line of a single page of a single copy of a book, I will venture to call a Token. .... In order that a Type may be used, it has to be embodied in a Token which shall be a sign of the Type, and thereby of the object the Type signifies. <sup>142</sup>

The Stanford encyclopedia of philosophy uses a line from Gertrude Stein's 1913 poem *Sacred Emily* to show the distinction being applied: "Rose is a rose is a rose is a rose". <sup>143</sup> It is equally true that the sentence contains both three words (in repetition) and ten words (in total). In the first case it is three word types that are counted, and in the second case ten word tokens. Thus types are singular, ideal entities that have no spatio-temporal location, but are able to *determine* things that exist, whereas tokens can exist multiple times within a single page or book, which Peirce refers to as *replicas*.

The third term of Peirce's triad, tone, has fallen out of general use in contemporary mainstream philosophy, in favour of a simplified two-part division of type and token. However for this study, discussion of Peirce's semeiotics focuses upon tone in relation to diagrammatic art. In Peirce words:

An indefinite significant character such as a tone of voice can neither be called a Type nor a Token. I propose to call such a sign a Tone. <sup>144</sup>

Like types, tones do not physically exist but are able to *characterise* things that do. The unique qualities of the words: '**and**' (cambria font, black, 12pt size, bold, ), '*and*' (cambria font, black, 12pt size, italics) or '*and*' (Edwardian script font, black, 18pt size, regular) provide examples of 'indefinite but significant' changes to each of the three token words. It also illustrates how tokens rely upon the qualities of tones in order to exist, and thus the fundamental role played by tones and its qualisigns as one of the minimal units of Peirce's semeiotics. Unlike types each tone is unique. Unlike tokens, tones can not be repeated but can only be very similar. <sup>145</sup>

Peirce had also considered the term *tinge* for this category, thus providing a visual correlative to the auditory nuance of the term tone. Later still he proposed the term *potisign* and then *mark*, suggesting a refinement in emphasis to image, notation and writing: "(f)or a 'possible' sign I have no better designation than a Tone, though I am considering replacing this by 'Mark.'" <sup>146</sup>

Peter Cudmore suggests that:

This first term might benefit from a designation appropriate to the sensory organ, so that auditory signs are tones, visual ones tinges and so on. 'Mark' seems a hylozoic stage beyond this immediate apprehension, suggesting that a judgement has already been made.<sup>147</sup>

Peirce also introduced the term *tuone* as a combination of tone and tune, in an attempt to account for the subtle complexities of music's aesthetic effects; the *tuone* being "a quality of feeling which is significant, whether it be simple, like a tone, or complex, like a tune".<sup>148</sup> (Peirce seems not to have provided an equivalent visual combinatorial concept for mark which tone finds in tuone.)

The symphonic musical form provides a useful demonstration of Peirce's triad of signs, and remind us of the scope of and ambition of his project. In the case of the symphony, its compositional structure can be understood as a type, and exists in an abstract, general way. Each single performance of the symphony can be considered as a token, a single instance or manifestation of the type. Although each performance may be different, it is an iconic token (sinsign) of that particular work. Lastly, the aesthetic effects of the token performance upon an audience member relies upon what Peirce refers to as a tone. Thus one of the key roles of the conductor in interpreting the score is to formulate the minimal tone / tuone structures of the music.

It should also be noted at this point that divisions between sets remains fuzzy, with signs able to change between tone, token and type depending upon the context in which they are used or interpreted (ie: tone as qualisign or tone as interpretant). This context is also referred to as the 'semantic framing' or 'semantic moment' and relates to the gap between artists intention and viewers interpretation or projection on to a work.<sup>149</sup>

*Tones, tuones* and their qualisigns are all nuanced signs. Such signs carry certain connotations and have the ability to indirectly evoke thoughts and feelings, which are often vague and ambiguous. This encourages a diversity of interpretation in the arts, a subject explored in detail by Umberto Eco in his 1989 book *The Open Work*.<sup>150</sup>

Eco's study focuses on the importance and potential of multiple readings of all genres of art, including literature, cinema, music, and fine art. Conventional works can be understood as conveying conventional meaning, existing to support a conventional view of the world; the open work conversely, emphasises ambiguity and the destabilization of meaning, this multiplicity of meaning allows for, (somewhat paradoxically) open works to convey large quantities of information.

Tones and tuones are key components in the aesthetic subcode of diagrammatic art, and their significant (yet indefinite) nature bolsters Eco's idea of openness, the collision of clarity and vagueness.<sup>6</sup> The use of tones/tuones in the aesthetic subcode of diagrammatic art is distinctly different to that of other forms of fine art. Artists involved in making diagrammatic artworks generally suppress the tones and tuones within their work, while selectively retaining certain specific tones. This can be demonstrated by comparing the diagrams of mathematicians to the diagrammatic works of artists: how exactly are tones and tuones treated by the mathematical-scientific code as compared to the aesthetic code?

The diagrams used in geometry pre-suppose the substitution of real world tokens for ideal types. For example, a 'token' point of ink on paper can represent a conceptual 'type' point of zero dimensions, and a hand-drawn 'token' ink line can represent a perfect one-dimensional 'type' line of zero width. In order to effectively portray and read the idealized types, tones in geometric diagrams are minimized during production and overlooked during reading such images. As Peirce understood it, "the diagram as the specific figure one contemplates – that is when perceived as a token with a certain tone, is read as a type by prescind[ing] [leaving out of consideration] 'the accidental characters that have no significance'".<sup>151</sup>

Figure 33 shows a simple diagrammatic proof of the Pythagorean theorem: the relationship between the three sides of a right-angled Euclidean triangle. The theorem states that the square of the hypotenuse is equal to the sum of the squares of the other two sides.

However, as is evident in the sketch, accuracy is not a prerequisite for the token image in order for us to grasp the concept of the ideal type, and various tones exist within the diagram. The hand-drawn lines have some considerable thickness, and yet are assumed to represent ideal lines of one dimensional length and zero width. As shown by the blue dotted line, lengths and angles are wildly inaccurate, and magnification reveals the true image to be disjointed and pixelated, thus neither truly straight or appropriately connected.

Yet despite the various forms of token imprecision, we are not only able to grasp the nature of the proof in its ideal form, but to perform even further conceptual manipulations of the diagram. It can be understood that the figure does not portray a single triangle of the precise size shown in the sketch, but can be taken to represent all the possible sizes and proportions as a continuum of conceptual, right angled triangles.<sup>7</sup>

6 The aesthetic code can be broken down into subcodes, (i.e. the style of Cubism) and personal subcodes (i.e. the individual style of Picasso)

7 For further exploration of this idea, see: Stjernfelt, F (2011) *Diagrammatology, an investigation on the borderlines of Phenomenology, Ontology and Semiotics*, New York, Springer.

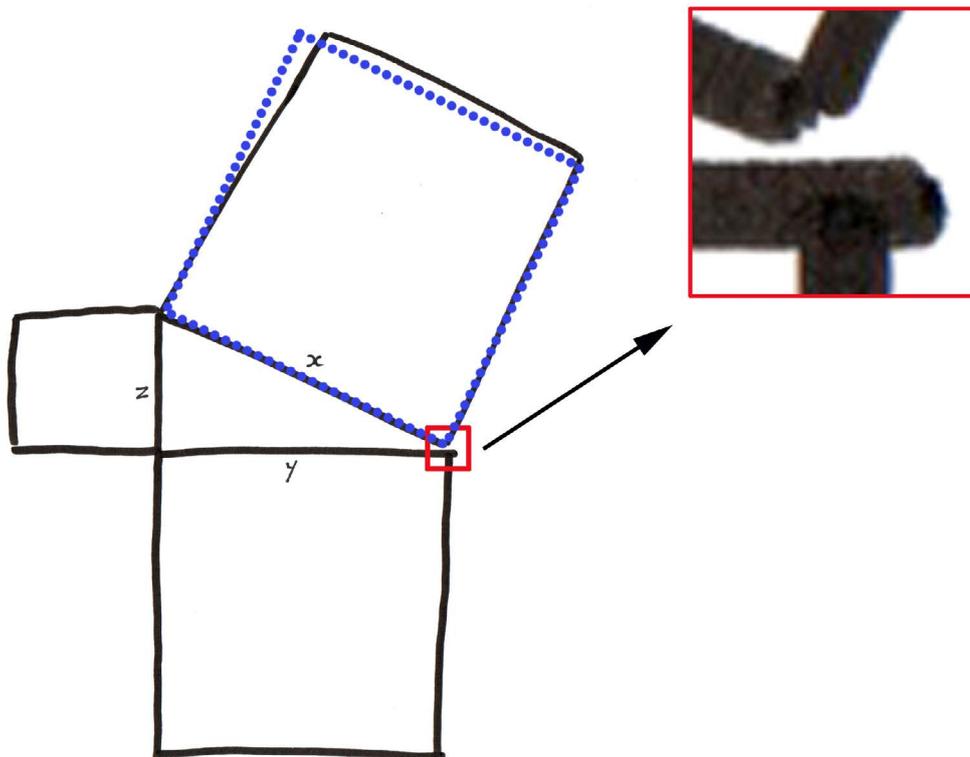


Figure 37: Sketch of the diagrammatic proof of the Pythagorean theorem highlighting the imprecisions of a real world token representation of an ideal type.

The tone or tuone in a work of art, however, play a key role due to their direct involvement in the aesthetic experience. The nature of tone promotion and suppression in the diagrammatic aesthetic subcode is more complex, as the use of the diagrammatic format acts to minimize tones within the work, while different artists choose to actively highlight particular tones in order to create their own distinct, personal, diagrammatic aesthetic.

The Grouping of diagrammatic art works according to semiotic approach and aesthetic style is presented in Map 1, one hundred diagrammatic art works from the last century. Map 1 illustrates the interconnected nature of the diagrammatic domain of art, and the great range of issues these works raise and forms that they take. Many of the artists included are either directly or indirectly involved with science and mathematics, and diagrammatic art is shown to be increasingly international in nature.

## 4.2 Sol Lewitt: Minimising tones and the poetics of geometry

It is instructive to apply Peirce's concept of tone to Sol LeWitt wall drawings, and their attendant process of translation and transcription. Towards the end of the 1960s, LeWitt made a series of groundbreaking works, which exist primarily as concepts. These concepts are established by precise sets of diagrammatic instructions specifying the lines, shapes, colours and dimensions to be used in order to recreate said concept as a high-fidelity artwork. When the diagrammatic instructions are purchased, the accompanying certificate validates the authenticity of the artwork (figure 38) and grants the owner permission to reconstruct the work in a location of their choice.

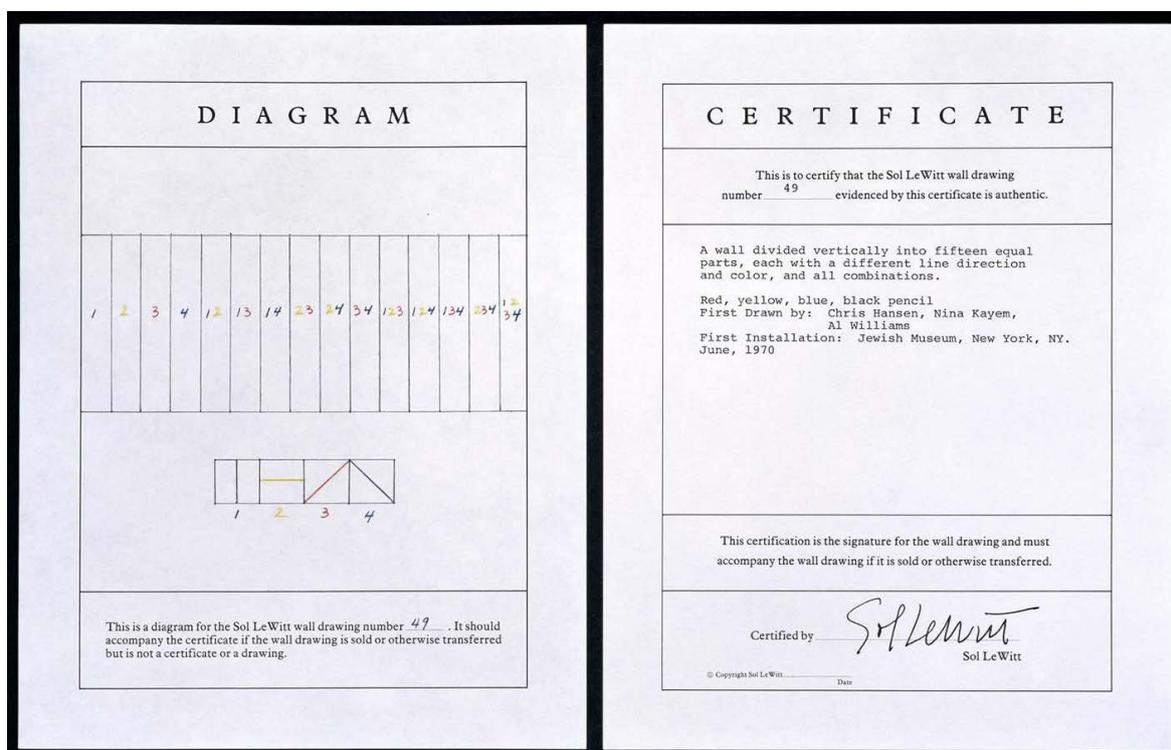


Figure 38: Sol LeWitt, Diagram and certificate for Wall Drawing #49, 1970, Ink on paper

By attributing absolute priority to concept, LeWitt gave a Platonic dimension to these artworks, insisting that they exist in essence as ideas (types) in a purely abstract, immaterial way, but with the potential to be rendered as a tokens physical form, each of which contains the tones of its production. "The Idea becomes a machine that makes the art."<sup>152</sup> LeWitt's explained his attempt to minimise tone in his work in the following statement:

If the artist wishes to explore his idea thoroughly, then arbitrary or chance decisions would be kept to a minimum, while caprice, taste and other whimsies would be eliminated from the making of the art... To work with a plan that is preset is one way of avoiding subjectivity... This eliminates the arbitrary, the capricious, and the subjective as much as possible.<sup>153</sup>

Germano Celant discusses LeWitt's work in terms of its entropy, a scientific term for measuring the level of disorder within a system. In this case, the system is the personal aesthetic subcode of Sol LeWitt's art, and in which Celant says that the

entropy of communication is reduced to the ideal state... in which the visual element is the exact result of a conceptual process [and] permits the extreme purification of the idea or concept, to the point at which it is presented for what it is, a rational and objective entity that does not admit those subjective or empathetic conditions that are part of the usual aesthetic operation.<sup>154</sup>

Celant's comments are idealistic in terms of the extent to which it is possible to strip an artwork entirely of its subjective nature, and are more suited to the early monosemic works of Venet, as we shall see in chapter 4.3. LeWitt himself discussed the importance of what he referred to as the *mark* of an individual maker left during the execution of each wall drawing.<sup>155</sup> In this way different individuals following identical sets of instructions for the same art work, at different times, do produce wall drawings that differ in subtle and idiosyncratic ways, and this thesis proposes that in such diagrammatic art forms, the poetics arise from such subtle but important *marks* and *tones*, as well as acting as an index of human activity.<sup>8</sup>

Examining the first five propositions from Sol LeWitt's *Sentences on Conceptual Art* helps clarify the artist's position, and his conception of the roles that intuition and logic plays as a device in his work:

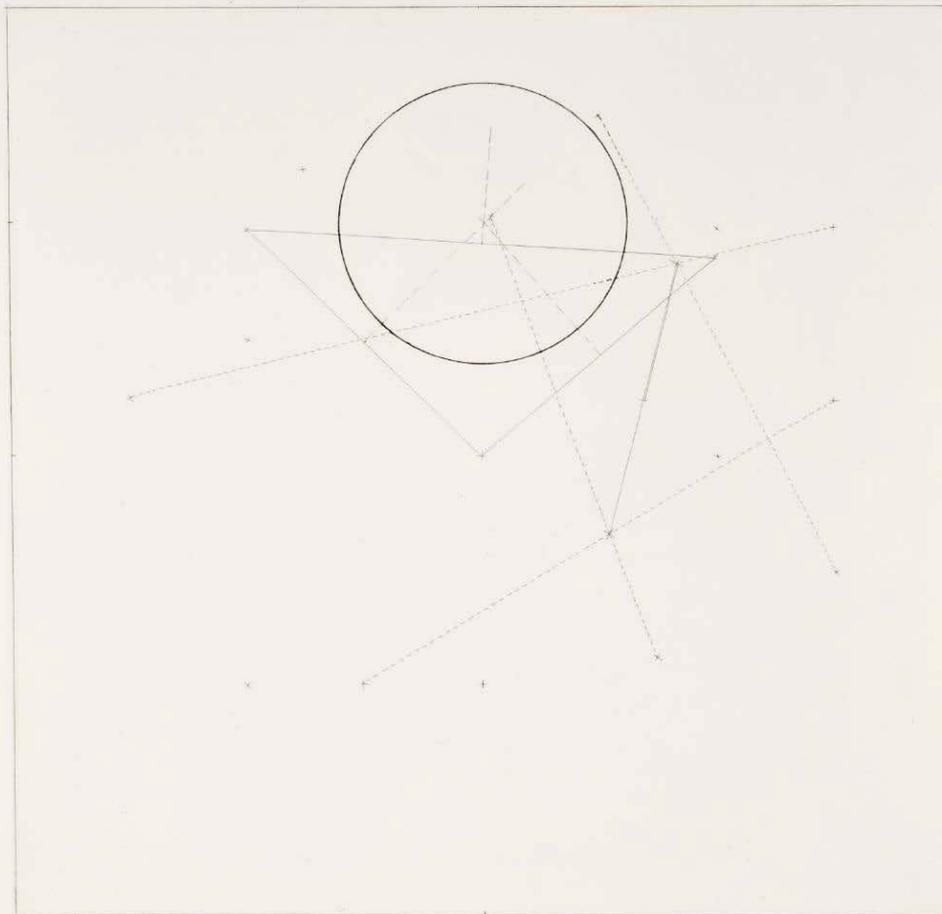
1. Conceptual artists are mystics rather than rationalists. They leap to conclusions that logic cannot reach.
2. Rational judgements repeat rational judgements.
3. Irrational judgements lead to new experiences.
4. Formal art is essentially rational.
5. Irrational thoughts should be followed absolutely and logically.<sup>156</sup>

In making these statements, and by using the provocative term *mystic* in a 1960s art scene described by Robert Storr as "avowedly positivist", LeWitt warned against what he considered to be an unfruitful reliance on logic and rationalism, and the commitment of some of his fellow artists (including Donald Judd) to a predictable and aesthetically sterile empiricism.<sup>157</sup> The subjective free-play of LeWitt in his choice of concepts prior to the logical execution of these irrational thoughts demonstrates how his work has a subjective rather than abstract matrix, based on a human and not technical a priori, which thus helps explain their ability to transcend their methodology.

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<sup>8</sup> Interestingly, LeWitt, like Peirce, uses the example of the concert performance to discuss what he refers to as mark, and what Peirce refers to as both tone and mark (See ref. 151).

The Location of a Circle



A circle whose radius is equal to half the distance between two points, the first point is found where two lines would cross if the first line were drawn from a point halfway between the center of the square and the upper right corner and the midpoint of the top side to a point halfway between the center of the square and the midpoint of the right side and a point halfway between the midpoint of the right side and the lower right corner, the second line of the first set is drawn from a point halfway between the center of the square and a point halfway between the midpoint of the left side and the upper left corner and the midpoint of the left side to a point halfway between the center of the square and the upper right corner and a point halfway between the midpoint of the right side and the upper right corner; the second point is found where two lines would cross if the first line is drawn from a point halfway between a point halfway between the center of the square and the midpoint of the bottom side and a point halfway between the center of the square and the lower left corner to a point halfway between the end of the first line of the first set and the end of the second line of the first set, the second line of the second set is drawn from a point halfway between the point where the first two lines have crossed and a point halfway between the start of the first line of the first set and a point halfway between the midpoint of the left side and the upper left corner to a point halfway between the end of the first line of the second set and the midpoint of the bottom side; and whose center is located equidistant to three points, the first of which is located at the center of the square, the second point is located at a point halfway between a point halfway between the center of the square and the upper left corner, the third point is located halfway between the start of the first line of the first set and the end of the first line of the second set.

LeWitt 39a 1/2

Figure 39a: Sol LeWitt, Location of a Circle, from the series: The location of six geometric figures (circle, square, triangle, rectangle, parallelogram and trapezoid), 1974, Set of six etchings, Edition of 25, 10 AP

By following LeWitt's tone-minimising approach toward its conclusion, we arrive at his *Location* series, an austere, geometric world of Platonic-type geometric forms accompanied by labyrinthine poetic-instructional texts (figures 39 a,b). These works approach becoming what James Elkins describes as *pure notation*, in his tripartite analysis of Images, into text, picture and notation (discussed in terms of its application to diagrams in chapter 1).

### Location of a Circle:

A circle whose radius is equal to half the distance between two points, the first point is found where two lines would cross if the first line were drawn from a point halfway between a point halfway between the center of the square and the upper right corner and the midpoint of the topside to a point halfway between a point halfway between the center of the square and the midpoint of the right side and a point halfway between the midpoint of the right side and the lower right corner, the second line of the first set is drawn from a point halfway between a point halfway between the center of the square and a point halfway between the midpoint and the left side and the upper left corner and the midpoint of the left side to a point halfway between a point halfway between the center of the square and the upper right corner and a point halfway between the midpoint of the right side and the upper right corner; the second point is found where two lines would cross if the first line is drawn from a point halfway between a point halfway between the center of the square and the midpoint of the bottom side and a point halfway between the center of the square and the lower left corner to a point halfway between the end of the first line of the first set and the end of the second line of the first set, the second line of the second set is drawn from a point halfway between the point where the first two lines have crossed and a point halfway between the start of the first line of the first set and a point halfway between the midpoint of the left side and the upper left corner to a point halfway between the end of the first line of the second set and the midpoint of the bottom side; all whose center is located equidistant to three points, the first of which is located at the center of the square, the second point is located at a point halfway between a point halfway between the center of the square and the upper left corner, the third point is located halfway between the start of the first line of the first set and the end of the first line of the second set.

Figure 39b: Sol LeWitt: Text accompanying Location of a Circle

However, Elkins proposes that in the case of highly notational images as geometric diagrams,

...it might seem that pictures would be left behind in the far reaches of geometric rigor, but I am arguing the opposite. Picturing is at stake even in the most torturous geometric labyrinth: It is pictures that are being 'harassed', driven to their limits.<sup>158</sup>

LeWitt uses the high-fidelity, low-entropy notation of geometry, but contrasts it with a convoluted textual description of, or instructions for, each of his six geometric diagrams. LeWitt also chooses to write the texts using everyday language, rather than the efficient and specialised symbols of mathematics, and the result is a single sentence, hundreds of words long and impossible to mentally reconstruct.

The texts accompanying each geometric image become almost religious mantras, where meaning is lost within the sounds of the words themselves. This fascinating juxtaposition of text and pure notation rescues the works from the sterility of formal rationality LeWitt warned against, resulting in a poetic resonance that is Romantic-Objective as well as diagrammatic in nature.<sup>9</sup>

Nicholas Baume describes *the location of six geometric figures* (also produced as wall drawings) as one of LeWitt's most disciplined and exacting works, and yet also his most absurd and wryly funny, suggesting that the text is a "form of abstract verbal play" for LeWitt.<sup>159</sup>

Importantly, LeWitt himself once remarked that he considered his Location series his "poetry".<sup>160</sup>

Note:

Despite LeWitt's insistence on a strict methodology of production, his 1975 Wall Drawing #271 (Black circles, red grid, yellow arcs from four corners, blue arcs from the mid points of four sides), first executed at Dia:Beacon in 2007, was, under the instruction of LeWitt, painted over and re-made. The drawing had remained as a concept on paper for 32 years and yet, at some point in the process of its realisation, had failed to meet certain aesthetic criteria set by LeWitt, resulting in the decision for it to be redrawn.<sup>161</sup>

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9 For a strikingly similar example of pure geometric notation in contrast juxtaposed with its dense textual description from the note books of Leonardo da Vinci, see Appendix I

### 4.3 Bernar Venet: The monosemic image

In 1966, at the age of 24, the French artist Bernar Venet started his series *equation paintings*, literal reproductions of specialist mathematical diagrams and symbols with a conceptual emphasis upon their linguistic/semiotic nature. (figure 40) In making these early and important conceptual works, Venet's focus was upon the fixed, unambiguous nature of Bertin's concept of monosemy.

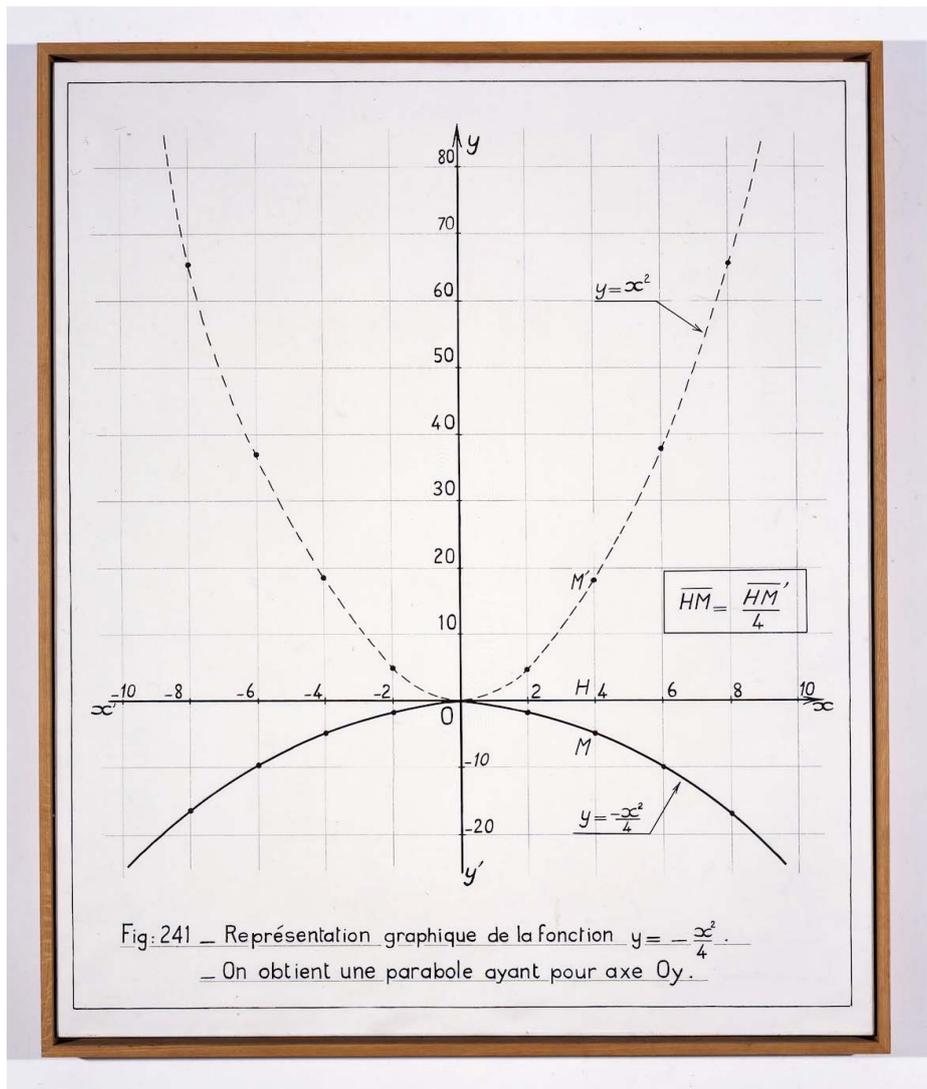


Figure 40: Bernar Venet, *Représentation graphique de la fonction  $y = -x^2/4$* , 1966, Acrylic on canvas, 146 x 121 cm

The French geographer, cartographer and theorist Jaques Bertin proposed three levels of signification in his monumental work *Semiologie Graphique* (Semiology of Graphics), which, published in 1967, laid the foundations for the modern study of information graphics.

Bertin proposed the term *pansemic* to describe those abstract images with what he called a universal, or seemingly infinite number of possible readings, as is the case with Eco's *open work*. Polysemic or figurative images on the other hand were restricted in the number of ways in which they can be read, whilst monosemic images presented only one level of signification and thus one way in which they are intended to be read. Venet made this the subject of his 1971 painting *Degrees of Abstraction After Jacques Bertin*, a diagrammatic summary of his conception of monosemic art (figure 41).

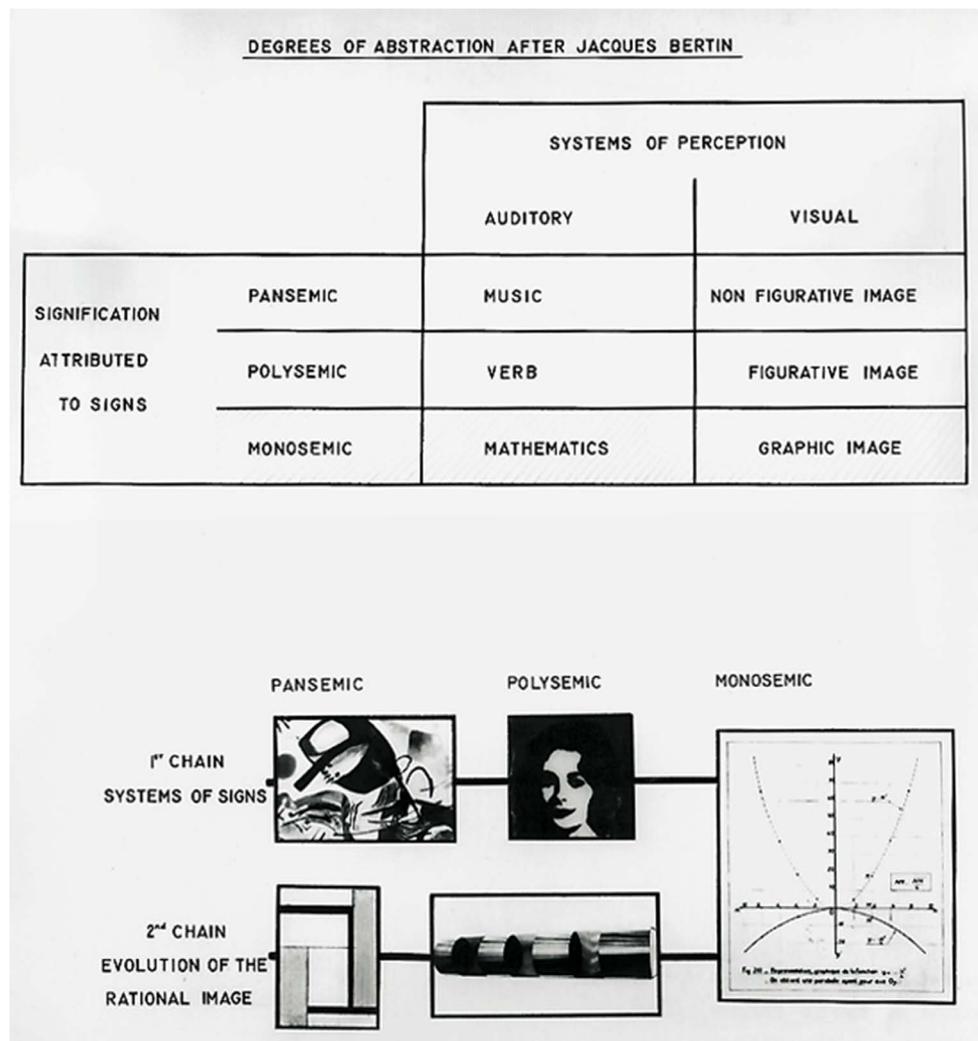


Figure 41: Bernar Venet, *Degrees of Abstraction After Jacques Bertin*, 1971, Ink, collage on paper. Private collection, Italy.

To the majority of non-specialist viewers and, as Venet readily admits, to the artist himself, these symbolically hermetic equations written in the vernacular of applied and pure mathematics remain impenetrable concepts.<sup>10</sup> Venet has described his reverence toward the symbols that he uses in religious terms, and this in turn has effected his choice of materials, such as his use of the colour gold with it's connection to Russian icon paintings.

<sup>10</sup> In semiotic terms, Venet is employing signs with extremely low *motivation*. The less motivated the sign, the more learning of an agreed convention is required in order to understand their meaning.

In a move that mirrors Sol LeWitt's rejection of a the colourless austerity of his early works, and the saturation of his later works with vivid colour, over time Venet's equation paintings have come to deal directly with issues of artistic aesthetics, such as colour, form and materiality. (figure 42) Venet himself states that "I thought that I had pushed my process to its extreme limits and this called for an end".<sup>162</sup> In describing his 2012 exhibition of his saturation paintings, Venet states that:

All these equations come from Kurt Gödel, who was the most intelligent and most abstract mind that ever existed on earth, and knowing that, to me, it's a bit like the word of God. So painting these equations in gold, they become icons, like the ones you see in Russia, that you look at with great respect. And when I use shaped canvases, which is what I'm doing now, they recall the oriole of the Saints. We are in the sublime.<sup>163</sup>



Figure 42: Bernar Venet, Gold Triptych with Two Saturations, 2009, Acrylic on canvas, 247 x 592.5 cm

Donald Kuspit writes of the interplay of romantic notions of the sublime with the intellectual world of mathematics in Venet's work:

Bernar Venet seems to be the most intellectual of conceptual artists, but his intellectuality is a means to a romantic end - what Kant called "the feeling of the sublime." Venet has had a life-long affair with mathematics, but the mathematical murals - his descriptive term - that are its grand climax, are more sublime than mathematical, or rather use mathematics as a springboard to the sublime. They are in fact an inspired rendering of what Kant called "the mathematically sublime."<sup>164</sup>

The poetry of Bernar Venet is also aligns itself with his artistic philosophy, in that it employs non-romantic means to a romantic end. The nineteenth century English Romantic poet Samuel Taylor Coleridge proposed that poetry consists of “the best words in their best order”.<sup>165</sup> Much of Venet’s process of composition relies not on diction (choosing the “best words”) or syntax (arranging the “best order”) but on re-contextualizing readymade language.

Venet’s approach also rejects William Wordsworth’s assertion that “all good poetry is the spontaneous overflow of powerful feelings”, in that Venet chooses to fashion found poetry from texts which come from newspapers, scientific and technical publications, dictionaries and other indexes.<sup>166</sup>

Like his art, the poetry of Venet challenges comprehension and accessibility, and the majority of non-specialist viewers are left pondering the hieroglyphic symbols of a specialist scientific and mathematical vernacular, such as with the poem *Monostique*, the title referencing a monostich, which is a one-line poem, a form that can be traced back to antiquity (See figure 44). The important role that this particular equation was to play in Venet’s practice is summarised by Ken Allen in his essay *The A-Poetic poetry of Bernar Venet*:

...Venet employs the mathematical symbols and scientific language that were found in his work of the middle to late 1960s. The piece that started him on this track is called *Monostique*, which was originally conceived of as a poem. Several years ago, Venet decided to install a wall drawing to revitalize his minimalist apartment surroundings, so he cleared off a wall and printed on it the equation of *Monostique*, one of his earlier mathematical equations-as-poetry. The startling effect of the equation on the wall compelled Venet to reorient his art practice in this direction.<sup>167</sup>

### Monostique

$$M^2 = \sum_{\theta} \left( \frac{\sigma(\theta)_{\text{exp}} - \sigma(\theta)_{\text{cale}}}{\Delta\sigma(\theta)_{\text{exp}}} \right)^2 + \sum_{k, \theta} \left( \frac{\langle T_{2k} \rangle_{\text{exp}} - \langle T_{2k} \rangle_{\text{cale}}}{\Delta\langle T_{2k} \rangle_{\text{exp}}} \right)^2$$

Figure 43: Bernar Venet, *Monostique*, found equation, date unknown.

#### 4.4 Marcel Duchamp: The elements and the Elements

Jaques Nayral wrote of Duchamp's work in a cubist exhibition at the Galeries Dalmau in Barcelona that "[t]he Mathematical spirit seems to dominate Marcel Duchamp. Some of his pictures are pure diagrams, as if he were striving for proofs and synthesis."<sup>168</sup>

Duchamp was deeply interested in the detached, objective qualities of technical diagrammatic drawings, expressing his desire to make "paintings of precision" with a "beauty of indifference."<sup>169</sup> Duchamp writes of his aim to

go back to a completely dry drawing, a dry conception of art. I was beginning to appreciate the value of exactness, of precision and the importance of chance... And the mechanical drawing was for me the best form of that dry conception of art... a mechanical drawing has no taste in it.<sup>170</sup>

However an often overlooked work which questions our notions of ideal forms in geometry with a degree of poetic pathos is *Unhappy Readymade*, an assisted readymade by Marcel Duchamp, c.1919. (Figures 44 a,b and c) Foreshadowing the production process of LeWitt, *Unhappy Readymade* consisted of a simple set of instructions sent by post as a wedding gift to his sister Suzanne Duchamp and the artist Jean Crotti. In an interview with Pierre Cabanne, Duchamp described his instructions for Crotti to buy a

...geometry book which he had to hang by strings on the balcony of his apartment in the rue Condamine; the wind had to go through the book, choose its own problems, turn and tear out the pages. Suzanne did a small painting of it, 'Marcel's Unhappy Readymade.' That's all that's left, since the wind tore it up. It amused me to bring the idea of happy and unhappy into readymades, and then the rain, the wind, the pages flying, it was an amusing idea...<sup>171</sup>

Duchamp's unhappy readymade relies on the contrast between ideal geometric types, their manifestation as token textbook diagrams, and the resulting tones that act to emphasise Duchamp's artistic intentions.

Linda Dalrymple Henderson points out that this was in fact one of Duchamp's last specific comments on geometry, and that the book used was a copy of Euclid's elements, so that, ironically, the plane geometry of Euclid was in contrast to damage caused by the wind and rain, producing tones within the structure of the work as "non-Euclidean deformations of the Euclidean geometries in the text."<sup>172</sup>

In a letter to his sister, Duchamp wrote: "I liked the photo very much of the Ready Made sitting there on the balcony. When it all falls apart you can replace it."<sup>173</sup>

Duchamp also suggests that this is a lesson to be repeated, a reminder of the fundamental difference between an essentialised, idealised, conceptual landscape of perfect forms, and the chaotic nature of decay and change, which composes our everyday experience of the world. Some years later Duchamp told one interviewer that “he had liked disparaging ‘the seriousness of a book full of principles,’ and suggested to another that, in its exposure to the weather, ‘the treatise seriously got the facts of life’”.<sup>174</sup>

Duchamp’s thoughts echo the romantic period conception of the “dusty textbook universe of the enlightenment”, and Goethe’s rejection of Diderot’s *Encyclopédie* and d’Holbach’s *Systems of Nature*.<sup>175</sup> To Goethe this academic, hermetic world was dangerous, dark and death-like,

...a system of nature was announced; and therefore we hoped to really learn something of nature, - our Idol... But how hollow and empty did we feel in this melancholy, atheistical half-light, in which earth vanished with all its images, heaven with all its stars.<sup>176</sup>

Jochen Bockenmühl, describes the difficulties faced by Goethe in his pursuit of the archetypal phenomenon as the risk of “freezing oneself in abstraction or losing oneself in mystical reverie”, adding that “[t]o avoid these potential errors, observers must direct their gaze upon their own thinking activity as well as on the thing itself.”<sup>177</sup>



Figure 44a:  
Unknown artist,  
Photograph of Unhappy  
Readymade, 1920



Figure 44b:  
Suzanne Duchamp,  
Unhappy readymade,  
Oil on canvas, 1920

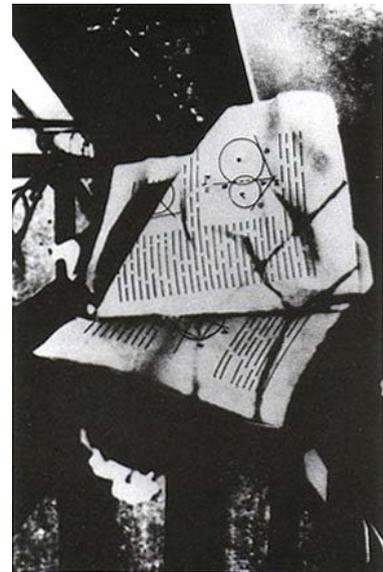


Figure 44c: Marcel Duchamp,  
Unhappy ready made, Box in  
a valise version, re-touched  
photograph, 1935 - 41

Duchamp and LeWitt's introspective use of wit, irony and failure in their work act as antidotes to these issues, and reminders of the limitations of rational investigation, and how a very human form of poetry can exist when such limits are creatively confronted.

This chapter has explored some of the fundamental semiotic differences between the diagrams of science and those of art. It also highlights the particular aspects of diagrammatic art that allow it to appear objective in nature and yet maintain a subjective element in order to create what I describe as a Romantic-Objective resonance.

Chapter five considers the diagrammatic field of contemporary fine art, and how artists incorporate aspects of contemporary science, culture and society, and respond to the information technology revolution in a Romantically-Objective way.