POETICS IN SPACE:

Visual Poetry and Spatial Meaning   from Mallarmé to Metalheart,

and then Arakawa and Gins

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VISUAL POETICS:MEANING SPACE
FROM MALLARMÉ TO METALHEART

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Abstract

This project develops a theory of visual poetries in terms of the perceptual and technological resources at their disposal, in particular elaborating the potentials of spatiality as a body-referent language resource for meaning and poetry. The first chapter examines Mallarmé's spatialization of the poetic text in *Un coup de dés* (1897) as the effective starting point of modern visual poetry; it exposes the formulaic poetics of its visual design, and situates Mallarmé's visual practice in relation to his literary metaphysics. The second chapter examines the graphic design artists of *Metalheart* (2001) as culminating a century of integrating the media, and spatializing the design idioms of text design. The third chapter confronts "visual poetics" as a conceptual challenge, examines a book by David Arnold, *Situations* (1984), as a case study concerning spatial reading, and finally lays out a basic empirical aparatus (attention tracking) for addressing the experiential questions of visual (poetic) meaning making on phenomenological grounds, and suggests the beginnings of a reception theory for visual and spatial poetries based on the notion of the wandering viewpoint. While circumventing 20th Century visual poetry as the actual literary historical corpus that this theory is meant to serve, the project aims to reframe discussion of visual poetry in two principal directions: expanding the medial scope of the work considered, and grounding theoretical discussion in a theory of experience, one that sees semiosis as continuous with perception.

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"If the discovery of the psychological nature of Meaning
were completely successful, it might put an end to
psychology altogether."
Professor Pear (1923)

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BASIS: Chapter 1
Visual Poetics Rooted in Mallarmé's Spatialization of the Poetic Text

0. The Long Shadow

In her essay, *Experimental/Visual/Concrete*, written for a major symposium on contemporary poetics and concretism, Johanna Drucker undertakes to tell the history of typography-based visual poetry through the 20th Century. Early on she turns to the figure of Stephane Mallarmé, and characterizes him as "casting a long shadow over the entire period of the early 20th Century avant-garde" (*Figuring* 115). Since the bulk of Mallarmé's work was rejected by the avant-garde, as the apogee of *Symbolism*, the decadent aesthetic legacy against which a new world of art was to be defined, the positive influence Drucker speaks of comes down to one particular work: the visually unprecedented *Un coup de dés.*[1] Elsewhere, Drucker describes this work as "the single most striking precedent for avant-garde experiment with the visual form of poetic language" (*Visible* 50).

Many key poets who tell the history of their art start with Mallarmé. Thus, Franz Mon, in an influential essay from 1963 credits Mallarmé with having reintroduced the "poetry of the plane", paving the way for concrete poetry and other movements by reactivating the page's visible surface as a "constitutive element of the text" (Mon 77). Similarly, Agosto de Campos, one of the founders of concretism, writes:

> For me, the dividing line for inventive poetic language in modern times is Mallarmé's work *Un coup de dés* (1897), a poem conceived intersemiotically as a fragmentary structure ("subdivisions prismatiques de l'Idee"), conjoining visual mural and musical score. … The last Mallarmé – from *Un coup de dés* to *Le Livre*– catalyzes and spreads the principal future alternatives of poetic language. (de Campos 376)

Non-practicing commentators are not so unanimous on this point, siding differently on the issue of Mallarmé's paradoxical dual role – high-priest of symbolism and proto-avant-garde experimenter – than those who have internalized this ambiguous influence as artists. Willard Bohn, for example, whose *Modern Visual Poetry* fashions itself as

the first comprehensive textbook on the subject, starts with Guillaume Apollinaire and F.T. Marinetti, though he acknowledges Mallarmé as an "important precursor", even a "radical" one (18).   Of Marinetti and Apollinaire he asserts definitively that they "invented modern visual poetry in 1914" (19). His reasoning, it seems, rests on the degree of their awareness of new media as the site for a cultural renewal. He quotes Michel Butor as saying that Apollinaire was the first

> to understand poetically that a cultural revolution was implicated in the appearance of new means of reproduction and transmission, that the phonograph, the telephone, the radio, and the cinema (not to mention television and tape recorders), which preserve and transmit language or stories without recourse to writing, obliged us to regard the latter through a new lens, and especially to pose several radically new questions concerning the fundamental role of the book in our civilization.

But Mallarmé was clearly the first to respond "poetically" to the rise of new media, principally influenced by the graphic innovations in newspaper and advertising design. More than just borrowing ornamental features from these new cultural artifacts, he reflected seriously on the changing role of language and reading in an environment of increasingly visual information. While he never manifested the futurist enthusiasm for material innovation for its own sake, he was the first to fully embrace the material possibilities of poetic presentation, and to begin dismantling the regime of strictly mimetic language.

As I hope to make clear in this chapter, already 17 years before Apollinaire and Marinetti's first visual works, Mallarmé anticipated the full complexity of issues involved in developing a visual poetry, and established a rich, modern legacy for its future evolution. Typographic poetics as Mallarmé practiced it was a genuinely new departure, anticipated only by contemporary advertising and the new look of newspapers, and its possibilities remain unexhausted even today. Apollinaire's *Calligrammes*, on the other hand, were a revival of the only kind of visual poetry that even the 19th Century could have called traditional, even classic, namely the pattern poem.[2] Though his freer typographic and calligraphic styles, and the primitivist simplicity of his language, align the work more explicitly with modernist trends, there is no question that Apollinaire casts a much shorter, fainter, shadow over the ensuing century of artistic innovation.

Typographics, of course, represents only one aspect of the highly varied universe visual poetry in the 20th Century will become. But it is rightly seen as the trunk from which all other aspects emerge as branches, or onto which they are forced as graftings. In this chapter I want to examine Mallarmé's contribution as a way of firmly establishing the basis of visual poetry in the typographic amplification of conventional poetic practice. In particular I want to show that his engagement with the question of spatial meaning

anticipates much of what will follow in even the most heterogeneous and discordant facets visual poetry will later assume.

1. Mallarmé Spatializes the Poetic Text

> Whether we wish it or not, any optical differentiation of a picture surface generates a sense of space. A typographic design, scribbling on paper, color spots on a canvas, a photograph, a simple haphazard manipulation of light or a painting with an explosive emotional message—all these are spatial expressions by virtue of the processes through which the eye organizes their visible differences into a whole. (Kepes 21)

While the early 20th Century avant-garde in general rejected the Symbolist high culture Mallarmé stood for, artists of that time couldn't ignore the example Mallarmé had set, as it stood out to them against the background of conventional verse culture. The paradox of Mallarmé is that in him an extremely etherialist ideology about language gave rise to an intensely materialist practice, one that got taken up by others, and that by the 1910's was generally aligned in ideological opposition to the *symbolist* metaphysics of a Mallarmé. Drucker articulates this paradox in her book *The Visible Word: Experimental Typography and Modern Art, 1909-1923*:

> The spatial and visual manipulation of the poetic text desired by Mallarmé in *A Throw of the Dice* embodies a curious paradox. On the one hand this poem, the most hermetic of Mallarmé's works, was the expression of his desire to "…break away completely from the phenomenal world and toward a poetry of absolute purity". But on the other hand, in the process of bringing forth an idea in form in order to render it perceptible, Mallarmé invested in a highly material practice. He manipulated the typographic form, paying close attention to its visual features, spatial distribution, and capacity to organize the text into a hierarchized figural order. Antimaterial though he may have been in his intentions, his means, in this work, suggest the possibilities for a materially investigative practice. (*Visible* 52)

The realities of mediatization and the visualizing of popular reading that Mallarmé noticed were even more pronounced for the avant-garde poets than they had been in Mallarmé's time. Radical play with the materiality of language became a widespread poetics priority for the new generation, as it had come to be for Mallarmé, who had inaugurated such play with gentler intentions towards the cultural system hosting it. As he says in his preface to Un coup de dés, he did not intend to "break with tradition at all", just to push the boundaries of presentation, "but not so far as to offend anyone: just enough to open

some eyes" (Collected 122).3 The climate in 1909 when Futurism surfaced, or in 1916 when Dada did, was not so polite. Mallarmé, as a potential influence for these poets really only showed up in 1914, with the first visually adequate printing of Un coup de dés. By that time artists like F.T. Marinetti, Ilia Zdanevich, Wassily Kamensky, Tristan Tzara, and Kurt Schwitters could see the resources offered by typography and graphic layout, and all found ways to turn those resources, in a strongly oppositional practice, against the decadent cultural mentality of symbolism as they saw it.

Despite, or because of this paradox in the transmission history of visual poetry, the implications of Mallarmé's experiment are so foundational for later artists, that it serves us here to linger on Mallarmé, and to examine in some depth the formal and theoretical investigations out of which visual poetry as a modern experimental art form emerged.

To characterize what Mallarmé did as a first move in the ongoing game we now call visual poetry, we can say that he **spatialized** the poetic text. In what sounds today like an understatement, Mallarmé in his preface to Un coup de dés, points to this spatialization of the text as the only thing new about his new kind of poetry, "quite without novelty but a spacing of the reading" (Igitur 405).

Paul Valery, who 'got' Un coup de dés already in Mallarmé's time, when he saw the drafts of the would-be definitive Lahure dition, observed that Mallarmé had:

> produced a spatial reading, which he combined with the linear reading; it was equivalent to enriching the literary domain with a second dimension. (Valéry 314)

When Franz Mon says that Mallarmé reintroduced the "poetry of the plane," he observes:

> with this the plane itself becomes a constituent of the text; it introduces its instants of meaning, i.e. center, edge, up, down, right, left, into the reading context…. (Mon 79)

And Drucker, in her 1996 essay "Experimental/Visual/Concrete", puts it similarly:

> Mallarmé's attention to the space of the page as a space, and his careful measure of the relative weights of words as forms on the page, activated dimensions of visual poetics which could not be brought to life by literal iconic images (of vases and such) or by the conventions of traditional literary layout and design. (Figuring 115)

By taking charge of the size, typeface and placement of his lines, Mallarmé integrated sophisticated spatial effects into the dynamic of reading experiences we call poetry. Visual space became a poetic quantity where it effectively hadn't been previously. To those artists who took it up in their work, spatiality appeared fresher and probably vaster as an expressive/articulatory resource than conventional meter or stanzaic patterning.

With Mallarmé, the whole range of perceptual and cognitive values associated with space became, at least potentially, available as tractable amplifications to the experience of poetry, promising to potentiate in visual terms poetic qualities such as rhythm, lyricism and emotional or intellectual poignancy, previously achievable only within the linear presentation constraints of conventional print culture. More than just a doubling of poetic means in another mode, however, space presented a world of resources previously unexploited in the literary arts.

Mallarmé's accomplishment, as Valery saw it, was momentous, amounting to the feat of capturing, "for the first time in finite space", "the form and pattern of a thought." Valery exclaimed, in a later reflection on the poem:

> I was struck dumb by this unprecedented arrangement. It was as if a new asterism had proffered itself in the heavens; as if a constellation had at last assumed a meaning. Was I not witnessing an event of universal importance, and was it not, in some measure, an ideal enactment of the Creation of Language…? (qtd in *Collected* 265-6)

How the opening of space as a poetic resource could appear so momentous an event needs some explaining. For Valery, the activation of the blanks and negative space of the page, and the visual role of the typography, made possible a previously unattainable expressiveness, bringing out qualities of the experience of thought which poetic language alone could not reliably access:

> It seemed that I was looking at the form and pattern of a thought, placed for the first time in finite space. Here space itself truly spoke, dreamed, and gave birth to temporal forms. Expectancy, doubt, consternation, all were *visible things*…. There amid murmurs, insinuations, visual thunder, a whole spiritual tempest carried page by page to the extremes of thought, to a point of ineffable rupture—there the marvel took place, there on the very paper some indescribable scintillation of final stars trembled infinitely pure in an inter-conscious void; and there on the same void with them, like some new form of matter arranged in systems or masses or trailing lines, coexisted the Word!

The degree to which "the form and pattern of a thought" require a spatial rendering to be apprehended is open to debate; to a debate begging core philosophical questions about the nature of representation. But certainly it is reasonable to see in a visualized poetic practice promising new resources for the figuring of ideas. The reason is that, as many philosophers and some recent cognitive psychologists acknowledge, thought is itself inescapably spatial, or in a different formulation, involves spatiality at fundamental levels of its structure and operation. As Buckminster Fuller, whose 1300 page magnum opus, *Synergetics*, is subtitled "Explorations in the Geometry of Thinking" puts it, "Space is the invisible complementation of the cognitive system. Like the rubber glove, cognition is left hand; space is inside-out right hand, and vice versa" (123).

As a category, like time, permeating all phenomenality, space and its properties are inextricable from conscious experience, even within the hermetic realm of "pure" ideation. Fernande Saint-Martin, in the context of laying the philosophical groundwork for

her *Semiotics of Visual Language*, makes the same point:

> Basically, the notion of space, which is preeminently pluralistic, must be thought of as anterior to any notion of the object or the construction of the object. M. Merleau-Ponty (1968; 234) suggested this view when he wrote that space is "a communication with the world older than thought." R. Thom (1972; 327) suggested also that one should consider spatial thought as the basis of man's conceptual thinking. (xii)

Because of how the cognitive system evolved, building on the foundation of primitive sensory/motor processes engaged at all points with the spatio-temporal realities of animal experience, we have spatial percepts, schemas and metaphors built in to every later cognitive development. In this sense, we can affirm with Ernst Cassirer, that "there is no achievement or creation of the spirit which is not in some way related to the world of space…. Space forms as it were the universal medium in which spiritual productivity can first establish itself, in which it can produce its first structures and formations" (150). While for Cassirer this observation follows from a post-Kantian inquiry into the "phenomenology of knowledge", the same notion emerges with more concrete scientific grounding in contemporary studies of the embodied nature of reason and cognition in general.[4]

While on the one hand, this argument suggests that space was always already inherent in the conceptual structure, not to mention the visual presentation, of poetry and all other writing, on the other it points to the remarkable significance of its being for the first time consciously embraced, and actively engaged as a constitutive aspect of poetic meaning. The simple "espacement de la lecture" which Mallarmé ventured, corresponds, in the perspective I want to develop with this essay, to the beginning of visual poetry as a self-aware practice. Mallarmé was the first to fully commit to the spatiality of writing, though the full potential of spatial poetics to articulate thought in visible forms is still only beginning to be explored.

To understand visual poetry in relation to the germ of it contained in Mallarmé's single, implication-rich innovation in presentation, let us turn now to the poem itself, *Un coup de dés*, and to an examination of how space was used in making it, what kind of space that makes for the reader, and how that space gets formalized, if at all, as poetics.

2. The Uses of Space in *Un coup de dés*

> C'est à des places variables, près ou loin du fil conducteur latent, en raison de la vraisemblance, que s'impose le texte. L'avantage, si j'ai droit à le dire, littéraire, de cette distance copiée qui mentalement sépare des groupes de mots ou les mots entre eux, semble d'accélérer tantôt et de ralentir le mouvement, le scandant, l'intimant même selon une vision simultanée de la Page (*Igitur* 406).

In his preface to the poem, Mallarmé predicts that the reader will first be struck by the fact of so much empty space; "Les "blancs" assument l'importance, frappent

d'abord; la versification en exigea, comme silence alentour". This blank space is measured, gauged and managed for precise poetic purposes. Its role, visually equivalent to silence, is to allow words and groups of words to stand out, and to stand in relation to, to perform the complementary but inverse semiotic functions that enable the "Hasard" of language, the "sub-divisions prismatiques de l'Idée", to split, link and flow, and amount, in an ideal intellectual intensity ("circonstance fulgurante" (Igitur 405)) to "PEUT-ETRE… / UNE CONSTELLATION".

In the Preface, Mallarmé says the proportion is about one third text to two thirds blank: "un morceau, lyrique ou de peu de pieds, occupe, au milieu, le tiers environ du feuillet: je ne transgresse cette mesure, seulement la disperse." La Charité estimates the blank space is 72% of the total, (La Charité 83). These proportions, neither precise nor accidental, represent a presentational economy at the heart of Mallarmé's experiment, the ratio of sound to silence, language to visual ground, required for the poem to work. In the absence of a determinate narrative – "tout se passe, par raccourci, en hypothèse; on évite le récit" – this emptiness is the room it takes, so to speak, for the alternate ordering logics to manifest, for the musical resonance, the semantic polyvalence, allusiveness and ambiguity to surface in the flow of reading.

More than merely framing and highlighting fragments of the poetic text, the blank space in Mallarmé's poem represents a fundamental condition of the language's functioning. As Virginia La Charité explains in her book, The Dynamics of Space, "The geometric dimensions of space are to the practitioner of plasticity what grammar is to the writer: coordination of the pieces into an organic structure."

> Poetic manipulation of space determines the reading of the text, for it is the use of space as the element of design which determines the image: where the image begins, where it stops and returns. Space controls the combinations of meaning through groupings, dispersion, and isolation, and at the same time it multiplies their possible combinations. (37)

La Charité makes much of the indeterminacy Mallarmé achieves this way, arguing that the spatial design opens the text intentionally to multiple readings. On the one hand she points out that Mallarmé's penchant for complicating the reading through tricky syntax, homophones and homographs, finds rich new ground in a spatial strategizing (146). On the other she takes pains to show that the poem can be meaningfully subjected to wholly divergent reading orders, according to the material structure of the printed object; e.g. reading by signatures (the folded, folio-sized sheets of paper whose four sides do not correspond to subsequent pages once the book is stitched and bound), reading by rectos or by versos separately, reading "retroactively" from back to front, or, because the text is ultimately circular, reading forward from any point and back round to where you started,

(158-175).

A crucial function La Charité identifies in the predominance of empty space is to establish a context of impersonality and authorial absence in the text, thus encouraging reader participation and ownership in the ultimate outcome of the reading. Mallarmé doesn't break with the grammatical conventions of presentation merely to establish equally determinate conventions in an alternate, spatial code. Rather, he produces a spatial ordering whose logical grounds are inscrutable in the context of their visual disposition, where the positive mass of printed lines seems almost powerless in relation to the space that carries and engulfs them.

> The reader is shipwrecked by the deliberately contrived arrangement before him. The print does not serve as a navigational guide; on the contrary, the waves and the foam are the white space which directs him and frees him to read. (146)

Hopeless to recuperate the "fil conducteur" that made sense of this arrangement to the author, the reader is forced to sink or swim, engaging actively in the enterprise of construal that, within the medium prepared by the poet, exposes the reader first-hand to the creative struggle that is poetry; "The reader undertakes the layout not to reconstruct the poem but to experience Poetry" (150). In this sense, La Charité identifies the blank space with poetry itself, with the freedom to experience the very "coherent principle of the universe", unencumbered by an authorial intention: "Only the space of the unprinted permits the reader to impose order on the objects before him, dissemble them and reassemble them in a cataphorical pursuit of meaning" (151).

This means that for the reader the meaning of the poem is synonymous with the encounter that occasions the construal. [?] More than with many other poems, the interpretation of Un coup de dés begins and ends with a retelling of the process of encountering it.

On the first spread, the phrase "UN COUP DE DÉS" appears alone, centered at the upper right, much as it would be on a title page, both introducing and initiating the poem. If a reader did not know to expect a radically different kind of text, it's more likely at the second spread that she would first really see the difference. Distinctions between the title and the body of the text blurred, the opening line resumes, in text dropped down to below the mid-line of the recto of the following spread. Where the empty space of the first spread was still somewhat in keeping with conventional page layout, its striking continuation in the second opening announces another purpose to the mise-en-page and challenges the reader to follow both visual and verbal developments as the poem unfolds. Both the continuity and the dashing of expectations that occur here visually are reinforced

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in the text by the word "JAMAIS", set in caps of the same size as the opening phrase, rhyming with it ("jamais" with "dés"), and yet jarring as a note of contradiction in the still undivulged train of thought.

Compounding the ambiguity this abruptness generates, a parenthetical phrase begins towards the bottom of the right-hand page, in smaller (12pt) caps. This phrase, "QUAND BIEN MÊME LANCÉ DANS DES CIRCONSTANCES / ÉTERNELLES", contrasting with the brevity and initially-presumed clarity of the first phrase, draws the reader further down a stream of semantic slippage that ends, apparently without resolution, at the bottom of the page where the words "DU FOND D'UN NAUFRAGE" rest on or near the lowest printable line. Both verbally and visually, this announces a key theme of the poem: shipwreck. With the text concentrated on the lower half of the right-hand page, an apparent optical weight reinforces the sense of depth and pressure on top of "NAUFRAGE", and, given the disconcerting shifting of semantic ground, even in the short scope of this passage, the word seems proleptically to embody the anxiety of confusion and foundering that from the outset threatens the enterprise of meaningfulness which the poem enacts.

This apparent drowning is redeemed, provisionally, at the next spread, where, maximally defying the gravities enacted in the previous page, the word "SOIT", in capitals just noticeably larger than those of NAUFRAGE, appears at uppermost left of the left-hand page. Soit is either an optative, or a conditional of the verb être, "to be", and at a purely grammatical level poses possibility and a renewal of semantic input, contradicting the apparent finality of shipwreck on the previous page. Here, finally, after "SOIT", the type turns roman lowercase, and assumes its baseline size, not different from what would be used for conventional literary printing. The text covers much of both pages, and assumes a density that marks a far pole from the isolated presentation of the title text "UN COUP DE DÉS". Here too, however, placement of text seems to follow its own logic, at first seeming to defy gravity in that it occupies only the upper half of the left-hand page, before sliding over the gutter to the right-hand page, and describing in that motion the desperate effort of an abyss to "dress its flight". As the lines of text move ineluctably downwards, however, and cross to the right-hand side, the gravity again seems to assert itself, and a denser concentration of lines follows, one below the other to the bottom of the right side of the spread. As these lines accumulate downward, the floating character of the lines gives way to a piling character, adding first pressure again and then within that, a textual gravity that echoes the gravity that dominanted on spread 2. We begin to see, against the void of blank space, how language here takes on a new, or fuller, form, "matter arranged in systems or masses or trailing lines" as Valery put it. (Collected 265).

As we see, wading into the peculiar waters of this opening passage, and even more when we study the rest of the poem, Mallarmé has come to a poetic craft whose execution requires precise management of how the words appear spatially. His poet's sense of verbal measure, for the rightness of diction and grammar, for the precise sequence and timbre of alphabetic sounds, developed in his working with more conventional forms, gets augmented in Un coup de dés to include a sense of visual measure and rightness in the spatial placement of the language; "C'est à des places variables, près ou loin du fil conducteur latent, en raison de la vraisemblance, que s'impose le texte." He is clearly writing with space, in a way not supplementary to language but that amplifies it from within. In an interesting comment, La Charité observes: "Space does not record experience; it expands it…" (36). So, the gaps and intervals are not so much semantic counters in their own right, as potentiations of the semantic latencies in the language. The question remains, however, what we can make of the space in positive terms. What is the "vraisemblance", the "verisimilitude" that guides Mallarmé's decisions of placement? To what, other than the oceanic indeterminacy La Charité insists on, does the space correspond?

When he introduces Un coup de dés, he explains its arrangement as a form of scoring. He directs the reader to link the spatial impressions to aural (or inner-aural) effects, focusing the new and potentially unruly implications of the visual presentation clearly towards a musical and vocal significance:

> …there results, for whoever would read it aloud, a musical score. The difference in the type faces, between the dominant motif, a secondary, and adjacent ones, dictates their importance for oral expression, and the range or disposition [portée] of the characters, in the middle, at the top, or at the bottom of the page, marks the rising and falling of the intonation. (*Collected* 121)

Much of Mallarmé's effort in fashioning a new kind of poetry concerned the ambition, common to the 19th Century, to raise poetry to the condition of music.5 The innovation of a graphical scoring, redeploying the units of language as notes and bars in an orchestration at once musical and linguistic, is already a bolder realization of this ambition than anything that proceeded it. But it is the fluid abstraction of his language, its resistance to being fixed in determinate grammatical segments, its irreducibility from a state of movement and integral on-goingness, that constitutes the real accomplishment. Compared to the work of another musical poet, Swinburne for example, whose major accomplishment was to recuperate in contemporary verse the intenser lyrical potentials of ancient poetry, e.g. the difficult hexameters of sung Greek verse, Mallarmé managed to incorporate a measure of music "as such", a musicality favored precisely on the basis of

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its difference from, and transcendence of language, and one that necessarily transforms language to a new intermedial condition through the fusion.

But for Mallarmé, the achievement of an aesthetic ideality on the order of music is sought in the name of poetry, not for the purpose of escaping it or compensating its faults. If he is seeking to amplify the poem, "chant personnel", to something analogous to the symphony, as he says at the conclusion of his Preface, poetry remains the "unique source", the meta-art whose cult he keeps unwaveringly, and to which he can claim to add music as a surplus entitlement, a neglected dimension that fulfills poetry's rightful function rather than usurping that of another art. And the rightful function it fulfills, expressed in the notion of a verisimilitude guiding Mallarmé's novel way of distributing text upon the page, is the performance of thought, or mind, or intellect.

The "chant personnel", poetry in its traditional, lyric mode, Mallarmé classifies as the "empire of passion and dreams", whereas this amplified, symphonic mode he designates for "treating…subjects of pure and complex imagination or intellect." He refers to his method as an "emploi à nu de la pensée", an application of thought in its raw state, and says the scoring results from that. The result is not a series of verses, but the idea in "prismatic subdivisions", whose placement in graphic space is meant to correspond to an order sensed on the conceptual plane. In explaining the value of the spatial distribution in establishing dynamics of pacing and inflection, he refers to the spacing as a "distance copiée qui mentalement sépare des groupes de mots ou les mots entre eux." The distance on the page copies a distance experienced mentally, a separation at once spatial and temporal, entailing the "retraits, prolongements, fuites" that carry over into the typography, and in which Valéry reads the expressive miracle of Mallarmé's spatial experiment, the visibility of "expectancy, doubt, consternation" and other ineffables, carried entirely in the gaps and absences surrounding text.

The Poetics

A lot can, and must, be said to elucidate the visual poetic principles at work in Un coup de dés. But I think the issue can best be approached by starting with the one particularly concise statement of practical poetics included in the Preface. The strategy behind the visual dimension of his poetic language, at least as expressed there, consists essentially of two interrelated isomorphisms, two specified matchings of pattern that serve to link the visual markers to their latent and intended acoustic performance, and to the semantic inflections added by that voicing, whether out loud or under the breath. These two isomorphisms, while not constituting a definitive, consistent system, are nevertheless

a valuable guide for understanding Mallarmé's aesthetic strategy in this poem, and in the new genre it inaugurated. In their formulaic statement, and in their execution in the poem, these two principles can be seen historically as the first instance of an explicit visual poetics, and the point of departure for the long tradition of spatialized poetic practice.6

Taken from their context near the middle of the Preface, the isomorphisms appear each in one short sentence:

1: La différence des charactères d'imprimerie entre le motif préponderant, un
    sécondaire et d'adjacents, dicte son importance à l'émission orale.

and

2. La portée, moyenne, en haut, en bas de page, notera que monte ou descend
    l'intonation.

For labelling purposes, they can be abbreviated this way:

1. type : hierarchy of enunciation

2. "portée" : rise or fall of intonation

Mallarmé insists on the specificity of these principles in his poetic strategy, stating that "In a work lacking in precedents, only a certain number of very bold directions, infringements, and so forth, forming the counterpoint to the prosody, remain at the elementary state." As Johanna Drucker, notes, he intentionally limited his typographic variables to a strict minimum: "In spite of his stated love of poster art, he restrained his choices, keeping to one typeface [Didot] and to text sizes, rather than those large letters used for display" (Drucker, Visible 52-3). He appears cautious in setting out on a new track, not to extend too far too soon, until the viability of the project is established. We know that Mallarmé wanted to do what he did with Un coup de dés on the scale of a book, "The Book" or "spiritual instrument" he imagined in his many notes on the subject (Igitur 266). This was research – for himself, for the lyric tradition, for Art – and he was careful to proceed methodically and to show his work.

If we look again at the opening passage from Un coup de dés we discussed above, we can see to what extent the key he gives us for it fits:

Type

There are three7 typographic variables that Mallarmé brings into play in Un coup de dés, three differences in the "characteres d'imprimerie", coding the lines into rhetorical channels, and marking each line's importance in the oral transmission. These variables

are:

1.	CAPS/lowercase,	2. roman/italic,	3. SIZESIZE.

The opening theme, "UN COUP DE DÉS", and its continuation "… JAMAIS… N'ABOLIRA…LE HASARD", is distributed a chunk at a time through the poem, appearing on the 1st, 2nd, 5th and 9th openings respectively. It provides both the initial thrust of the poem, and an organizing thread which supports the reader in his/her difficult task of preserving coherence as it progresses. These are the "arrets fragmentaires" around which Mallarmé says the fiction, the text as it builds up in the mind of the reader, will flower and dissipate. Elsewhere in the Preface, he speaks of a "fil conducteur latent", (a "latent guide wire" or "thread") in relation to which all the other lines have their position and their significance. At an explicit level this sentence has an analogous function, serving as a guiding thread for the rest of the work. He refers to it as "capital", meaning foremost in importance, and so the typographic choice of caps establishes a tautological rightness. Not that every word-meaning or thought can be so neatly linked to its associated letterforms, but in the homonymy of the word "capital", we see the logic his scoring is based on. The type is chosen to code separate registers of the text, according to importance, or perhaps more accurately, to the hierarchic order of statement.

> While poetry regularly makes use of recurrent themes, suspended and fragmented elements which reconnect in associative processes, one of Mallarmé's unique contributions is this visual marking of themes to force the connections. (*Visible* 53)

When the poem's opening phrase is interrupted after the word "JAMAIS", we encounter the first typographic change. In smaller letters, still all caps, the note of definitive certainty – NEVER – is undercut by a wordy elaborating phrase: "Quand bien mÊme lancÉ dans des circonstances Éternelles", and then further down, "DU FOND D'UN NAUFRAGE." Both graphically and informationally, the new lines are subordinated to the dominant thread they modify. The relationship between theme and qualification, fragment and amplification, which determines one of the poem's basic counterpoints, is introduced here, graphically keyed as Mallarmé prepares us to notice, in the comparative typography of the lines. As a unit, this spread, number 2, has that relationship – assertion/ qualification -- as its fundamental structure, and the typography works to highlight that.

The next spread starts at upper left with the single, capitalized word, "SOIT", one step up in size to 14pt, followed by a long digressive flow introducing the small lowercase lettering that constitutes the texts baseline type size; only one spread, 9, has smaller

type. Distinguishing the "SOIT" from the "que" phrase that necessarily follows it in this standard construction highlights the word as a distinctive act, cancelling, as I said earlier, the apparent finality of the word "NAUFRAGE", suggesting possibilities, and resuming the elaboration of conditions, despite which, the throw of dice will never… .

Other pages show structures and alignments of thought much more complicated, for example, spread 9, which uses 5 different type size/style combinations in an arrangement that covers most of both pages of the opening. There is italic type in 3 sizes, one of them all caps, and roman capitals in two sizes, including the next and final installment of the dominant motif, in large roman type: "LE HASARD." On this spread, the hierarchy of "importance" is harder to grasp all at once, because the variation is greater, but at the same time we feel its influence much more directly.

One important function of the typography that we see clearly demonstrated here is its division of the text into channels. On the one hand this codes the relative importance or hierarchic role of the different lines as we come to them, providing a kind of counterpoint within the reading. On the other, it invites us to skip intervening lines of different type to read all the text of a certain style together; as La Charité says, it multiplies the combinatorial possibilities of the reading. Thus, following principles of visual organization that are standard in Western graphic design, and reconfirmed by the verbal parallelism, we almost inevitably read "*C'ETAIT LE NOMBRE CE SERAIT* LE HASARD". True to Mallarmé's formula, reading this way does not distort the text so much as eliminate subordinate detail. Reading it in strict order of the lines does not so much correct the reading as amplify it, folding it out to reveal a texture of nervous qualifications inside. Within the subordinate portions, the relationship of major channel to minor is repeated at a smaller scale. Following "*LE NOMBRE*", comes the appositive phrase "*issu stellaire*" and a sequence of conditional phrases anxiously speculating on the nature and action of "*LE NOMBRE*", which, "were it to exist", would turn out to be chance, "Le Hasard", that which the throw of the dice will never abolish.   Another function of the intensification of typographical contrasts at this point, including the widest range and greatest variety of the whole work, is as a kind of symphonic crescendo, all instruments playing, before the title sentence at last comes to its term.

The isomorphisms Mallarmé specifies as clues to reading the poem, and to tracking its complex semantic texture, seem accurate as far as that goes, though he leaves his account of the experiment very thinly depicted. As with his poetry, so with his explanations, not too much at once. We see this in particular when we examine the second isomorphism, establishing the linkage between "portée" and whether the intonation is to read as falling or as rising.

Portée

"Portée", my dictionary tells me, translates as:
"*f.* bearing; span; litter; brood [animaux]; projection; reach; scope; compass [voix]; import, comprehension; stave (mus.); *à portée de la main*, within reach, to hand."

Henry Weinfield, in his translation of the Preface, renders "portée" as "range or disposition", trying, it seems, with the first word to capture the complex temporal and spatial suggestiveness of the term, while with the second seeking a perhaps more useful concreteness with the notion of physical placement or positioning.

It is a richly suggestive term, uniting in its meanings physicalities of voice and hand, a conceptual sense (import/comprehension), technical reference to the stave of musical notation, and the notion of animal blood lines, generational, and hence genetic projection forward in a line of descent or transmission. It is a term well suited to the constant demand Mallarmé makes on his words to perform polysemous functions. The term is also rich in spatial connotations, describing arcs of projection or progenesis, but also any span, reach or scope. Yet, in his Preface, Mallarmé is only asking the reader to notice the lines' relative vertical placement ("in the middle, at the top, or at the bottom of the page"), and to read that as marking whether "the intonation rises or falls" there. All the other directions and qualities of movement the text goes through are left out. He doesn't mention the overriding down-right slope that characterizes the implicit physics of his pages. That, presumably, and other features of the spatial ordering fall into the category of features not "outre la penetration" of the "lecteur habile".

Especially on the pages where the typography reaches its full complexity, it becomes clear this formula is not complete. On the first opening of the poem, consistent with the standard placement of titles on a title page, the words "UN COUP DE DÉS" appear centered in the upper third of the right-hand (recto) page. On the next spread, also on the right-hand page, the next word appears left-justified at the vertical middle of the page. The word, at least in my ear, does read with a falling tone, a tone it might not have, for example, if the word had appeared instead at the top of that page, level with, or rising relative to the words it follows. The placement clearly plays some role. On the other hand, the alternation from a high, acute "é'" sound ("dés") to the graver vowels of "jamais", where even the rhyming "-ais" sound is flatter and deeper in tone than the sound it echoes, this also has its impact on the intonation.

At the second change of type on this spread, where the key words in large caps give way to a longer "secondary" string in smaller, still capitalized letters, the intonation again appears to go down: "QUAND BIEN MÊME LANCÉ DANS DES CIRCONSTANCES/ ÉTERNELLES". That

this line appears below the "JAMAIS", already half-way down the otherwise empty page, is certainly one factor in this; but there are others. Again, the vowel tones themselves ("COMME BIEN MÊME") are low relative to what precedes them, and the obviously subordinate grammatical role of the line, compounded by its wordiness, losing the automatically more elevated effect of words uttered in isolation, adds further to the sense of falling or lowering.

The third and final phrase on this opening, "DU FOND D'UN NAUFRAGE", attenuates the subordinate clause even further, appending itself with a delay two lines further down, near the bottom of the page, and, perhaps even more clearly than in the previous cases, confirms Mallarmé's formula. Again, however, its relative vertical placement is only one factor in the lowering tone. The line comes late, as an afterthought, diverted several steps from the trajectory of the phrase that launched the poem. Semantically it invokes a sinking, and locates itself at the geographic bottom of the poem's universe. In the inner ear of the reader, asked to continue holding the chain of words, now on its third or forth digression, open to a grammatical conclusion, the phrase enacts a running out of breath, a stalling in the linguistic momentum through attenuation. We are left at the bottom of the page, with an image of shipwreck, and the sound of a sentence that has fallen short.

When we turn to the next spread and see "SOIT" at uppermost left, the role of vertical placement shows much more clearly. The "SOIT" rises in the voice, reopening the extended subordinate clause from the previous page, but with a fresh impetus. When the text then turns to lowercase, and row after row of lines in small type descend the pages, drifting inexorably to the right and downward, we see more fully how far Mallarmé's formula applies. As the words move lower and lower, a sense of depth accumulates around them, as if in a medium whose density pressurizes downward. Some combination of the vertical positioning and the rhetorical deferment, each phrase later and later in an enunciation whose original sense and impulse recedes as the text advances without syntactic closure, generates the deepening of tone Mallarmé mentions. But so much more is going on in the vocal effects of a passage like this, that we are forced here to try filling in some of the blanks Mallarmé has left in his Preface describing them.

One major factor at work in how these lines strike the ear, a factor the term "portée" easily extends to include, is their indentation, or relative left-right positioning. There is a linear, horizontal flow enacted in the space of these pages, that interacts with the vertical one. Since in Western languages we read left to right, this movement is inherent in all writing. But by variably indenting each line of text, Mallarmé calls this movement into a more dynamic play. It is as if the left edge of the text (whether relative to the actual margin of the page, or to the *de facto* margin established by previous indentations where the text

is not left-justified) carries a standard valence of "beginning", while the right edge has a valence of "ending". In so far as a new line starts to the left of that which preceded it, the movement "resets", either pulling the movement of the preceding line up short, or simply letting it run out, depending on the pace of the utterance. On the one hand this left-right gradient seems to repeat on a smaller scale the distinction in intonation Mallarmé assigns to the relative vertical position of different lines -- returning to left raises the intonation as the breath and the voice prepare to begin a new utterance, while continuing to the left cues the voice to add the next segment to an ongoing utterance, extending the breath closer to its limit, and consequently lowering the tone. On the other hand, the left-right positioning plays counter to the effect of lines descending the page. Where Mallarmé observes the conventions of top-to-bottom lineation very strictly, never placing a word or line of text higher than the text that precedes it (except when starting a new spread), the choice of indentation allows him to counterpoint the downward movement with a relative lift in tone as a line starts over at left, or to further the falling of the tone as fragments of text extend further and further to the right.

Johanna Drucker draws attention to this property of movement and momentum in the poem. She notices that the italic script used for the smallest text lends movement to those lines, in contrast to the upright roman text, even more stationary in capitals. As an indication of how consciously Mallarmé considered these variables, she points out that in preparing the deluxe Lahure edition, the proofs for which give us our best evidence as to how Mallarmé wanted the poem to look, (though the edition itself never appeared in print), he asked the printers to find him a lowercase italic "*f*", "in which the top and bottom curls were not symmetrical" (*Visible* 56). Such a letter, in which the horizontal bar, called an "arm" (Woolman/Bellantoni 8), is above the midpoint of the vertical stroke, or in which the "terminal" (or upper end) is more tightly curled, and less weighted than the "tail" (or lower end), would reinforce the sense of rightward linear flow. In a symmetrical letter, where the balance corresponds to a sense of repose, the right-pointing terminal and the left-pointing tail cancel each other out.

Observing the dynamic of the lines on the poem's third spread, Drucker notes the interaction between the linear movement of the text, in this case set in small roman type, and the dual constraints encountered by that movement, namely the lateral margins of the page and the vertical movement as the lines sequence downward.

> The first three lines "SO BE IT / that / the abyss" ("SOIT[8] / que / l'Abyme") make a rapid descent, one from the next, emphasizing the downward fall, and then have that movement slowed in the continual movement of the next eight lines simply by the closing up of space." (*Visible* 56)

The argument of the text at this point, particularly difficult to fix in a paraphrase or narrative summary, plays on contrasts of flight and falling. The protagonist is the "abyss", which through almost imperceptible mutations and reflections is both the void and what struggles to stay aloft within it. It is depicted both as a receptive space spread out beneath an incline, and in the same breath, as something with wings struggling to stabilize its flight and avoid falling in. The interaction between the left-right drift and the vertical descent of the lines mimics here the struggle narrated in the text. The phrase "plane desesperement", describing the Abyss as "desperately planing", comes near the limit of the rightward movement. The words "d'aile / la sienne / par" then drop as if the flight were faltering or the bird had finally caught itself and hung for a second between flight and falling, or between falling and flight. The suspended phrase then continues on the far side of the gutter: "avance retombee d'un mal a dresser le vol / et couvrant les jaillissements / coupant au ras les bonds", in three steps to the extreme edge of the spread, at which point the text shifts several steps back to the left, countering the otherwise unhindered movement to the right, with the line "tres a l'interieur resume". By this point, as I read it, the careening dive is finally broken. The lines that follow are distinguished from those on the left-hand page by their greater length, and by the fact that the indentation regularly shifts back to the left, cancelling any impression of either lateral motion or vertical falling. The imagery shifts here to (water)spouts, to the sail on a listing ship, whose motion is mirrored by the yawning of the waters that track it from below, ready to engulf it should it tip. The tension between abyss as hollow void and as principle of buoyancy or flight is recast in a new image now, handed off semantically through the analogic pairing *wing – sail* to a quality of movement more of waving or teetering. The anxiety of flight over an abyss of air shifts to that of sailing and the threat of capsizing into an abyss of water, while the grouping of the text shifts from an airy spaciousness to a density reminiscent and suggestive of water. The next spread will thematize the new motion as dramatically as this one thematizes its own, and the "portée" of the lines will again play its dual role.

A useful way of thinking portée as a concept is in terms of lines of arc, the span extending from one segment of a thought or image to the next, as well as the separations between these segments and the coordinates of the page: margin to the start of a line, start of one line in relation to the last, or the next. Mallarmé's more restricted use of the word in the Preface, linking it to a lowering in intonation as lines follow each other vertically, identifies it with a decay in vocal energy as the enunciation proceeds, a subtractive value in the lateness of a line's appearing. His pages are noticeably devoid of devices for re-charging the vocal force, such as anaphora or rhythmical structures that build momentum through repetition and the preparation of exclamatory phrases. Aside from the function of type

in adding emphasis here and there, the lines are characterized by "retraits, prolongements, fuites," "withdrawal, extension, and evasion", enacting in weakening spurts the relentless entropy behind the poem's hopes for order. I think it is a natural extension of the concept to apply "portée" to the finer-grain questions of left-right placement and spacing between word clusters, elaborating it further as really Mallarmé's main technical term for explicating the spatial detail of his visual poetics.

Portée in this sense is experienced most immediately in the movement required of the reader' gaze to link one segment of text to the next, and so follow the poem to its conclusion. This visual tracking, generalizing the minuter input of separation between segments, gives rise to a more global experience of space that is truly new to the literary text with this poem. Glancing from one word or cluster to the next, making adjustments for type size and the length of lines, projects a dimensionality within the conventional flatness and linearity of the page. Valery, in the passage quoted earlier, sees this as "enriching the literary domain with a second dimension," implying both that poetic text previously had only one dimension, and that a single new one was added by Mallarmé's experiment. Franz Mon, in his "Poesie der Flaeche" also speaks of the two-dimensionality of Mallarmé's text. He explains the one-dimensionality of conventional text as a situation where any spatial information in the placement and material form of words is reduced to the single value of a linear, temporal sequence, allowing the "one-after-another of the lines" to translate directly into the "one-after-another of speech", "without the next-to-each-other of the fixed written sign contributing anything" (Mon, *Essays* 78; my trans.) And in his analysis of the spatiality of the new reading, he lists only the two-dimensional relations of center, edge, over, under, right and left.

While a rhetoric of 2-dimensionality conforms to our commonsense ways of talking about text and graphical space, in an important way it is inadequate to the spatiality we experience with *Un coup de dés* and that Mallarmé opens as a legacy for poetic research. First of all, at a purely philosophical level, it is worth remarking with Buckminster Fuller, that there is no such thing as single dimensions: "There can never be any less than four primitive dimensions" (Fuller 128). Perceptually, we discern relative depth in a flat surface even if we logically disregard this, and in a text with such pronounced contrasts of letter size and positioning as *Un coup de dés*, the optical cues clearly resist our resolving everything onto a single, flat plane. Johanna Drucker acknowledges this when she comments: "Thus the changes in size create an illusionistic space as well as a graphic and abstract *espace* within the white blankness of the page" (Drucker, *Visible* 55).

From another perspective, the dynamic aspects of the new spatial reading, the fact that the experience of reading is inseparable from the experience of movement, renders

the text spatial in a real, four-dimensional way. By many accounts, space as such is a product of movement, generated in the organism's crucial effort to coordinate sensory inputs with motor control. In this view, as neuroscientist Alain Berthoz puts it, "perception is simulated action", meaning that the experience of space even in a detached, stationary situation like reading comes about because looking from one place to another involves kinaesthetically modelling an equivalent bodily movement (Berthoz, 10-21). This is the science behind an argument like that of Dee Reynolds, that "kinaesthetic empathy" raises the reading of *Un coup de dés* to the dimensionality of the body:

> Through éspacement', the reader can become involved in an experience of kinaesthetic empathy which involves imaginary identification, through the body, with the dynamics of the text. This does not mean that we apprehend the text itself literally or even figuratively as a body, but that we respond as animate, embodied beings to its dynamics. (Reynolds 7)

While the kinaesthetic dimension of *Un coup de dés* has been conspicuously neglected by critics other than Reynolds, and does not figure prominently in Mallarmé's own writing, it is nevertheless a crucial aspect of the visual poetics to which his work gives rise. At a somewhat superficial level, Mallarmé's interest in dramatic typography, as seen primarily in ad posters, concerned the potential for a visceral, bodily impact in reading; "des lettres grasses qui s'imposent et entrent d'elles-memes dans les yeux", as a contemporary noted (Cohn, 480). More significantly, Mallarmé saw substantial analogies between the musical movement of concepts in his poetry, and on his pages, and the literal movement-art of dance, as Reynolds demonstrates at length in her essay. While it remains latent for the most part, I think the implications are clear that Mallarmé's spatialized writing corresponds to a notion of meaning that must ultimately involve the whole body.

> Je crois que pour être bien l'homme, la nature en pensant, il faut penser de tout son corps, ce qui donne une pensée pleine et à l'unisson commes ces cordes de violon vibrant immédiatement avec sa boîte de bois creux…il faut cela pour avoir une vision trés-une de l'Univers. (Mallarme, *Igitur* 352)

As I will argue in later chapters, this embodied, kinaesthetic dimension represents the greatest area of unrealized potential in the visual/spatial poetics Mallarmé engendered.

Mallarmé's "formula", focused in the two isomorphisms we have explored in this section – (type codes the importance of an utterance, and portée codes intonation) – and the innovative spatial technique it speaks for, present the nugget of a visual poetics, understood as a technical theory of visual poetry. This applied poetics takes its place within the broader theoretical framework of his speculations, always metaphysical in tendency though showing an incisive material awareness, into language and 'The Book'. As

Johanna Drucker explains in *The Century of Artists' Books*:

> The idea of "The Book" became a guiding principle for Mallarmé, who used it as the foundation of his poetics. This concept of "The Book" was the basis for imagining a form of representation which would be equal to the full experience of the world and also transcend its limitations. (Drucker, *Century* 34)

The same year *Un coup de dés* appeared in the journal *Cosmopolis*, 1897, a collection of his prose writings, including the essay "Quant au Livre" ("Concerning the Book"), was published under the title *Divagations*. In the key section of that essay, headed "Livre, Instrument Spirituel", Mallarmé states a central proposition of his poetic project: "Tout, au monde, existe pour aboutir a un livre" ("Everything in the world exists to become a book") (*Igitur* 267); a book he saw it as his job to write. The Book was to be an "explication orphique de la Terre"[9] (Cohn 478), "architectural et premedité", a definitive crystallization of reality and all meaning within a perfect universe of language. It was the strain of trying to articulate such a totalizing vision that guided Mallarmé's experimentation, extending the complexity of his language as a measure of its carrying-capacity, and eventually necessitating the "espacement" he resorted to in his last poem, which, he seems to have felt, had finally prepared him to write the Book itself.[10] Space, the history of Mallarmé's poetic development tells us, is an essential element both in capturing the multivalent play of thought, and in manifesting the transcendent principle of order and meaning that is cosmos. Its (re)introduction into the repetoire of poetry was vital to making the ultimate accomplish of poetry possible, the "hymne, harmonie et joie, … des relations entre tout" (*Igitur* 267).

3.   Material Metaphysics and the Poetics of Presentation

In *The Visible Word*, her study of typography in the early modern avant-garde, Johanna Drucker notes that the concept of "figuration" embodied in *Un coup de dés*:

> belongs properly to the *presentational* rather than to the *representational*—to that order of visual and verbal manifestation which claims to bring something into being in its making, rather than to serve to represent an already extant idea, form, thought, or thing. (Drucker, *Visible* 59)

Visually, the shaping of the text does not depict or portray. Instead, it registers as an irreducible, concrete fact, and has semantic import principally through the modulation

it gives to the text. It supports the text in its presentation, even at the level of graphic analogy, but on its own, as visual form, does not represent.

This view contradicts the wisdom of commentators who have often found iconic shapes in the poem, and tried to apply notions of the ideogram to its interpretation. Robert Greer Cohn, for example, whose readings have had an enormous influence on several generations of Mallarmé scholarship, sees specific, intended imagery in the layout of each spread. He argues that the poem, being an "orphic explanation of the Earth", follows a strict conceptual framework, and he identifies each spread with a particular "level in the hierarchy of sciences, extended through several stages of the development of art" (Cohn 34):

> D'abord la metaphysique ou l'epistemologie, avec quelques suggestions d'astronomie, Pages 1 et 2; les sciences physiques, Page 3; les sciences biologiques, Page 4; les sciences sociales, Page 5; l'art primitif et rituel, Page 6; le theatre (art public), Page 7; la poesie (art prive), Page 8; la synthese de tous les arts, Page 9. Avec ceci, c'est le Retour vers l'ocean vide de tout realite, Page 10, et l'espace solitaire, Page 11, ou demeure une unique constellation comme le dernier amas de realite, le Multiple retournant a l'Unite don't il est issu.

For each of these, he then says the reader should be able to discover in the shape of the text a corresponding ideogram. For example, on page 3 – (by page, Cohn means spread or opening) – he sees the Big Dipper, or a boat and its sail, or a pen in its inkwell. On spread 6 he sees a whirlpool, on 7 a hat with a feather in it referring to Hamlet, by way of an allusion in the image of the "bitter prince of the reef", and on 8 the Y-shaped tail of a vanishing mermaid (Cohn 35). How these so-called ideograms correspond to the level of science or art profiled on their respective spreads is one question, but a more pressing question involves confirming that such ideograms are there in the first place. I, personally, have a hard time finding any of those just mentioned, with the exception of the Big Dipper image, and possibly the variant that sees in the same figure a pen and inkwell.

The only substantiation Cohn provides for reading the poem's visual form this way is in a footnote, where he refers to a letter Mallarmé wrote to Andre Gide in 1897, giving "the key", to two of the ideograms. The passage in question, which Cohn cites in an appendix, reads as follows:

> La constellation y affectera, d'aprés des lois exactes, et autant qu'il est permis à un texte imprimé, fatalement une allure de constellation. Le vaisseau y donne de la bande, du haut d'une page au bas de l'autre, etc…; car, et c'est là tout le point de vue (qu'il me fallut omettre dans un "périodique"), le rythme d'une phrase au sujet d'un act ou même d'un objet n'a du sens que s'il les imite et, figuré sur le papier, repris par la lettre à l'éstampe originelle, n'en sait rendre, malgré tout, quelque chose. (Cohn 485)

The ideograms this letter is meant to point to, the constellation and the listing ship, occur

on spreads 11 and 3 respectively. Spread 11, with the words "UNE CONSTELLATION" in the middle of the right-hand page, refers directly to the Big Dipper by invoking the "Septentrion", which as Henry Weinfield explains in his notes, "is the seven stars of the Dipper that point to the North Star" (*Collected* 274). The Septentrion is what makes the Big Dipper an arrow for easily locating the North Star, the single most important resource for navigating on the open seas. The significance of this image, relative to the poem's central problematics of drift and shipwreck, more than explain why it makes sense that it should appear there as a visual image. And, if we see it on spread 11, I think we are forced to see it also on spread 3, which Cohn does, and on spread 10, which he doesn't. Without significantly more distortion, I can find it on spreads 7, 8 and 9 as well.

While I don't question the plausibility of a Big Dipper ideogram, or "hieroglyph" (Weinfield), appearing in the text, especially on spread 11, I do question the notion that Mallarmé was concerned with iconic shaping in this way. Even in his letter to Gide, I'm not convinced that his reference to the "constellation" concerned a definite, mimetic figure. He says, to paraphrase, that the constellation will produce [*affectera*] fatally an allure of constellation, "*d'aprés des lois exactes*, et autaunt qu'il est permis à un texte imprimé," (according to precise laws, and as far as possible for a printed text). Is Mallarmé here assuring himself, or Gide, that the readers will not fail to recognize his ideogram of the constellation? Surely simple iconic resemblance, even a little "off", is enough for that, without having to worry about precise laws to bring the point home. And while the rigid constraints of letterpress printing no doubt limit what you can do pictorially, surely he could have made the resemblance just a little clearer, e.g. by more closely respecting the proportions of the famous constellation; -- if that was in fact what Mallarmé was after. By invoking the "lois exactes", Mallarmé suggests there's something substantially more complex at work here than simply shaping text into a pattern, and in the phrase "allure de constellation" we sense he means something much less literal. I think what we are dealing with here might very well be a reference to the constellation as a verbal figure, planting suggestions for the reader to consider hidden relations and poetic groupings among the fragments.

As for the second image referred to in the letter, Mallarmé is much more direct in describing the presence of the ship as a figure in the text: "The vessel lists there, from the top of one page to the bottom of the other, etc…". But when we look to the text, it is clear that there is no literal image of a ship. Indeed, if Cohn claims that both the Big Dipper and the ship are figured on spread 3, it's hard to imagine how there could be. What we see instead, at best, is a diagrammatic suggestion of the ship's *path*. In his description to Gide, Mallarmé is clearly referring to the ship as a verbal figure, and tangentially to a visual

correlary of its movement.

A passage like this brings us back to the heart of Mallarmé's abiding paradox. While on the one hand he develops a bold visual poetics that both breaks all conventions of literary printing and avoids the easy pictorialism of pattern poetry, on the other he rejects conventional modes of representation, not in favor of a more direct treatment of things, but because even the late-romanticism of his era was too direct, too materially focused for his tastes. The paradox enters where this striving for the virtual and disembodied, by some unheeded contradiction in his own development, leads him to the very material repertoire of *Un coup de dés*, a work that will inspire poets in their all-out rejection of Symbolism and representation, as well as others who will continue the subtle line of investigation, beyond distinctions of form and content, that Mallarmé pursued toward the end of his life. "Antimaterial though he may have been in his intentions, his means, in this work, suggest the possibilities for a materially investigative practice" (Drucker, *Visible* 52).

One way out of, or into, this paradox is to recognize the strain Mallarmé places on his means in practicing this particular brand of verbal alchemy. The effort to represent what Mallarmé is representing, or to represent at a level of abstraction corresponding to his object, requires him to recondition the tools of verbal delivery. This effort, both culminating and putting an end to the Symbolist enterprise in France, corresponded in detail, if not in spirit, to an intensifying focus on presentation in European art. As Peter Burger points out in *The Theory of the Avant-Garde*, the shift to a focus on means precipitated the dramatic changes in artistic climate between the 19th and 20th Centuries.

> Since the middle of the nineteenth century, that is, subsequent to the consolidation of political rule by the bourgeoisie, [the development of art in bourgeois society] has taken a particular turn: the form-content dialectic of artistic structures has increasingly shifted in favor of form. The content of the work of art, its "statement," recedes ever more as compared with its formal aspect, which defines itself as the aesthetic in the narrower sense. From the point of view of production aesthetics, this dominance of form in art since about the middle of the nineteenth century can be understood as command over means; from the view of reception aesthetics, as a tendency toward the sensitizing of the recipient. It is important to see the unity of the process: means become available as the category "content" withers. (Burger 19-20)

I think it would be hard to argue that for Mallarmé "content" becomes a category of less importance as he investigates new material possibilities for his writing. It is sooner because he felt his theme was so important, or because he thought it required a special mode of apprehension to be successfully conveyed, that he resorted to formal innovation. On the other hand his theme or subject matter, the "Word" or Logos and its relationship to Chance, is considered at such a state of rarification that Burger's same analysis might

still apply. Certainly the further Mallarmé's content recedes into abstraction, the more noticeable his formal devices become for handling it.

Another way of looking at it is to say that the theme itself brings him to this paradox. Logos as a subject for poetry, "Le Verbe" as he calls the principle of order and meaning that stands against Chance, and the ideal counterpart to language, which does its work on the temporal plane, inevitably leads the poet to look closely at his means of expression. The problematic of establishing meaning in a meaningless world, or of using the mundane and material to access the transcendent and Ideal, poses language and the tools of representation as the central challenge. And, as Johanna Drucker describes it, this concern with language and meaning was a common path leading artists and writers towards a specifically material practice:

> Formal investigation of signification within early twentieth-century art frequently focused upon an inquiry into the effect of the material properties of the signifier in its relation to the signified. Most specifically, this signals a shift of emphasis from the plane of reference, meaning or content, which had previously dominated representational art, to conspicuous and general attention to the plane of discourse. (*Visible* 61)

While in his earlier poetry, the symbols themselves seem of primary interest -- "l'azure", "les fenetres", "le pitre chatie" or, in a more dramatic mode, the characters Herodiade or Igitur -- worthy of a rich, detailed embodiment focused towards the transcendent meaning they are to serve, in *Un coup de dés* the symbolization itself, language, thought and the production of meaning, become a thematic focus. Words and word groups are handled like counters in an improvisational game, that not by resemblance and not by allegory, but by sheer dint of figural logic and suggestion, and the action of blank space allowing room for creative reader construal, achieves its meaning. Figures like the feather, or the whirlpool, or the "maitre" or the "conflagration" he struggles to navigate or subdue, dissolve in the medium of associations that constitutes *Un coup de dés* to become tropes for our own effort to read the poem, and make sense of the relations between these things. As meanings they vacate the fiction we construe them in to leave us confronting meaning as a general principle, and our own involvement in ordering the tangled threads of language.

The frame for Mallarmé's most important consideration of language, and that extends his attention to regions of materiality he might not otherwise have entered, is his enduring interest in and preparation for "The Book." The engagement with spatiality as a resource for potentiating multivalent language, his study and use of typography as an active component in the writing, and the attention he pays to the material properties brought to language by the daily newspapers and print advertising, all originate in his long-standing

quest to understand, and then produce, The Book. And it is these features that show him, despite, or because of, the unrelenting Symbolism that motivated him, to be in a real sense the starting-point of the material/presentational agendas that figure so prominently in the 20th Century.

In the essay "Quant au Livre", in which his decades of meditation on The Book received their fullest public airing during his lifetime, we can observe something of his intense practical scrutiny of textuality at its material basis. In the section entitled "Le livre, instrument spirituel", in other words where one might least expect it, we see him thoroughly involved with the mundane physicalities of the newspaper. His purpose is to compare the newspaper, "this rag" he calls it and which he saw coming to dominate the reading experience of Europe, with "the book, alone supreme" (*Igitur* 267). While his judgement is clear before the comparison starts, it's important to notice what his criticism is aimed at. There is no blanket rejection on the basis of a vulgar materiality, but rather an appraisal of the potentials, and realization, observable in the different available means.

He expresses clear interest in the novel anatomy of the newspaper as a container for language, acknowledging for example certain "conveniences" for the writer in the practice of juxtaposing various panels of text. He admires on poetic grounds the "bird" format of the pages, with the "extraordinary intervention of the fold", "like a flight gathered up, but ready to spread out". The fold establishes a rhythm, and adds a dimension of mystery to the newspaper, hiding its content in the silence of an inside and the deferral of a reverse. And, of course, there are the possibilities of an alphabet "bestowed with infinity" by the combinatorial of typographical composition (268-69).

He considers the newspaper as a kind of base case of literature, containing all the possibilities of the visible word: "Every discovery of printing is contained, under the name of Press, up to now, elementarily in the newspaper" (268). It is characterized primarily by the elementary state in which it handles language, "revealing, in the first degree, raw, the flow of a text". This observation no doubt contributed to Mallarmé's ability to re-imagine poetic writing, and The Book, as a spatial arrangement, organizing flows of text and reading.

The newspaper's failings lie primarily in its inability, or disinclination, to animate its material arrangements with any spiritual interest. He laments the prosaic "generality of the columns". He criticizes the excess of its material devices, e.g. the chaotic arrangement of articles, where the reader's interest is lost by the time he is able to find where one segment, interrupted by an onslaught of new and unrelated items, continues, lost "among an incoherence of inarticulate cries", perhaps the advertising section. Whereas the book, "by correspondences, institutes a game, we know, that confirms the fiction" (269), the

newspaper uses all the available resources, yet without a worthy or coherent fiction to serve, indeed undercutting the possibilities for such a fiction in its fragmented and utilitarian form. Throughout this investigation, Mallarmé retains his abhorrence for the newspaper as a force of decline in the culture of reading, but he shows a real interest in the unrealized potentials of its form. And he shows himself critical of the book for some of the same reasons, particularly with regard to the visual monotony of the pages: "toujours l'insupportable colonne qu'on s'y contente de distribuer, en dimensions de page, cent et cent fois" (271).

A dimension of Mallarmé's concern with the formal means of literature that brings his study of materiality to a deeper level, where he can begin to assess the actual spiritual function of a given feature, is his concern with the internal dynamics of reading. For example, describing his own text in the Preface to *Un coup de dés* he details the impact of spacing on the pace at which the reader will be likely to read it, adding: "La fiction affleurera et se dissipera, vite, d'après la mobilité de l'écrit, autour des arrêts fragmentaires d'une phrase capitale des le titre introduite et continuée" (*Igitur* 406). Elsewhere, in explaining the musical dimension of poetry, he deploys a notion of the "voix interieur", or "inner voice", which Johanna Drucker reports had currency in late-19th Century philosophy and linguistics (*Figuring* 103), and focuses it towards the role of the mind in the actual performance of the poetry. He writes:

> Un solitaire tacite concert se donne, par la lecture, à l'ésprit qui regagne, sur une sonorité moindre, la signification: aucun moyen mental exaltant la symphonie, ne manquera, rarefié et c'est tout – du fait de la pensée. La Poesie, proche l'idée, est Musique, par excellence – ne consent pas d'inferiorité. (*Igitur* 271)

With such statements, Mallarmé locates his technical analysis clearly within the psychological domain of the reader's response. In interesting ways, such an approach is reminiscent of the psychological reception theory of Wolfgang Iser, whose *The Act of Reading* lays out a detailed phenomenological description of the process perhaps no poet before Mallarmé had observed with such acuity. What Mallarmé calls "la fiction", or the poetic whole as the reader construes it, fragment by fragment in response to the text, corresponds to Iser's notion, borrowed from Roman Ingarden, of the "sentence correlates", or the "portrayed world" which is the sum total of sentence correlates, forming in the mind of the reader an aesthetic object correlated to the text on the page (Iser 110-113). When Mallarmé speaks of "arrets fragmentaires" he articulates a prosodic strategy based on a variable conception of the unit (from one word to an extended line of words) that corresponds to Iser's use of the indefinite word "chunk" to indicate the same

notion, namely "that span of the text which can be encompassed during each phase of reading" (110). Finally, in Mallarmé's beautiful phrase describing the dynamics of reference and suggestion among the words of a text, "ils s'allument de reflets réciproques comme une virtuelle trainée de feux sur des pierreries," we may even detect an anticipation of one of Iser's most sophisticated notions, the "reciprocal spotlighting" required to explain the continual updating of meaning at the level of the sentence correlate, as each new "chunk" changes both what came before and what is next expected in the ongoing effort of construal: "Every articulated reading moment entails a switch of perspective, and this constitutes an inseparable combination of differentiated perspectives, foreshortened memories, present modifications, and future expectations" (116).

Mallarmé shows a concern with the reading situation also at the concrete level of visual scanning. Part of his objection to the monotony of block text in traditional book printing concerns the repetitive strain it places on the eyes. In a passage that has interesting implications for visual poetics, he writes:

> Plus le va-et-vient succéssif incéssant du regard, une ligne finie, à la suivante, pour recommencer: pareille pratique ne représente le délice, ayant immortellement, rompu, une heure, avec tout, de traduire sa chimère. (*Igitur* 270)

While it's anyone's metaphysical guess how a freer mode of visual scanning might, immortally, give the temporary feeling of liberation Mallarmé suggests, it is clear that in considering it he has brought to poetics a very new practical concern. One impact of a non-linear, or non-block mode of arranging text is to treat the reading eye to a taste of the same rhythm and mobility the voice and ear have traditionally enjoyed in poetry. Another, as Virginia La Charité sought to emphasize, is to open the text to alternate reading orders and ways of combining the fragments. Dee Reynolds, in her study of the kinaesthetic dimension of *Un coup de dés* points out the new challenge such options place on the reader's attentiveness, comparing it to dance works of Merce Cunningham where simultaneous actions on different parts of the stage require of the viewer what John Cage calls a "polyattentiveness" (Reynolds 3), precipitating an experience of surfeit identified with the post-modern. A work like *Un coup de dés* that strives to be the "hymne…des relations entre tout" is similarly bound to exceed the reader's, as the poet's, ability to contain it, and the mobilization of visual scanning as an active poetic variable is one more innovation Mallarmé developed for accomodating the transcendant dimensionality.

While Mallarmé does not develop these thoughts fully enough to credit him with a full-blown theory of his own presentational method, they do show the serious

consideration he gave to evolving an explicit poetics that would capture the intricacies of his practical mastery. They are all facets of his life-long study of language, as manifestation of the Ideal, and as a toolset for the trade of poetry. The idea of systematizing such knowledge went against deep instincts of his literary culture, and so despite the detailed focus of his investigations, he, like most poets, left no organized set of principles or catalogue of technique. As La Charité argues: "Mallarmé's poetry does not reveal a system; in fact, the variations of his prose commentaries on poetry emphasize the lack of a system, if not his rejection of one" (La Charité 34). And yet, Mallarmé did harbor a kind of longing for system, a desire to consider the knowledge of language as a whole, to feel it as a special possession, and confirm his intuition that in its fullness it constituted a body of esoteric truths. The idea of language as an occult science, holding in some manner the secret to the mystery poetry seeks to reveal, was integral to his thinking even before the period of his work on The Book. It clearly informs his most important writings.

In 1929, Eduard Bonniot, Mallarmé's nephew and literary executor, published two previously unknown fragments of speculative writing, "D'une methode (plan)" and "La Litterature, doctrine", assigning them the title *Diptyque* (*Igitur* 434-5). The fragments, thought to date from 1865 (or 1870) and 1893 respectively, show Mallarmé contemplating the notion "science of language", and flirting with a formal, theorized approach to poetics beyond what we see even in the essay "Quant au Livre". The first piece, consisting of only a single paragraph, announces two themes that will figure prominently in the later, more detailed series of notes. First is the curious circularity of the phrase, "science of language". Mallarmé notes that sciences have always had language as an external given in which to base their formulations, not, until now, implicated in the reflexive bind of being at the same time the subject of those formulations. Secondly, he notes the generality at which the idea of language is to be taken in this perspective. In this he anticipates Saussure, not only in considering language methodologically from a perspective other than that of historical or comparative grammar, but also in extending the notion to a consideration of sign systems in general:

> [se formuler par le mot] Langage, leur objet, employé seul, l'impression la plus générale d'un moyen d'expression, je ne dirai pas de l'homme absolument, car, modifié par un terme adjacent, tel que le *langage du coeur*, celui *des yeux, langages muets*, il convient a certaines portions isolées de son ame, et nous assimilons ces variations au *langage des choses*, -- mais, l'appliquant momentanement aux donnés que peut atteindre une science, lesquelles sont des notions – d'expression générale de notre ésprit. (*Igitur* 379)

The notion of linguistic science as an instance of language contemplating itself, despite the stricter philosophical tone he takes in addressing it, goes to the heart of Mallarmé's literary metaphysics. On it rests the notion, made explicit in the second

fragment, that ultimately poetics amounts to spiritual doctrine. He writes in the opening section of "La Litterature, doctrine":

> Si! avec ses vingt-quatre signes, cette Littérature exactement dénommé les Lettres, ainsi que par de multiples fusions en la figure de phrases puis le vers, système agencé comme un spirituel zodiaque, implique sa doctrine propre, abstraite, ésoterique comme quelque theologie (379)

In this sketch of an essay he describes a universe where the "Verbe", the "Word" or Logos, can only be accessed through the finite resources of language. The same passage continues:

> : cela, du fait, uniment, que des notions sont telles, ou à un degree de rarefaction au-delà de l'ordinaire atteinte, que de ne pouvoir s'exprimer sinon avec des moyens, typiques et suprèmes, don't le nombre n'est, pas plus que le leur, a elles, illimité.

The spiritual value of those twenty-four letters, therefore, and of the detailed science that explains their permutations, lies in their ability to perform that miracle. The two realms are wholly other – "Ne jamais confondre le *Langage* avec le *Verbe*" (383) – and yet, presumably through the offices of the poet, they can be joined.

His speculations here take the form of an incarnation theology, arguing that "The Word, through the Idea and Time which are 'the negation identical to the essence of' Becoming, becomes *Language*. Language is the development of the Word." Language is also identified with chance ("le hasard"), suggesting a teleogy of the fall of the Absolute from unity into an absence of all coherence on the temporal plane, as well as a spiritual evolution by which that original unity, in the very material of its dispersal and negation, strives to reestablish itself. He speaks of an evolution by which speech ("la Parole") generates "the analogies of things through the analogies of sounds", and by which writing ("l'Écriture") "makes note of the movements [gestes] of the Idea manifesting in speech, and offers them their reflection in order to perfect them" and to preserve them for the future. All this, so that one day,

> leurs analogies constatees, le Verbe apparaisse derriere son moyen du langage, rendu a la physique et a la physiologie, comme un Principe, degage, adequat au Temps et a l'Idee. (384)

The eschatological optimism of this passage conflicts with the metaphysics expressed in *Un coup de dés*. There the notion of the Word revealing itself in language, or in any temporal form, is summarily denied. The throw of the dice, the venture of thought, working in language, to put an end to chance, to establish a determinate principle representative of the Absolute, is both stated and demonstrated to be futile. Every

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thought attempts this, the poem asserts in its final line, and every thought fails. Now, since we are not dealing with a systematic theology here, but with two moments in an ongoing meditation on the themes of chance and the Absolute, there is only so much we can make of this apparent conflict. But one way of attempting to resolve it may help us to see how the meticulous material poetics Mallarmé invested in could be consistent with a "theologie des Lettres".

Un coup de dés, in the mode of an "orphic explanation" of the universe, describes the attempt of thought, meaning science and literature and metaphysics, to impose order on chaos. It is an effort to represent the Absolute with finite means. The "maitre" is the image of this mental enterprise: having forgotten the instinctual maneuver, he relies on an "ancient calculus" to subdue the conflagration. The helm he formerly grasped corresponds, therefore, to rational control over the indeterminacies, his ability to manage a structure that holds him aloft despite them. But two images of his hand show the hopelessness of his ever by that means reaching the Absolute. First, the "conflagration" at his feet, in the figure of the water, is said to "stir, and mix with the fist that would grasp it", where "it", I take it, refers to helm. This suggests that despite his efforts to overcome chance, he is of its substance, and it will come between him and the tools – language, reason – by which he seeks to tame it. In the second image, a few lines down, he appears to lose heart, he hesitates, a "cadavre par le bras   ecarte du secret qu'il detient." This line, the way I read it, simply delivers the inverse pronouncement, namely that the master's nature as conditioned, consubstantial with chance and death and finitude, holds him at an irreducible remove from "the secret he holds," namely the hint of transcendental order or Logos contained in the knowledge or language by which he keeps afloat.

Though it is only thinly hinted at here, in the image of the master's one alternative – going, à la "maniaque chenu", with the flow (flots) – I would argue that the secret to resolving the division between chance and the Absolute, or between language and Logos, lies within the chaos of language itself, namely in its self-reflexivity, as exemplified in the notion of a "science of language."

In "La Littérature, doctrine" Mallarmé returns repeatedly to the notion of language contemplating language, "le langage se reflechissant"(Igitur 379).

> Dans le "Langage" expliquer le Langage, dans son jeu par rapport a l' Ésprit, le démontrer, sans tirer de conclusions absolues (de l'Ésprit). (382)

He comments that language, no doubt in part through his efforts, has achieved awareness of its own means. Perhaps because of this, science, which he identifies here with grammar and rhetoric (381), now has the possibility of actualizing such a self-reflexivity:

DE LA SCIENCE – La science ayant dans le Langage trouvé une confirmation d'elle-même, doit maintenant devenir une CONFIRMATION du Langage.

Cette idée de la Science appliquée au Langage, maintenant que le Langage a eu conscience de lui et de ses moyens, reste feconde…. (381)

The point, I think, is not that science will express the truth of language, or succeed in fixing the Absolute through imposing verbal definitions on reality. This is just what the "master", as a figure for science, fails to do. Rather, I think it offers the opportunity for the Logos as principle to emerge within language internally, as awareness. If the Word is the principle of order (unity, essence), then the terms of language (difference, relation) cannot be rendered identical to it. The Absolute cannot be brought on, like the kingdom of heaven, by abolishing chance. But if, as Mallarmé's theology suggests, the Word is at work within language, reasserting itself, then it can be participated in. It cannot be represented, but it can be experienced, in an awareness of making order that identifies the individual, through her engagement in language, with the Word.

The doctrine proper to the art of letters, a science of language, does not strike Mallarmé as "some kind of theology" because it is a substantively different thing from literature, but rather because of its analogous nature. In "La Litterature, doctrine," Mallarmé defines science itself, or "method", as a "fiction": "Toute méthode est une fiction"(379). In this respect it is not different from poetry, the other application of language, but rather both are understood as embodiments of the ordering principle, at work among the elements of chance and disparity. And these, in turn, are both identified with mind, and mental processes, "En fin la fiction lui semble être le procédé même de l'ésprit humain". Science in this context is valuable precisely as the self-consciousness of language, and the self-consciousness of language is valuable as the occasion for self-awareness of mind, in which the individual person and the transcendent principle are identified.

This can perhaps be made a little clearer by an example from Mallarmé's life.

It is often told that a spiritual crisis precipitated his embarking on the project of his "grande Oeuvre". In a letter to Cazalis dated May 14, 1867, Mallarmé refers to this experience, which here and elsewhere he describes in the language of death and rebirth. He writes:

Je viens de passer une année éffrayante: ma Pensée s'est pensée et est arrivée à une Conception pure… je suis parfaitement mort, et la region la plus impure ou mon Ésprit puisse s'aventurer est l'Eternite, mon Ésprit, ce solitaire habituel de sa propre pureté, que n'obscurcit plus même le réflet du Temps. (ctd. in Cohn 471)

A period of lucid self-awareness, his thought thinking itself, is all he narrates to describe

this terrifying, and transformative year. Arriving at this stage of pure conception, through a death-like experience – "emporté dans les Tenèbres, je tombai, victorieux, éperdument et infiniment" – everything he can see or think, he claims, is Eternity, unobscured by even the reflection of Time. "…je suis maintenant impersonnel… une aptitude qu'a l'Univers Spirituel à se voir et a se developper, å travers ce qui fut moi."

From "La Littérature, doctrine", written maybe six years later:

> Le Verbe est un principe qui se developpe a travers la négation de tout principe, le hasard, comme l'Idée, et se retrouve formant,…lui, la Parole, à l'aide du Temps qui permet a ses elements épars de se retrouver et de se raccorder suivant ses lois suscités par ces diversions. (385)

To Cazalis he speaks of undergoing a "supreme synthesis" in the wake of this experience, which left him fragile, but "incapable…of distraction", and committed to "the work [oeuvre] that will be the image of this development". The *agon* of transfigurative reflexive awareness bestowed on him, or restored to him, a "Science" which would prepare him for his work "which is The Work. The Great Work, as the alchemists said, our ancestors", "of a purity man has never attained". In his telling of it, he has become himself the site of the Word's reintegration. This was his assignment:

> Fragile, comme est mon apparition terrestre, je ne puis subir que les développements absolument nécessaires pour que l'Univers retrouvé, en ce moi, son identité.

What's missing from this story to explain Mallarmé's theology of participation in the Logos is its extension beyond the narrow visitation of the single poet. He has become impersonal, but of course the letter is only about him. On the other hand, impersonality is one of the chief qualities commentators identify in *Un coup de dés*, compared to his earliest poetry or the standard verse of Symbolist contemporaries. La Charité argues that the spatialization of the reading in Mallarmé's new kind of text is precisely a vacating of authorial presence, and a making room for the reader to enter and assume her own role in the process of connecting (raccorder) the "elements épars" into a fiction.

> The fixity of words and their groupings into lexical, semantic, and syntactical units must be distorted so that the richness of their differences, contradictions, and deviations provokes the reader to respond. (La Charité 174)

That response entangles the reader in the circularity of a language that is ultimately, and at many levels, about language. The images that supply clues for making sense of the poem reveal themselves as tropes of that very effort. Tentative meanings vacate the fiction

they seem to serve, exposing in its place the process itself, the mental process responding to the linguistic process. Mallarmé's "one and only subject, 'fil conducteur'," La Charité asserts, "is the self-reflexive text which calls attention to its own composition in the space of the page" (34). Engaging the material panoply of chance, in the name of the Ideal exiled within it, Mallarmé develops a method for sharing the experience of self-reflexive enlightenment with the reader, who, reading her reading, may possibly see the Word stand forth in unabolished chance.

References

[1] Mallarmé, Stephane. *Un coup de dés*. First published in *Cosmopolis*, Paris, 1897. First version approximating Mallarmé's typographic plan published in an edition edited by Mallarmé's nephew, Eduoard Bonniot, Paris: Nouvelle Revue Francaise, 1914.

[2] cf. Dick Higgins. *Pattern Poetry: Guide to an Unknown Literature*. Albany: State University of New York Press, 1987.

[3] For commentary on the depth and character of his non-iconoclasm, see Weinfield p. 264.

[5] For a discussion of the shift in 19th Century from a painterly to a musical model, see Roy Park, " 'Ut Pictura Poeisis': The Nineteenth-Century Aftermath," *The Journal of Aesthetics and Art Criticism* 28, no. 2 (Winter 1969): 155-164.

[6] Isomorphism is a key concept in later Concrete poetry. See Bohn's chapter in *Modern Visual Poetry*. A very interesting development of the concept occurs with the "computational" branch of Oulipo, named F.A.S.T.L.

[7] On two spreads, there are words in a mid-sized italic type that seem be heavier than regular weight, but since there is no lighter weight type of the same size used in caps, I will assume the difference is one of size and not weighting. The Lahure proofs would need to be consulted to answer the question definitively.

[8] Drucker's translation needs this caveat: The French word "soit" here can only be incompletely rendered into English with any one translation decision. Weinfield captures the other facet of the word's sense by translating it "Though it be". Both aspects, optative and conditional, are contained in the original.

[9] From a letter to Verlaine, November 16, 1885.

[10] Cohn cites Regnier to the effect that Mallarmé, having seen the publication of *Un coup de dés*, went to spend the summer of 1898 in Valvins, where he confidently intended to write his Book. He died there on September 9th, (Cohn 485).

LIMIT: Chapter 2

Metalheart Representing the Spatial Maximum of 20th Century Graphic
Design
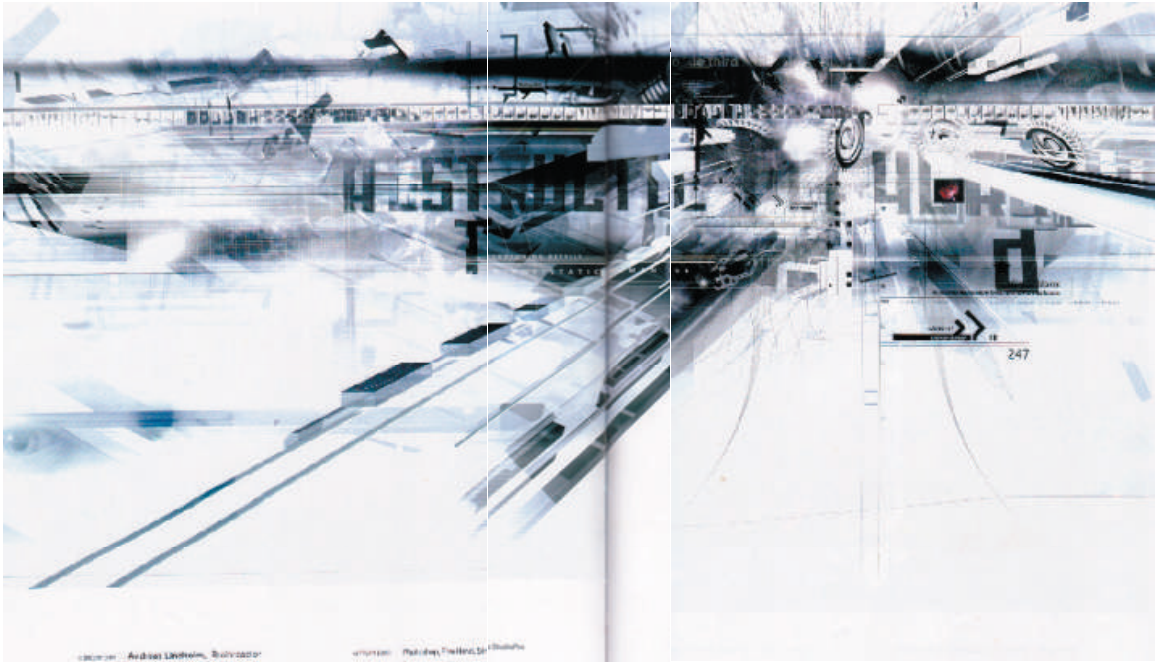
Andreas Lindholm, "Metalspread 02"

In 2001, Gingko Press, a digital-age design books publisher in San Francisco, published *Metalheart*, presenting new work by Swedish designers Andreas Lindholm and Anders F. Rönnblom, and by a host of their contemporaries from around the world. Its large, smooth pages hold hundreds of explosive, full-color designs and its jacket-fold conceals a CD full of fonts, fractal digital patterns and photographic background textures, from which, we're told on the inside cover, the artwork in the book was made. The works featured are the result of an artistic experiment among designers, exploring possibilities for typography in the context of digitally integrated visual media. They are spatially intensive beyond almost anything conceivable until late in the 20th Century, and as such reveal an extreme of the evolution print media have undergone since the days of Mallarmé.

By 19th Century or early modernist standards, the work in this collection is almost unimaginable. It has a visual intensity that even in our media-saturated age registers near

peak. In Lindholm's "Metalspread 02", one of the project's foundational pieces, the page explodes, and hangs suspended, in a pictorial space charged with activity at every scale and dimension, and in every direction of movement. Chaotic bits of imagery, computer graphics and letter forms hurtle forth from a whited-out center, the streak and scattering of fragments frozen in a paradoxically tight visual coherence as the vectors of their separate acceleration array outward. Alignments in the frozen motion retell, perhaps irretrievably, a more organized universe these elements may have constituted prior to exploding with this unexplained force. With the explosion, a dark space of great depth appears to open within the white flatness of the page. This depth extends in through the page while the jagged vectors of fragmented material project out from it toward the viewer. Where the original nature of the materials, like the cause of their dispersal, can only be guessed, this emergence of voluminous and projective space within the apparent two dimensions of the page comes as perhaps the piece's most explicit content. It is an emblem of the designer's ability to overcome, more convincingly than ever before, the spatial limitations of the print medium.

From the very beginnings of modern visual poetry, when the poster advertising of late 19th Century Paris and London exerted its influence on Mallarmé, visual poetry and graphic design have existed as parallel phenomena. As textual practices sharing a common base of signifying resources and strategies, visual poetry and graphic design have been at once allies in evolving the hybrid verbal-visual textuality so vital to today's media culture, and antagonists in the broader conflict between critical/creative art and strategic/exploitative commerce. It was the attention-getting devices of early advertising and newspaper layout that inspired Mallarmé to explore the material aspects of writing. But it was his literary training and musical ear that saw the potentials for turning space as such to sophisticated rhetorical, lyrical and poetic ends. Mallarmé's strategies were hugely wasteful by the economic standards of commercial printing. Yet the stylishness and clarity of his presentation demonstrated types of verbal/visual impact that would ultimately assume market values of their own in the developing industry of promotional advertising.

Compared to Mallarmé's two-thirds empty pages, in which variations in type size and the positioning of lines could produce illusions of depth and movement, the poster layouts typical of his day tended to be crowded with bulky type and ornaments, or else filled with the figurative artwork of stars like Toulouse Lautrec and Alphonse Mucha, in either case preventing space as such from playing much of a role. In the 20th Century however, and particularly with the advent of photogravure and half-tone techniques for integrating photography in the layout of texts, graphic design quickly outstripped visual

poetry in the refinement of its spatial effects. Throughout most of the past century, visual poetry remained a resolutely two-dimensional art form, leaving much of the potential for a spatialized reading and writing unexamined. What I want to do in this chapter is to explore the fullness of spatial articulation and expressivity manifesting by the end of the century in graphic design, as well as to examine the radically new territories typography is drawn into by the emergence of digital technologies and the opening of information space in the form of the World Wide Web. The examples in this chapter will serve largely to highlight the distance between graphic design and most visual poetry in terms of the spatial resources each makes use of. However, since today's computer design technologies are collapsing the gap between what a poet without specialized design and production training can imagine and what he or she can create, the same examples also suggest a new formal starting point for a visual poetry interested in engaging the spatial potentials of design in the digital era.

1. TYPECRISIS : developments in dimensional typography

Metalheart started as an experiment in typography. Both Lindholm and Rönnblom hade been designing digital type in addition to their graphical work – Rönnblom's in baroque 3D forms involving unusual textures and materiality, and Lindholm's in a wide variety of sleek, 2D fonts that define an effective aesthetic for a digital, techno-inspired typography.[1] As they tell us in their introduction to the book: "The METALHEART book project started in 1998 with the emBOX/Brainreactor Prototype CD, containing fonts and 3D typefaces that were sent out to digital designers. We wanted them to use and abuse our alphabets, and then send us their artworks" (*Metalheart* 8).

Someone looking at "Metalspread 02" might be forgiven for forgetting this was about typography, or for doubting it could have much to do with language. And only a few of the works in the book are much more language-intensive than this one. The expansiveness of the visual space, and the crowded overlay of graphic materials, clearly dominate in almost every one of the compositions. Yet, in most of them type, and through it language, do still play key roles. Words and segments of text, often in configurations suggesting the functionality of interfaces or information displays, inhabit the graphic vastness of these pieces along with all kinds of other items. They both order the flux of items through apparent functions of labelling, ekphrasis and instruction, and guarantee that flux at a conceptual level, by generally avoiding semantic closure themselves.

A number of the pieces involve pre-existing texts (Walter Benjamin's description of "the angel of history" or passages from Hakim Bey in two pieces by Halvor Bodin (Metalheart 120-124) elaborately set in stunning visual environments. Others, the majority, incorporate fragmentary text of a nature analogous to the often ambiguous graphical objects they share space with. The most prominent textual element in Lindholm's "Metalspread 02", for example is the single neologism "ABSTRUCTURE", descriptive of the indeterminate scene that incorporates it in a way that escapes both banality on its own terms and tautology in its ekphrastic relationship with the visuals. The most determinately informative text is the half-hidden phrase "Welcome to the third dimension", which points attention to the spatiality of the piece as an independent purpose, while apparently seeking to limit the fixative effect a more foregrounded positioning might have had on the piece's range of possible meanings.

Lindholm, like most of the artists represented in *Metalheart*, is a commercial designer, working today for high-profile clients. Not surprisingly, the visual idiom of many of the pieces borrows from advertising. Except for a couple of works from outside the framework of the project, however, there is no actual commercial content in any of the works. Similarly, much of the work has clearly emerged from within the electronic music culture, (Lindholm mentions in his personal statement that he used to compose techno beats on the synthesizer), and presents an intensified version of the techno aesthetic common on flyers and posters related to that scene, but they aren't event or album promotions either. The textual elements, consequently, are oblique enough in their function to potentially qualify as poetry, i.e. they are neither communicative or persuasive in a conventional sense, nor simply gratuitous place-holders in an exercise where only the graphics matter. They display a "purposefulness without purpose", to use Kant's phrase, nominally qualifying them as art at both visual and verbal levels. Having said that, however, I want to make it clear that for the purposes of this chapter, I am less concerned with any possibility of reading these works as poems than I am with exploring the resources they make available for visual communication in general, with the implication that these resources could prove vital for a spatially-enhanced visual poetic practice.

Metalheart as a project addresses typography as it might exist in the multiple and often overwhelming space of contemporary media. The project, representing work from a broad spectrum of designers active in the late 1990's, poses typography as one aspect of an important contemporary challenge, the way typography was an important contemporary challenge for Mallarmé, and for the early-modern avant-garde after him. Developments in print technology in each era yielded "new dimensions" of visual expressiveness, and typography in each era was challenged to adapt. At each stage, new media possibilities

seemed to threaten the continued relevance of printed language. And at the same time those media, as sheer opportunities, inspired the printed word to recreate itself in the new formats. Metalheart, investigating typography within a hyper-voluminous graphic space, applying Photoshop, Freehand, 3D Studio Max, Cinema4D and similar programs, explores a future for language within the new media environments of our age.

Bauhaus and the New Typography

> We want to create a new language of typography whose elasticity, variability and freshness of typographical composition is exclusively dictated by the inner law of expression and the optical effect. Moholy-Nagy 1923 (*Anthology* 75)

The legacy of early avant-garde experiments with typographic design, from Futurism and Dadaism through the Constructivists and Bauhaus, was a graphic design industry that quickly absorbed the truly revolutionary and iconoclastic intentions of its pioneers by making their work a lucrative component in the burgeoning world of advertising and commodity aesthetics.[2] This transformation was completed with the institutionalization of typography in the design curricula of the Vkhutemas academy in Moscow, and more significantly, of the German Bauhaus in Germany. During the 1920's figures such as Herbert Beyer at the Bauhaus and Jan Tschichold in Berlin organized the dynamic possibilities of typographic design into pedagogically manageable form, which together with the systematizations of color and pictorial form by Bauhaus colleagues Wassily Kandinsky and Paul Klee, seemed to add up to a total visual language, considered by many of its self-confident practitioners to be scientific, universal and independent of cultural values[3]. Armed with this language, and later with the arguments of gestalt psychology to support it, the first generations of certified "graphic designers" were sent out to confront the serious, and profitable, challenges of visual communication in the 20th Century.

Laszlo Moholy-Nagy, who taught at the Bauhaus from 1923 to 1928, directed the influential "Basic Course" there for a number of years, and later oversaw the transfer of Bauhaus culture and ideology to the United States in 1937, was perhaps the most comprehensive observer of the new media situation of his day, and consistently emphasized the important role typography was to play in it. In *Painting, Photography, Film* (1925), his first study of the possibilities presented by new media technologies, Moholy-Nagy portrays a cultural moment in which photography, film and the new printing techniques have created a new environment for visual information. And, as he had first done in a 1923 article written for the Bauhaus Exhibition, and would continue to do up through his 1947 magnum opus,

Vision in Motion (292-352), he exhorts designers to evolve a "new typography" adequate to that environment's complexity and dynamism. He writes:

> Every period has its own optical focus. Our age: that of the film; the electric sign, simultaneity of sensorily perceptible events. It has given us a new, progressively developing creative basis for typography too. Gutenberg's typography, which has endured almost to our own day, moves exclusively in the linear dimension. The intervention of the photographic process has extended it to a new dimensionality, recognized today as total. The preliminary work in this field was done by the illustrated papers, posters and by display printing…. Only quite recently has there been typographic work which uses the contrasts of typographic material (letters, signs, positive and negative values of the plane) in an attempt to establish a correspondence with modern life. These efforts have, however, done little to relax the inflexibility that has hitherto existed in typographic practice. An effective loosening up can be achieved only by the most sweeping and all-embracing use of the techniques of photography, zincography, the electrotype, etc. (*Painting* 39)

The "loosening-up" he speaks of involves the dimensionalization of typography from a "linear" function, where its chief role is to disappear in the transmission of "content", to a function that asserts its material presence, and the spatial values of its appearing on the page, while also bringing in the virtual depth and volume of photographic spaces. There were many proponents of the "Neue Typographie" (Kinross xxiv-xxv), including Kurt Schwitters at the hub of a loose group of Berlin designers known as the Ring, out of which emerged one of the most thorough statements of the new graphic agenda, Jan Tschichold's primer, *Die Neue Typographie* (1928). While the added spatiality of the new typography necessarily plays a role in every presentation from this period, basic as it is to the underlying principles of graphical abstraction, Moholy-Nagy imbues it with a special importance. His background as an artist, and the influence of his friendship with El Lissitzky in his first years in Germany, anchored Moholy-Nagy's sensibility in Suprematism to an extent not shared by his German colleagues, and though any political aspect of this had fallen away by the time of his involvement with the Bauhaus, the technical engagement with space nevertheless retained for him a certain metaphysical value, inherently associated with a transcendence of more than just the basic plane of paper or canvas.

Interestingly, in assessing the state of 1920's typography as still exclusively linear, Moholy-Nagy seems to overlook Mallarmé, and the ten or fifteen years of avant-garde practice that had already changed typography so radically. When he does refer to these developments, which he associates with the play of contrasts in the typographic materials, "letters, signs, positive and negative values of the plane", he says they have had little impact on conventional usage. Moholy-Nagy elsewhere acknowledges, again without naming names, the contribution of typographers who "by the use of hand-set type…have produced

curious effects, and have called attention to hitherto unknown charms of typographical material—such as lines, rules, circles, squares, crosses, etc." ("Contemporary") In this we recognize the classic repertoire of painterly abstraction, as transferred to typography under the early influence of Suprematism, Constructivism and De Stijl. Yet even these failed to bring everyday typography up to the measure of its contemporary task, as Moholy-Nagy saw it, as more than an ornamental practice. Using the artifices of geometrical abstraction, he says, contemporary typographers have "'stuccoed' –with a purely craftlike mentality – illustrations, objects, figures, all very interesting because of their uniqueness." But, "on the whole they were far from influencing significantly any possible future development of typography." This, he says

> will be left to those typographers who can not only grasp the developmental possibilities and the flexibility of typographical machines and materials, but who can also understand the larger horizon of today's visual experiences. (*Anthology* 78)

By 1947 when he wrote *Vision in Motion*, Moholy-Nagy seems to have been as familiar with visual poetry as any writer of the period. Indeed, at a time when Isidore Isou in France and Kenneth Patchen in the United States were solitary experimenters in a field largely emptied during the ascendancy of Surrealism and the fallow period of World War II, he could comment sensitively on the contributions of Apollinaire, Marinetti, Morgenstern and others to the art of visual literature. Although he knew Mallarmé's other poetry, and mentions him as an ideological foil to the experimental literature he is discussing, he never mentions *Un coup de dés* in his survey. Indeed, it seems likely to me that he was unaware of the work, or else that he had seriously underestimated it, since it was of course the first to explicitly base its compositional strategy on dynamics of visual contrast and the "positive and negative values of the plane."

However this may be, Moholy-Nagy's assessment of the state of typographic art in 1926, as still in 1947, starts from essentially the same position as Mallarmé in 1897. For example, where Mallarmé complained about the monotony of "normal" reading,

> "Plus le va-et-vient successif incessant du regard, une ligne finie, a la suivante, pour recommencer:" (*Igitur* 270)

Moholy-Nagy writes, in his 1926 essay, "Contemporary Typography":

> This monotone of our books has resulted in disadvantages: first, a visually clear articulation of the text has become more difficult to achieve, despite the significant possibilities for articulation offered by the paragraph indent; second, the reader tires much more easily than he would by looking at a layout built on contrasts of light and dark or contrasts of color. (*Anthology* 78)

He complains:

> …the majority of our books today have come no further in their typographical, visual, synoptic form than the Gutenberg production, despite the technological transformation in their manufacture….

And, without the *littérateur's* check on his willingness to embrace new formal means, he looks to the same phenomena of media culture for alternatives, concluding:

> The situation is much more favorable with newspapers, posters and job printing, since typographical progress has been almost entirely devoted to this area.

Digital Design and the New, New Typography

60-some years after Moholy-Nagy wrote *Painting, Photography, Film*, with a new explosion in the medial basis of typography, the artform was again being challenged to adapt to a new dimensionality. In a graphic design textbook from 1988 (updated '93 and '98), Amy E. Arntson writes "During the twentieth century we have progressed along a visual escalation from photography to film to video to computers" (Arnston, 35). This list continues Moholy-Nagy's coverage of the major media arts 40-some years on into the computer age, which was just dawning at the end of Moholy-Nagy's life and career. Arnston lists computer graphics, interactivity, digital video, 3-D design and animation, and virtual reality as the new media resources, and challenges, for designers in the 1990's. She writes as a traditional designer taking stock of a changing world, more than as one who knows a way paved already.

> **Computer graphics** has come a long way since the Macintosh was introduced in the mid-1980s. The Internet is rapidly becoming a vehicle for marketing products. Producing visuals for home pages is a growing market for graphic designers, and the complexity of these visuals is increasing rapidly. Our ability to communicate with **interactive visuals** and to create **"desktop" video** and **3-D animation** are helping to develop a new market for graphic designers.
>
> > **Virtual reality** is another new and developing technology. It extends our senses by allowing a person to move through and interact with a computer-simulated environment by wearing special glasses and clothing or other sensors. … What might be the impact of virtual reality on design and communication? As we move into a new century, it is interesting to remember the important developments at the turn of the last century. (Arnston 35-7)

At the close of this survey, culminating a brief history of graphic design in a textbook typical of the period, Arnston hearkens back to the "developments at the turn of the last

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century", as if questioning whether a repeat of that era's explosion in media technologies might of itself produce a repeat of the avant-garde moment as a cultural pattern. But her send-off for design students, into "an exciting and challenging future for designers" is cautious and neutral as to any vision for the future: she states their task as "maintaining an emphasis on issues of values and content while learning and using a proliferation of new media" (Arntson 37).

Arntson represents typography at a moment when it knew the basis of its practice was being transformed, but did not yet understand its new role, or the true scope of the change occurring in visual communications. If I am correct in detecting an anxiety in Arntson's depiction of the future of typography, it can be read in the tension that last sentence displays between "an emphasis on issues of values and content" and learning to use the "proliferation of new media". The first phrase, naming what is to be protected as we enter the new media age, is awkward and vague, compared to the clarity of the technological situation that poses the challenge. The anxiety repeats Peter Burger's observation about modernism at the turn of the last century, that it witnessed the flourishing of form at the direct expense of content, which through this process was progressively eliminated from the aesthetic as a category (Burger 19-20). Similarly it repeats a commonplace reaction to "techno" artforms in the early decades of computing, worrying that to embrace the new media was to fall victim to the stunting effect of powerful means on a precarious meaningfulness.

By the early 1990's however, such perspectives were fading. Jessica Helfand, a graphic designer, design educator and essayist publishing in some of the leading graphic design magazines of the mid- and late-90's, (*Eye*, ID, Print, etc…), was commenting on a cultural moment that finally saw the penetration of digital technologies into all fields of design and production. From her position, the problem was not how to incorporate the new tools into a well-established practice, but how to possibly catch up with the wave of development in visual communication media that already threatened to leave the classical craft of typography behind. The situation, underscored by a booming market for graphic designers, cued the kind of urgency and excitement around visual communication that characterized the art and technology booms of the first modernism, and so in positive form fulfilled the somewhat concerned forecast made by Arnston and many others in the industry. In one essay, "Electronic Typography: The New Visual Language," Helfand finds herself repeating (unwittingly?) Moholy-Nagy's call for a new typography, in terms that make it sound like starting from the beginning. She writes:

> Like it or not, the changes brought about by recent advances in technology indicate the
> need for designers to broaden their understanding of what it is to work effectively with

typography. It is no longer enough to design for readability, to suggest a sentiment or reinforce a concept through the selection of a particular font. Today, we can make type talk: in any language, at any volume, with musical underscoring or sci-fi sound effects or overlapping violins. We can sequence and dissolve, pan and tilt, fade to black, and specify type in sensurround. As we "set" type, we encounter a decision-making process unprecedented in two-dimensional design: unlike the kinetic experience of turning a printed page to sequence information, time now becomes an unusually powerful and persuasive design element.

Today, we can visualize concepts in four action-packed, digital dimensions. Interactive media have introduced a new visual language, one that is no longer bound to traditional definitions of word and image, form and place. Typography, in an environment that offers such diverse riches, must redefine its goals, its purpose, its very identity. It must reinvent itself. And soon. (Helfand 106)

If, like Moholy-Nagy, she ignores the "reinvention" typography already experienced under DADA, Constructivist and Bauhaus designers, or disregards it in her framing of the contemporary challenge, she is not alone among her contemporaries either. Matt Woolman, who has taught and published influentially on the formal and informational frontiers of today's typographic arts, starts his *Digital Information Graphics* (2002) with this familiar observation:

Not since Gutenberg (1400-68) began working with this technology in the fifteenth century have we been at such a threshold of change in the way information is organized, delivered, received and consumed. (6)

His comment repeats almost directly what Moholy-Nagy was claiming 70-some years earlier. The obvious implication is that all the revolutions of printing, radio, photography, film, television and video have amounted to less than the change occurring now in the digital age, where with the internet and virtual reality the game is changed essentially. Much of the literature on artificial intelligence, virtuality reality and artificial life eagerly confirm this sense that the changes occurring now are epochal, more world-changing than anything since the gothic Bible, if not the Flood. Like the excited pronouncements from any period of accelerated change, however, the predictions can be true in essence without being trustworthy in detail. Certainly both Helfand and Woolman in this case, both sophisticated observers, avoid having to provide any arguments to as to exactly how the impact of digital technologies so far outstrips that of radio, film, the telephone or television in their day.

In fact many of the details Helfand points to concerning the "new visual language" were true of the "new typography" Moholy-Nagy promoted, which already in the 1920's could call on film and recorded sound to "make type talk: in any language, at any volume, with musical underscoring or sci-fi sound effects or overlapping violins," including the ability

to "sequence and dissolve, pan and tilt, fade to black", if not "specify type in sensurround".[4] At least as artifacts of the reader's inner experience, movement and sound were already purposeful elements in the presentational strategies of Mallarmé, as I explained in Chapter 1; remember Valéry's remark concerning *Un coup de dés*: "Here space itself truly spoke," etc… (*Collected* 265-6).

What Helfand is referring to that is unique is the new virtual environment this dynamic "talk" of dimensional and animated typography takes place in. Film and photography, both to varying effect, created virtual realities, but the effects required studios full of material and production equipment to create, and except for special effects ultimately relying on the same techniques of drawing, sculpture and construction that characterized the old arts, had to draw photographically/filmicly on nature, i.e. "real" reality, in producing the illusion of an alternate one. The digital revolution, the advent of "'desktop" video', 3-D animation, etc., supplies the construction of new media realities with an infinite space of virtuality to build in, and immersive presentational technologies and modes of interactivity open the same infinite space to the active exploration of viewers/users. In this new space of digital design, the distance between conception and production, between idea and thing, is radically narrowed, and typography in all its intermediality is freed to engage a total, 4- or more-dimensional reality substantively different from that of previous media.

3D Type

One particular aspect of the 1990's challenge to typographic practice, an aspect that stands emblematically for the whole scope of issues raised by the new space of computer design, concerns the development of three-dimensional typefaces. On the one hand, as the printed or projected image gains in visual richness, the lettering that represents language is forced into competition on a figural basis. Persistently flat lettering in a 3D environment can appear drab and out of synch with the spatialized aesthetic in which it is set. The typefaces designed by Lindholm and Rönnblom, and sent out for testing to other designers, are good examples of the attempt to invest lettering with a visual appeal consistent with the dynamic, three-dimensional style of the art.

Beyond appearances, however, there is the functional question of legibility. If the text is moving, or the viewing angle moving around stationary letters, there is the problem of how they will appear from different positions and at different angles. Extruded typefaces, whose two-dimensional surface has simply been extended backwards along the z axis, easily extend the legibility of a letterform "around corners" as it were, allowing the word to be read from a variety of angles, provided its frontal plane remains at least

partly visible. The art of 3D lettering in a kinetic context was perfected and made a part of daily visual culture through the evolution of animated movie titles and TV motion graphics. Digital media extend the problem into a wider variety of contexts, and remove it from restriction to the film and broadcast industries, while the dimension of interactivity further intensifies the legibility challenge, since a user may be free to move through the textual environment in ways unanticipated by the creator, and thus view words and letters from unintended angles.

Dimensionalized typography is not new to the late 20th Century, by any means. Basically the same kind of problem faced sign carvers in pre-industrial eras, though in the computer-informational environment substantially greater informational loads are at stake.   As J. Abbot Miller makes clear in his little monograph on the subject, many techniques used in developing 3D type for digital writing (extrusion, tubing, etc), were used by Mediaeval scribes for ornamental purposes in illuminated manuscripts and other important documents. With the development of titling conventions in film and television, the practice was merely extended to a more contemporary medium, and subjected to different forces driving innovation. Within the increasingly dynamic and competitive visual media, forms of language were required that could stand out and command attention, and for this three-dimensionality, with or without movement, was a natural option. In the golden age of cinema and the early days of TV the 20th Century Fox logo (already dimensionalized in its 1937 version), monumental and spectacularized by sweeping flood lights, already made animated, three-dimensional typography familiar to every American movie-goer. Today, the computer age makes the challenge of dimensional type both more urgent and more rewarding. In the digital environment, where scale is irrelevant and modelling tools extremely powerful, the same sophistication and precision that goes into an elaborate atmospheric or architectural environment can go into the design of letter forms and the programming of their behavior.

2. Metalheart Writing

It was in the context of engaging the new realm of possibilities opened by digital media, particularly advanced 3D applications and the endless capacities of Photoshop, that Lindholm and Rönnblom launched the Metalheart project. The digital graphics magazine EFX Art & Design, which Rönnblom edits, served as a platform for attracting other designers, many probably inspired by examples of Lindholm's work that began to appear there. The creative energy this tapped, however, and the aesthetic that emerged within the project were characteristics of a much wider design scene that had been emerging since the mid-90's. In focusing on Metalheart in this chapter, I don't want to neglect the work of other artists who may have preceded Lindholm and the others in developing this style of abstract 3D design, (Per Gustafson, for example, credits Jens Karlsson as one of the first[6] (*Nervous Room* interview), nor other projects that have served to document and disseminate it.

The Versus Project, hosted by Cubadust, for example, offers an excellent survey of similar design work collected in 2000. Though only one artist (Per Gustafson) features in both collections, and though the Versus Project includes a wider variety of styles, some antithetical to the spacey, techno work that characterizes Metalheart, many of the artists featured there demonstrate a striking continuity with the Metalheart aesthetic. The Versus Project is also noteworthy for its elegant on-line format, consisting of a long horizontal sequence of images, which the viewer scrolls through using a scroll bar. The images, each representing the work of one artist or design team and hyperlinked to the respective websites, have been graphically blended at the seams, creating a stunning medley of high-impact visuals, that is also a functional anthology of contemporary digital design (www.cubadust.com/versus).

The Word: Lindholm's "SILENCE "

While in many of the works collected for Metalheart, typography seems to play a role very secondary to the dramatic objects and spaces it accompanies, in others it is front and center. "Silence," a piece by Andreas Lindholm, gives us a good starting point from which to examine typography in its new incarnations. In the piece, the single word "silence" is presented in a shiny metallic font, the center of a graphically and spatially supercharged environment. Though hardly groundbreaking at the level of the letterforms themselves, "Silence" is an eloquent emblem of a reinvented typography for a number of

reasons. For one, the central word is set in a dimensionalized gothic font, translating the lettering of mediaeval scribes into a techno typeface of virtual machined steel. Highlighting the apparent materiality of the type, and dramatizing both the dimensionality and the "edginess" of its visual style, one wing of the eight-bladed X-figure backing the word appears to cut into the top of the letter "l".

Another significant feature is the degree to which the visual field, full of highly kinetic and dimensional forms that might otherwise overwhelm the letters, is made to serve them. The bladed flourishes behind the first and last letters of the word, permutations of the X-figure at the middle, aside from the salient framing they provide, seem to underscore the verbal enunciation of the word. The flourish to the left is dark and in effect receded, while on the other side the form catches more light and stands out. In addition, the two tentacles that traverse the piece horizontally reinforce this, passing behind the darkened element, while emerging from out of the middle of the element on the right and rising. The visual pulse this creates, left to right, rear to front, stands in counterpoint to how the word is pronounced, with stress on the first syllable, and adds tonal qualities to the word that the letterform itself could not achieve. These details, together with the blood-red background atmosphere, the fine texture of white grid-lines, vector graphics and flat type, and the dramatic shadowing from an ultimately ambiguous implied light source, dimensionalize the typography far beyond the slight extrusion, raised surfaces and shadowing of the letterforms themselves. These features create an emotional atmosphere for the presentation of the text, and can be seen as a visual analog to the kind of vibratory resonance Mallarmé sought to effect for his words at the musical and semantic levels[7].

The difference here is that both the word and its manifested resonance are visual, and the ideality conveyed by the atmospheric feeling refuses to separate from the materiality of the word itself.

The question remains of what a piece like Lindholm's "Silence" means, and how the typography and the surrounding visuals conspire to produce this meaning. Perhaps the inevitable comparison, especially since the larger context here is a discussion of visual poetics, is with Eugen Gomringer's classic concrete poem by the same name. That poem, which for better and worse has become perhaps *the* emblem of visual poetry, is famous for the concision of its statement. It consists of just one word, repeated

14 times, producing a rectangular block of text with a blank the size of the same word at the center. The effectiveness of the poem, emblematic of the strategy at the heart of concretism, rests on the synonymy (or close semantic tension) between structure and content. By presenting both the word "silence" and its highlighted absence, the poem acknowledges the paradox of a word that means wordlessness or absence of sound, while seemingly escaping this paradox by staging the word's absence as the central and effective referent. A non-appearance of language, in the context of language, conveys the notion of silence concretely.

In Lindholm's piece, on the other hand, the relation between the notion "silence" and the word's lavish setting seems more troublingly discordant. Any of Gomringer's poems, famous for their minimalism and typographic uniformity, seems more silent than this gaudy embellishment. The topic word appears centered and visually highlighted in a way that suggests all kinds of volume. And around the central element, stray lines of text expound talkatively on the qualities of silence: "silence is sexy", "SILENCE IS POWER", SILENCE IS POWERFUL/SILENCE IS SEXY//EXCITEMENT OF SILENCE// … ," . The word appears 19 times in various fonts and sizes, but unlike in Gomringer's piece where the tight regular formation concentrates the repetition to a singularity of statement, in Lindholm's piece it appears each time at the head of a sentence, and seems chatty. If silence is sexy, this is enough to kill the mood.

Yet, if we persist in reading the piece for a tighter semantic coherence, we are led back to the realization, true also of Gomringer's piece, that there is in fact no sound here. The very intensity of the visuals, so obviously *suggesting* loudness, emphasizes the distinction between sight and sound as senses. Sound here, we are reminded, is a dimension of the meaning we contribute, whether out of an age-old, ultimately unnecessary habit of voicing language when we see it, or because the intensity of one sensory mode causes us to extend it by analogy into another. The point here, if we wish to attribute one, may be an irony in the literal truth of the title: for all the virtually screaming visuals, the composition remains resolutely isolated behind the barrier walling off sound from sight.

Of course, Lindholm's piece was not meant as poetry. The piece is a formal experiment modelled on other kinds of text, most notably promotional advertising and commercial motion graphics. It is a hard-rock variation on a graphical precedent like the classic Coca-Cola label, the icon of icons, whose color palette it shares. It appears to be testing strategies for being striking and distinctive like Coca-Cola, or countless other luminous commodity fetishes, in a graphic idiom whole dimensions more dynamic and "eye-catching" than we are used to seeing on soda cans or dispensing machines; though whether the added spatiality would represent an advantage in the magical game of branding

is another question. As a visual message this piece deviates from the functional aim of direct communication, achieving an indeterminacy perhaps no further from the poetic than from the commercial. The proportionately frequent repetition of the key word is consistent with a promotional purpose, and the intensity of red in the piece, which Lindholm in his note on the piece refers to as "hot as hell," backs up the sales pitch at a visceral level. The associative statements, on the other hand, especially the predominant one, "silence is sexy", come across as a kind of parody of persuasive commercial rhetoric, and leave the semantic import of the verbal text ultimately indefinite, if not simply empty. When the thing in this visually fetishized presentation is named "Silence", we experience its product-identity as ambiguous, to say the least, and face the paradox of something presented with such concrete designs on sensation, that is itself the very essence of inapprehensible.

As an early sample of 21st Century graphic design, "Silence" represents the visual resources available to typography in the new millennium. As a candidate meta-text on visible language in the new digital design environment, "Silence" honors the ancestral script of European print culture in a virtual, 3D, and potentially kinetic, incarnation. At the same time, as an improvisation on the latest graphics applications, it showcases new technological capacities for adapting writing to the new digital reality conditioning it. Though its techno style, most at home on posters and flyers promoting techno music events and album covers, would have spoken to only a certain sector of the visual culture in 2001, it also represents a utopian (or distopian) technophilia that was broadly typical in the years of the 1990's tech-boom, and bust.

The Text: Tim Jester's "Blood"

"Silence" represents visual language potentials at the level of the individual unit. It is a single word, graphically/semantically backgrounded by a flourish of light, color and highly dimensionalized form, and framed at the center of a neatly gridded field of white lines and featureless gradient reds. While it demonstrates formal possibilities for typography in the era of digital design, it doesn't give much indication as to how a more total writing or reading could benefit from these possibilities. Tim Jester's "Blood (B positive, Don't B Negative)", very different stylistically, goes further in this direction. While for this chapter I want to persist in using the notions of visual language and visual reading more or less naively—a more thorough discussion of these notions will come later—I want to demonstrate a textual analysis that begins with the media and materials used in the piece, in order from that to gain a perspective on the basis for the communicative materials and strategies we might call its "language".

Media

Tim Jester's contribution to the Metalheart project was a long, horizontally oriented piece called "Blood (B positive, Don't B Negative)". The identifying information says it was created using Illustrator, KPT Vector Effects, Photoshop, and Dimensions. These programs allowed Jester to integrate text, graphical objects and imagery in two dimensions (Illustrator), to warp and distort Illustrator images, and render Illustrator typography in three dimensions (KPT Vector Effects), to modify and manipulate imagery and scenes at the level of individual pixels and regions of pixels (Photoshop), and design and render 3D objects with the benefit of movement and animation (Dimensions). Illustrator alone, as a program, compresses virtually all the previous repertoire of typography into a single digital tool, far more versatile and accessible than the letterpress, though without many of its material qualities. The other programs translate the repertoires of painting and photography (Photoshop, KPT Vector Effects), architectural drawing and modelling (Dimensions) into digital terms, and integrate the components seamlessly to produce coherent, printable or screen-viewable visual texts.

The result is, in key ways, typical of the Metalheart works generally, though stylistically Jester is less techno-oriented than the other contributors, and more representative of the street aesthetics of American hip-hop culture.[8] He uses a combination of flat and dimensional type elements, imagery integrated 2-dimensionally into the background field, and images presented as photographic or cinematic still frames, as well as highly resolved three-dimensional objects. And, integrating these, he applies an array of texturing and background effects, vector graphic mesh fields, flashing or light-streaking effects, and a controlled application of color for highlights and spatial shaping.

As a visual text intended for printing the piece is subject to limits not inherent

in the media of composition. For example, what is still on the page could be moving on screen, as the software used supports animation and embedded video. With this range of potentials at his disposal, Tim Jester, like his Metalheart colleagues, demonstrates the fulfillment of utopian forecasts made by prescient observers at the beginning of the 20th Century. This piece, the Metalheart project, and the larger culture of digitally aided graphic design which the project represents, can all be said to manifest a totality of media resources in line with the predictions Apollinaire made concerning the future language of poetry. In his "Esprit Nouveau et les Poètes", he envisioned

> a new art (vaster than the simple art of words), where, conductors of an orchestra of unheard-of extent, they [poets] will have at their disposal: the whole world, its noise and its appearances, thought and human language, song, dance, all the arts and all the artifices, more mirages yet than Morgane could have lifted on Mont Gibel, to compose the book seen and read of the future. (Apollinaire, "Ésprit" 945)

"Language"

While Andreas Lindholm's "Silence" represented 2001 Typography at the level of the individual unit, the word, Jester's "Blood" represents it the level of the short text. Though, like "Silence", "Blood" features a single word in dimensionalized type at the center of the piece, the word is angled and interlocked with other words and with other semantic elements. Technically, it contains two double sentences: "B positive, Don't Be Negative", and "blood cures, or blood destroys", though if we expand our notion of "language" to include the visuals in their semantic relations, we have a text of yet a larger scale. The verbal meaning is complemented by the visuals, and the visuals add a great deal of symbolic and narrative meaning to the words.

Before we can try reading the text, it will be useful for me to lay out range of meaning elements that make up its "language" (loosely understood). A first distinction can be made between verbal language elements, lettering and numbering on the one hand, and all non-verbal visual elements on the other. There are six layers of verbal language, approximately hierarchized according to the style of lettering. Predominant, of course, is the title-word "blood", not capitalized, but in solid block type (an extruded version of Lindholm's Brainreactor font, "Neutronica subworld"), with a metallic edginess haptically marking its sharp resolution from the background. Next in size, and in left-to-right reading order, comes text in broad flat capitals (Lindholm's "Industrial Faith" font), dim, white and semi-transparent to the background. In these letters we read, "DON'T B□/B+". Third,

as I'm counting, are the two words in large caps (the "Industrial Faith" font again in fine white outline), that forms the graphical baseline for the composition as a whole. Those words spell out explicitly the mathematical symbols in the previous layer of text. Fourth, the second sentence of the verbal text occurs in a dark, inset space below the large outline caps. These words, again in white, semi-transparent type — though here lowercase and in a different, much edgier font (Lindholm's "Neodreams") — are staggered as to type size, with the first line, "blood cures" larger and longer than the second, "or blood destroys". Fifth, I would list the single letter "H", a bright, opaque white capital right behind one of the rolling dice. Sixth, whether it seems very significant or not, would be the numbering on the syringe. And seventh, somewhat less legible, is a plane of text in the small white lettering of computer displays, seemingly a date and time code for something: Mx2 02 03-99/ 16:03 12/ F3 75/ …(4)". Finally, there is one other element, almost entirely undecipherable, just under the green portion of the syringe.

Cataloguing the visual elements is somewhat more complex. The precise and complete analysis of what went into the piece exists, if anywhere, in the working files created when Tim Jester made it. The layers I will break it down into are bound to simplify Jester's steps substantially, but I think the point will be clear. For convenience, I will start with the general red background, worked up in Photoshop and/or Vector Effects. The second layer I would list includes all the photo-realistic, or high-res computer-generated, 3D imagery: the dice, the fist, the martial artist, the flames, the syringe, and perhaps the drops of blood. The word "blood" would go in this category if I hadn't already listed it under verbal language. The coherence of this group is the high "iconicity" of the elements, their photo-realism or "verisimilitude". A borderline element would be the inverted image of a hand pointing a gun, because the abstraction of its black-on-red appearance makes it less than realistic, more cinematic, or dreamlike. This effect applies similarly to the high-contrast red drops, repeating the blood visible near the tip of the syringe at a higher abstraction. Other dimmed, embedded imagery rimming the dark region along the bottom left of the spread functions at a similar threshold between abstract texture and representational imagery.

The next distinct kind of visuals I would point to comprises the vector graphics,— lines, streaks and other elements framing and highlighting the image nexus of fist/flames/ syringe. Two streaks of red to the left of the other imagery do the same thing, aligning and highlighting the field of elements around it. Related to these, but on a broader scale, the sloped plane of dim, white gridding, created in Dimensions has an important, if relatively discrete, shaping influence on the space backing all the converging elements. Composed in the same software are the white wire-mesh platelets clustered along the main horizontal

axis. These are once again higher in iconicity, especially due to their precise volumetric rendering, yet are still the most abstract of the representational imagery. And finally, in a category of their own, due to their appearance aligned in distinct frames, are the four adjacent, photographic or cinematic "stills" in black and white. These suggest a discrete visual syntax and story-line embedded within the larger syntax and semantic import of the piece as a whole.

Meaning

At one level the verbal text, both in the title and in the piece's second sentence, establishes an explicit theme, heroin (or other drug) addiction and the dangers of intravenous drug use. The imagery supports this in detail, showing the needle, drops of blood that may or may not be contaminated, and scenes as from a film about the drug user's life, (a derelict building for using, a street deal, being followed by the police, handing something off to someone somewhere). The handgun could relate to the world of the film, but seems to denote life-and-death danger at a more abstract level, pointing in a "back-at-you" direction, and so apparently aimed vaguely in the direction of the reader rather than at any character within the fiction of the cinematic frames. At a similar level of vagueness is the fragmentary image of a screaming face, to the right of the right-most platelet, partially concealed behind the "N" of "Negative". Decontextualized like the pointed gun, this face similarly delivers a generalized significance loosely relevant to the theme, this time indicating pain or agony.

The image of the martial artist stands out initially as more completely incongruous with the user's world depicted in the other imagery. Whereas we can resolve the gun and the screaming woman into the narrative suggested by the still frames and supported by the verbal text, this figure sees to occupy an independent semiotic category. Most significantly, its contribution to the text seems necessarily figurative, with the dramatic image of "seizing the needle" suggesting itself as a metaphor with potentially ambiguous relevance to the rest of the piece. Again at what would appear a non-literal level, we have the fire, not realistically associated with the syringe it covers, but rather functioning as a special highlighting effect connoting a number of possible values related to the heroin theme, e.g. the physiological stimulation, a burning need, the pain of withdrawal, or just danger.

The wire-mesh platelets in the left half of the piece have a more direct meaning, referring to the presence of healthy or contaminated blood cells in the blood stream, yet their wire-mesh appearance distinguishes them from "literal" blood cells, placing them too at a more abstract level of signification. And, finally, the dice. Like the martial artist and

the fire, they have no obvious, literal role in extending the text's narrative aspect. More so than those images, however, the image of rolling dice comes with its own, almost self-sufficient metaphoric import, based on the widespread figures of speech that link gambling with risk-taking in general. As such, this image plays a leading semantic role in the piece, identifying the thematized drug-use with the chance of fatal consequences announced in the title text.

The "language-like" aspect of this composition, its ability to function as verbal-visual communication, begins at the possibility of syntax. Do the elements stand in syntagmatic relationships, connecting one with another, and thereby establish larger-scale meanings? The meanings I enumerated in the last paragraphs already presume this syntax and the larger-scale meanings. The fact that the dice, as they roll, appear to be uncovering the "H" behind them, for example, identifies the outcome of the dice roll with the outcome of a blood test, HIV + or –. The meaning potentials of "syringe" are modified specifically by the "fist" that clutches it, while both "syringe" and "fist" are modified by the "fire" that envelopes them. Clearly the elements compose, very multi-vocally, a larger whole of coherent, if not definite, meanings.

Determining syntax in the visual language has a lot to do with determining a reading order, since no formal visual syntax seems to be in effect. An example of a formal visual syntax would be the column and row structure of a table, or the logics of grouping and containment in a Venn or Euler diagram, where functions and relations among elements are specified by rules that exist independently of the elements. A more colloquial example would be the conventions of cartoon framing[9]. Jester's piece shows no such formal organization, though it is clearly highly ordered. Certain of its structural features – the horizontal orientation, the establishment of a graphical baseline along the horizontal and of a nexus of concentrated elements at one point on that line – are so common among the Metalheart artists that they suggest a shared idiom with its own syntactic conventions, but these are far from rigorous or systematic.

In our attempt to read these elements, we are confronted by a "free" field of information, and have only perceptual clues to rely on for ordering that information. For example, even at the verbal level, a visual ordering partly trumps the conventions of left-to-right, top-to-bottom reading. We read "blood" first because of its size, color and position at the center of the spread, and *despite* the fact that it appears in the middle of a line that according to the title comes after it. Fernande Saint-Martin, in her ambitious *Semiotics of Visual Language*, defines the syntax of visual language as: "the set of operations and functions through which perceptual mechanisms establish interrelations among the basic elements in diverse visual fields" (65). Her list of the principal "liaisons" or interrelationships that

get established this way includes: "neighboring", "separation", "envelopment", "encasing", "repetition", "juxtaposition", "superposition," and "vectoriality". So, to track how the different elements go together, we have to track how we are visually and spatially led to connect them.

I will save for Chapter Four a deeper look at the kind of visual language analysis Saint-Martin lays out. The point I want to make here, to conclude this assessment of "new typography" at the level of the extended visual statement, is that to fully account for the verbal and visual meanings of the piece, we are forced to resort to an anterior level of meaning, namely spatial meaning, that serves the other meanings as a kind of syntax, as well as contributing semantic import of its own. While a simple enumeration of the elements of this piece yields a substantial idea as to its meanings, the real import comes with perceiving the dynamic whole the elements constitute by virtue of their spatial organization. The aspect of vectoriality in particular helps explain the structure and impact of this whole.

Drawing on projective geometry, Saint-Martin defines vectoriality as "a linear oriented progression," or "a planar or mass thrust animating internal volumes" (Saint-Martin 72). Vectors are arrows, in the most abstract sense of space or mass pointing, or conducting, in a direction. In Jester's piece, they establish a clear, for me almost ineluctable, reading order, and organize the assorted elements of the piece to make a particular visual point. Jester layers elements over and alongside the horizontal baseline established by the large lettering reading "POSITIVE NEGATIVE", and does so in such a way as to build a strong visual momentum towards the right. The platelets, the series of black and white stills, the lines trailing behind the series of stills, the rolling dice, the word "blood" and the syringe all reinforce this movement by energizing the horizontal to the right. As the horizontal progresses through he word "POSITIVE" and towards the middle of the spread, the movement is pressurized by the closing up of space above and below the line. This movement culminates at the fist, where many factors conspire to halt and break the momentum established, highlighting the semantic nexus there as of primary importance.

An indispensable factor in generating this sense of movement is the field of variegated but empty red that fills the upper third of the piece, and much of the left side. That field presents non-uniform gradients of density and saturation which exert a strong spatial ordering influence over the piece as a whole. Over the right-hand side this field is relatively still, but beginning approximately over the "d" of "blood", the space is shaped to slope strongly to the left, while opening backwards to a broad depth. The gradient textures establish an optical flow, counter-clockwise and at a vertical angle back around to the horizontal baseline. The curve of this flushing movement is defined at upper left by a wedge-shaped white streak descending over the top of the "B+", and extended optically in

the downward, diagonal angling of platelets immediately to the right. The movement even seems to register as a disturbance in the horizontal flow of the platelets. Following the downward diagonal, one platelet appears pushed below the general flow-level, and those that follow to the right appear to be rising, their buoyancy reasserting itself out of the direct stream of pressure.

The field, shaped in this way, suggests a fluid mass hollowing out in the wake of a propulsion. It is the negative trace of the positive thrust of the word "blood" and other elements along the horizontal baseline. Anywhere one looks in the piece, above the baseline, the shaping draws the gaze into the path of this flow, returns it to the far left, and funnels it through the horizontal channel where the semantic action is happening. Thus the fluidity suggested graphically asserts itself more literally as a medium carrying the viewer's attention along a current of visual cues. The current reinforces a reading order in the vector that moves from left to right, from a wide end of relatively little information at the left, through a sharp narrowing at the center where semantic materials proliferate and complexify, to a peak where the sum total of these elements condenses in the single, compound image of the fist and syringe.

Clearly at one level this red fluid is the blood of the title, and the syntactic role it plays in organizing our reading of the piece is commensurate with its importance as the principle subject. The sweeping movement further suggests the rush of sensation and chemical activity that heroin use induces, and identifies those with the details of junky life depicted along the horizontal trajectory. When this movement reaches its most concentrated and visually accelerated point, transferred metonymically to the image of the syringe and adorned with visible streaking to enhance the effect, it is suddenly arrested by the fist. The largest single object in the piece aside from the word "blood", the martial artist's fist, with its broad flat surface and highlight of long vertical streaks extending to the upper and lower margins of the page, breaks up the horizontal movement, all the more so because it comes straight out from the page in a direction orthogonal to the vertical and horizontal axes of the picture plane.

As dramatized in the two fading after-images of the martial artist preparing to punch, the fist represents a powerful movement out from the two-dimensional plane in which most of the piece's activity takes place. While the fine lines of the large capitalized text ("positivenegative"), receded behind the black and white still frames and some of the platelets to the left, is here layered in front of the fist and thus partially counteracts the impression that it is emerging from the picture, this thrust outward along the z axis is clearly measured to visually negate the horizontal momentum I have been describing, and presumably to semantically counter the narrative thematics that momentum is

constructed to support. Read in this context, the martial artist works as metaphoric support for what is in my view the key statement of Jester's piece. More than a mere inconclusive arrangement of visual elements related to the issue of drug use and possible HIV contamination, relying on the title text to express a more articulate intention, this image extends the verbal idea dramatically and substantively.

As an image of vigorous physical and mental discipline, the martial artist represents a sudden decisive exertion of will, the only thing capable of breaking the cycle of dependency that makes heroin use so frequently fatal. While as a still image the gesture could be seen to carry a valence of challenge or temptation, holding a needle out to the viewer/reader, in the dynamic context established by the rest of the text, it represents more conclusively the sudden interruption of a life-threatening course of action and events. The fact that only this gesture emerges from a direction orthogonal to the dominant x and y axes, (even the highly-resolved "blood" and the dice are angled very obliquely) and so alone among the visual elements fully expresses the presence of this third dimension, identifies the third dimension as a formal device with "coming clean" as a possibility for radical change. The fist emerges with sudden force from a previously unrealized dimension of space/possibility, to break the deadly, cyclical habit..

Tim Jester, to a greater extent than other artists in the Metalheart collection, accomplished with his means what Valéry said Mallarmé was the first to do with his. He produced a "spatial reading", integrating verbal and visual codes in a textual form whose presentation relies on effects of arrangement and spatial volume well beyond those employed by Mallarmé. I don't mean to say that the other Metalheart works are not texts with meanings that can or must be read, but simply that Jester's is the most conspicuous (and successful) in elaborating a discursive structure that distinguishes its mode of reception from the simply pictorial.[10] The reading experience this produces benefits from a spatial ordering more sophisticatedly three-dimensional than most 20th Century graphic design, and demonstrates resources for an articulation and expressiveness with tremendous promise for more evolved forms of visual text.

3. Poetics Manual ?

"Whatever was done in human history as an outstanding achievement can be repeated or can be developed to a standard ability." (Moholy-Nagy, "New Bauhaus" 105)

Typography, in the earliest works of modern visual poetry, consisted of formal strategies evolved intuitively for literary (or artistically anti-literary) ends. Already in the 1920's, particularly under the auspices of Bauhaus pedagogues, graphic design was presiding over the process whereby these strategies were rationalized, catalogued and made available as functional means to designers whose assignments did not require, and probably could not rely on, a poetic intuitive development. The long line of typographic design primers extending from the Bauhaus through Swiss Design to the less prescriptive manuals of today (Lupton, *Dictionary* 32-33), represents a tradition of summarizing the knowledge base for creative work with the visual form of language. If graphic design is visual poetry's commercial sister, such books constitute practical manifestations of a visual poetics, and have a potentially significant role to play in supporting the development of new-media typographic mastery commensurate with more purposefully poetic applications.

One example contemporary with the Metalheart project is the book *Moving Type: Designing for Time and Space*, by Matt Woolman and Jeff Bellantoni. Published in 2000 by RotoVision of Switzerland, it represents an updating of the classic typography primer in the context of new design and display technologies. In particular it seeks to integrate principles of typographic animation into the standard repertoire, since with the release of Macromedia's "Flash" and similar scripting programs in the 1990's, and the increasing demand for animated text in web-based media, (for example, banner advertising), the practice of dynamic titling and motion graphics ceased to be the reserve of specialists in TV and film, and became a requirement for virtually every graphic designer working in new media. While *Moving Type* doesn't replace more exhaustive manuals focused toward print applications, e.g. Emil Ruder's *Typography* (1981), and doesn't attempt to address the broader possibilities of typography in the context of 3D computer art, its elegant concision demonstrates just how streamlined the basic presentation of typographic "poetics" has become in the hundred or so years of professional development in graphic design.

Whereas in 1897 Mallarmé could observe in newspapers and advertising posters the possibilities technology made available for typographic design, but had to derive principles of his own for controlling the variables and producing a reliable aesthetic effect, a poet waking to the potentials of spatialized writing in 2000 could learn in a few minutes of reading or interactive design tutorials the same basic strategies Mallarmé devised

himself for his groundbreaking, and still largely unrivalled work, as well as countless more pertaining to technologies only recently developed.

In sections entitled "Space", "Type" and "Time" (alternately, "Kinetics"), Woolman and Bellantoni cover the same typographic details Mallarmé pointed to in elucidating his work, though in the context of a dramatically modernized practice. In the Preface to *Un coup de dés*, Mallarmé specified first the role of empty or negative space ("les blancs") in framing the text and supporting the spatial and temporal patterning built into it. Then he explained the two fundamental isomorphic relations keying visual factors to the impact they are to have on the reading; the style and size of typographic characters were to mark the importance each line has in the aural performance, and the arrangement or disposition ("portée") was to mark the quality of its intonation, rising or falling according to whether the words appear high or low (or left or right) on the page. Since Mallarmé's strategy in general was to use spatial arrangement as a device for musical scoring, placement in the sense of "portée" (which among other things refers to the stave in musical notation) mattered primarily for its temporal value, and for the dynamic qualities it lent to the text.

Each of these concerns receives its brief treatment in *Moving Type*. The outline of topics under these headings is as follows:

Space: Point, Line, Plane, Volume, Perspective,
      Aspect Ratio, Composition, Ground, Depth, Grid, Mask

Type: Case, Face, Posture, Width, Weight, Scale,
      Distortion, Elaboration, Dimensionality

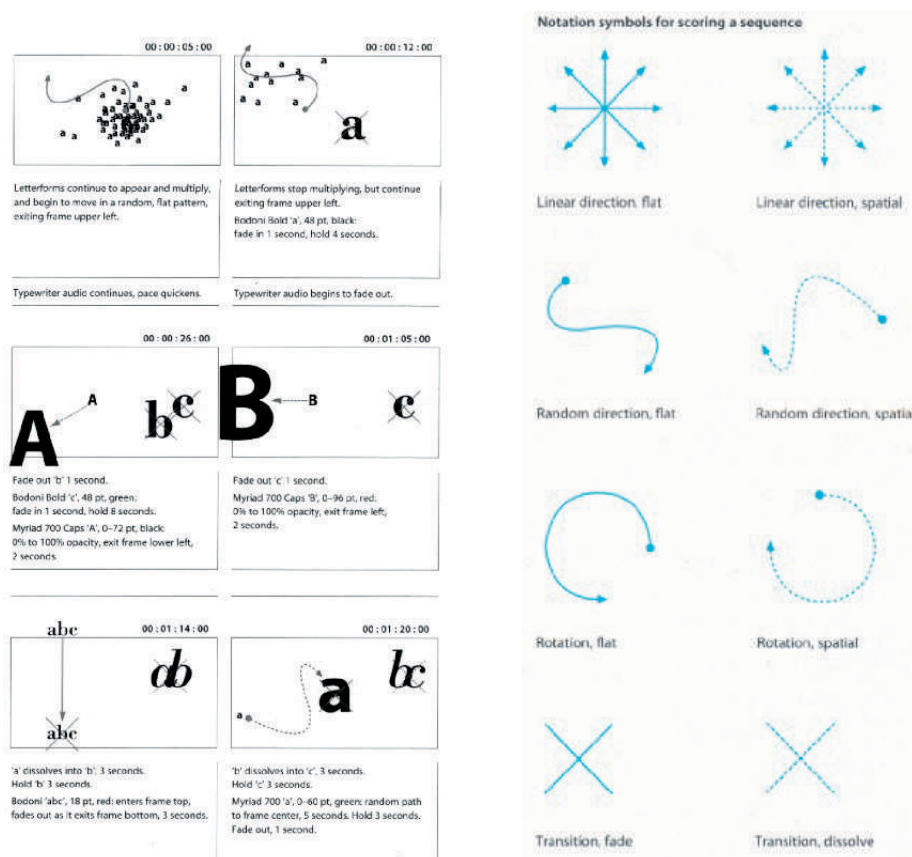Kinetics: Direction, Orientation, Rotation, Proximity, Grouping,
      Layering

The authors explain, with highly legible illustrations, the anatomy of a typographic character, the range of font choices, the relative impact of capitals or lowercase, roman lettering or italics, and various other factors from the "leading" or thickness of type, to spacing and "kerning", as well as the use of three-dimensional type and of letters and words rotated and angled in various ways. The fundamental association of type size with volume of inflection, and hence with the hierarchical order of components in a statement as Mallarmé stressed it, is covered in a series of variations on the sentence "Style is nothing but nothing is without style." Even in their simplicity, these examples demonstrate the basic lyrical potentials of these variables.

As for placement, Woolman and Bellantoni recommend using a grid to organize the positioning of different elements within a single frame. Similarly, Mallarmé had used quadrille paper to lay out the pages of *Un coup de des*, for perhaps the first time putting this standard design technique to a literary use. But the problem as the authors of *Moving Type* present it has changed dramatically from that faced by traditional graphic designers. In planning for the animation of a text, the position of words must be specified not only in the two dimensions of the textual surface, but also in the time dimension. Mallarmé used the differential spacing of textual elements as itself a sort of animation, scoring the vocal pace of reading and establishing subtle kinetic effects in both the ocular experience of following the words around the page and in some inscrutable mental counterpart experienced in the act of construal. The possibility of designing a text where the presentation itself, and not merely its reception, is time-based would presumably have been of tremendous interest to Mallarmé. Certainly the new genre of poetic text (and text-image) animation, evolving intensively since the late 1990's, represents a more literal musicalization of language than Mallarmé ever anticipated. But from a design perspective the complexity of the compositional task is multiplied exponentially with the addition of a real time dimension, and lyric mastery in the new typographic artform is a rare phenomenon. The examples of student and professional work included in the CD that accompanies *Moving Type*, while technically sophisticated, are in general far below the quality that can make of this genre a major new field of visual poetic art. [11]

To help designers (or poets) manage the complexity of time-based textual composition, the authors provide a number of useful organizational and scoring strategies. I won't try here to assess the potential these notational schemes have for a visual poetry in the age of animated text, nor to explain how they translate to the actual designing of animations in programs such as Flash or Director, but as suggestive resources representing

the sophistication to which the idea of a spatial scoring has come since the time of Mallarmé, they deserve a brief exposition.

00:00:05:00

Letterforms continue to appear and multiply, and begin to move in a random, flat pattern, exiting frame upper left.

Typewriter audio continues, pace quickens.

00:00:12:00

Letterforms stop multiplying, but continue exiting frame upper left.
Bodoni Bold 'a', 48 pt, black: fade in 1 second, hold 4 seconds.

Typewriter audio begins to fade out.

00:00:26:00

Fade out 'b' 1 second.
Bodoni Bold 'c', 48 pt, green: fade in 1 second, hold 8 seconds.
Myriad 700 Caps 'A', 0–72 pt, black: 0% to 100% opacity, exit frame lower left, 2 seconds.

00:01:05:00

Fade out 'c' 1 second.
Myriad 700 Caps 'B', 0–96 pt, red: 0% to 100% opacity, exit frame left, 2 seconds.

00:01:14:00

'a' dissolves into 'b', 3 seconds.
Hold 'b' 3 seconds.
Bodoni 'abc', 18 pt, red: enters frame top, fades out as it exits frame bottom, 3 seconds.

00:01:20:00

'b' dissolves into 'c', 3 seconds.
Hold 'c' 3 seconds.
Myriad 700 'a', 0–60 pt, green: random path to frame center, 5 seconds. Hold 3 seconds. Fade out, 1 second.

Notation symbols for scoring a sequence

Linear direction, flat

Linear direction, spatial

Random direction, flat

Random direction, spatial

Rotation, flat

Rotation, spatial

Transition, fade

Transition, dissolve

When the typographic elements are free to move around within the textual space, they can assume dynamic qualities and behaviors that directly impact the verbal semantics. Where Mallarmé exploited kinetic analogies over a space of several lines or pages (e.g. the left-right oscillation of lines across the gutter between two pages to reflect the listing of the ship thematized verbally), animation tools allow such effects to be orchestrated within the space of a single line, word or letter. In one sense this favors composition at the scale of the short lyric, whereas the devices Mallarmé used could only really take effect in a work of many pages. Conversely, the complexity of time-based composition makes attempting a longer work truly daunting. In another sense, the ability to score typographic movement is ideally suited to adaptation in forms of concrete poetry, with movement partly taking the place of structure in the classic formula of structure-content fusion that traditionally defines concretism.

Woolman and Bellantoni also demonstrate techniques for planning and keeping track of the rhythmical structure of an animated text, both in the visual elements and

in accompanying audio. In their notation, each box is used to indicate a unit of visual presentation, with circles along a parallel time-track marking audio units. The device allows for easy articulation of complex rhythmical patterning, and though in the examples above, notating "regular", "irregular" and "counterpoint" structures, it applies only to the relationship between a single visual sequence and a single audio track, it can clearly accommodate greater complexity. They demonstrate this greater complexity in the last section of the illustration, which shows four visual tracks each with different content and establishing various contrapuntal patterns, as well as an accompanying audio track. Clearly, Mallarmé's dream that spatial devices for a visually intensified poetry might raise the "chant personnel" of lyric tradition to the level of symphonic composition, finds an entirely new level of realization in the technologies available to typographers at the turn of the 21st Century.
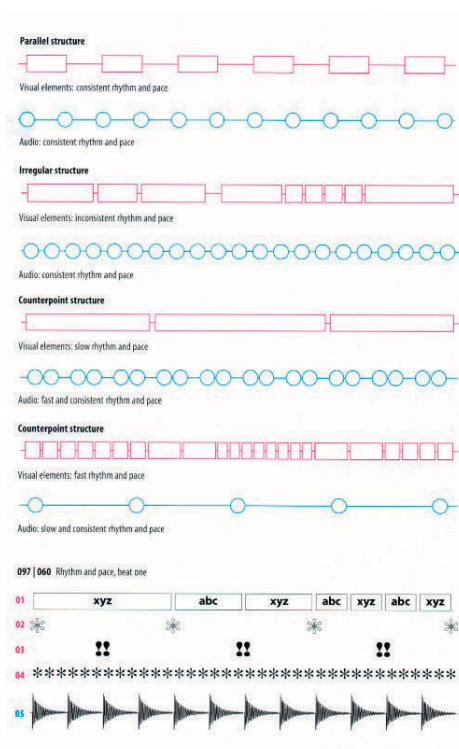
4. Metalheart Space

Digital technologies extend typography into a radically enhanced spatiality. The tools that allow for the dramatic articulation of pictorial space also permit an unprecedented control of typographic elements as factors in that articulation. The particular interests of the Metalheart artists, however, focus less on typography as such, and more on the elaboration of spaces for their own aesthetic value, and as environments for the presentation of a drastically intermedial form of textuality. Metalheart's relative marginalization of text elements doesn't undermine the project's relevance to typography. As Ellen Lupton and Abbott Miller put it, "The substance of typography lies not in the alphabet as such—the generic form of characters and their conventional uses—but rather in the visual framework and specific graphic forms that materialize the system of writing. Design and typography work at the *edges* of writing, determining the shape and style of letters, the spaces between them, and their placement on the page" (Lupton/Abbott 14). For Mallarmé, as we saw in the last chapter, placement (*portée*) was a more interesting or urgent variable to explore than type style, while for Metalheart, the "spaces in between" become the primary field of development. Ultimately, of course, the three aspects can't be separated, and each encounters its own set of challenges in the digital age. But in some important ways, as I will discuss later, designing the "space between" assumes a complexity and importance unprecedented in the history of graphic design.

The possibilities enumerated in a 21st Century design primer like *Moving Type* update graphic design instruction with potentials implicit in the fact that words and letters in the digital environment *are* computer graphics, and thus partake of the full compositional and computational flexibility of the medium. While to the reading mind words and images preserve certain fundamental distinctions, digital design capabilities narrow or eliminate differences in where and how each can be presented, completing an evolution that began with chromolithography and photogravure technologies in the late 19th and early 20th Centuries. This rapprochement of verbal and visual codes, maximized in the age of computer graphics, is paralleled on a theoretical level by the increasing recognition of the "intersemiotic" nature of sign function in general. If a legacy of structuralist and post-structuralist theory is to implicate language in the forms of non-verbal thought and experience, an important insight of recent cognitive science (e.g. Ruthrof's *The Body in Language* (2000)) does the converse, highlighting the indispensable role of non-verbal, or extra-linguistic signs in supplying language with its meanings. The intermedial possibilities

of visual communication, pursued so eagerly throughout the 20ᵗʰ Century, are therefore more than simply opportunities presented by the technology. They represent an evolution in our notions of meaning and language in general. Expanding the degree to which kinaesthetically engaging, 3D spatiality can figure in the presentation of such "text" adds an important extra-linguistic dimension to the resources of visual writing.

Spatial Devices

The Metalheart works demonstrate a wide range of devices for the extreme articulation of space, within the constraints of a finally 2-dimensional presentation. In many pieces, as we saw with Tim Jester's "Blood", and even more clearly in Lindholm's "Metalspread 02", vertical and horizontal bands of graphical elements extend across the piece as diametrical axes, and mark the surface plane explicitly, allowing obliquely angled elements to stand out clearly as an orthogonal, third dimension (z axis). In Lindholm's piece, a thin line of continuous image frames extends all the way across the spread, prominently marking the x axis and organizing the amorphous field of materials behind it, while a less conspicuous, vertical column of empty graphical boxes (y axis) intersects with it at the circular focal point of the piece, from which the obliquely-angled pencil of lines and rectangular blocks (z axis) projects out towards the viewer. Above and behind the horizontal band, to the left of where the three axes meet, and partly concealed in the dark blue depth there, are the words "Welcome to the third dimension".

This device, a very literal application of the principles of linear perspective, faces the inherent limitation that as the angle of the third axis approaches 90 degrees from the plane, (i.e. true orthogonal) it becomes illegible. Aligned to point "straight through" the frontal plane, or straight out at the viewer, the vectored planes in Klee's drawing (below), for example, would be indistinguishable from vertical or horizontal lines.
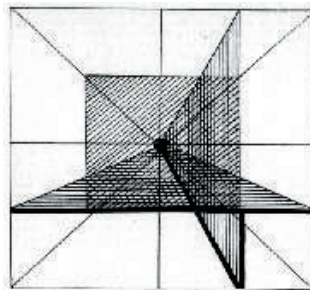
A simple line marking the axis would appear as a point, which is essentially the case with the fist in Tim Jester's piece. Nonetheless, as a standard convention for spatial

representation in Western art since the Renaissance, augmented here with the mechanical precision of a computer processor, the device is highly effective in suggesting depth and distance within the flatness of the picture plane.

Another device for amplifying the sense of space in these pieces involves the use of three-dimensionally rendered objects. Though in these pieces such objects only manifest two-dimensionally, and so appear reduced to conventions of perspectival illusion, they are truly three-dimensional in the virtual reality of their modelling or animation environments. The spectacular centerpiece of Lindholm's "GR Dacca-Food Digital", for example, a twelve-armed, spherically symmetrical object with piercing, nine-jointed tentacles lashing out through space in all directions, is a powerful example of this. The object, a robotic creature or probe suggesting perfect spatial intelligence and total 3D motility, is the very mechanical embodiment of spatial articulation. And technically, though it would not be impossible to paint such an image, the object's dramatic dimensionality and salience from the ground are the result of its having been composed in three dimensions. Creating the piece, Lindholm would have been able to rotate it in any direction, displace it along any axis, bend it at the joints, establish implied light sources illuminating it from any point in space, and specify complex paths for animating its intricate, whirling movement. Three-dimensional rendering, while computationally grounded in perspectival geometries, explodes perspective as an illusionistic convention, in that the dimensionality it produces is real, even if restricted to the virtuality of a digital environment.

Interestingly, as a side note, the space through which this thing swings its machine-tooled tentacles is graphed on the frontal plane with a circular metric that reads out as musical notation, suggesting that its movements register in the atmosphere as sound. Again, we see space mapped to serve a musical scoring.

The space of "GR Dacca-Food Digital", like that of several other Metalheart works, is the "deep space" of science-fiction fantasy, though blended with imagery, vector graphics and wire mesh fields in a way that resists any representational fidelity to "outer space." The aesthetic feel of the piece, relying on moody, extra-terrestrial qualities of light and atmosphere for a feeling of cosmic vastness, is strongly suggestive of a sci-fi environment, one in which the robotic probe would be a probable object. The vertical format of the piece, relegating fully half its surface to depicting a vertiginous emptiness below the probe, reinforces the impression of an interstellar space, independent of any planet as a gravitational reference. Yet the space at almost every point reasserts its character as graphic space, presenting incongruous imagery, objects, and textures. It suggests a space of imagination, where scale is irrelevant and objects, imagery and emptiness can occupy the

same place simultaneously. Yet it is also an impossibly detailed space, one only imaginable with the technical amplification of digital rendering.

Another key spatial device observable in the Metalheart works is the use of wire mesh and texturing to "shape" space, establishing slopes and regions of relative depth and volume without relying on objects to define depth by overlap, relative size or perspectival alignment. We saw the effect used in a very elementary way in Tim Jester's "Blood", and much more elaborately in "GR Dacca-Food Digital". The device derives from features of 3D modelling that allow the designer to specify the curvature of a plane or object onto which a color, texture or image is to be mapped. An artist wanting to faithfully reproduce the rectilinear grid of an Italian Renaissance courtyard would use basically the same feature. Employed abstractly for its own capacity to articulate spatial shape, and subjected to dramatic warping, the feature is a powerful device for creating a sense of space as such, as pure field or ground, independent of other objects. The work that best demonstrates this is the long banner-format piece by Per Gustafson, titled "Tribute to Metalheart".

Andreas Lindholm,
"GR Dacca-Food Digital"

Reading Space: Gustafson's "Tribute to Metalheart"

Per Gustafson: "Tribute to Metalheart", Photoshop, Flash, Lightwave 3D.

Gustafson's piece shows almost nothing but space. The mesh texturing and light effects articulate the field into indeterminate zones of differently vectored emptiness. A basic pattern of in and out is established horizontally across the surface, with thin vertical bands of bright light marking forward "corners", from which regions of darker, generally less dense space recede. As the denser vertical corners seem to shed vision off into the more receptive, negative zones, we can speak of the former as warps and of the latter as phases in a temporal experience of viewing. This pattern establishes a visual rhythm when scanned horizontally, breaking the piece up into (roughly) four irregular sections, with each phase offering a possible content to be explored.

Whereas those in the left half of the piece are relatively empty and open, the two phase-spaces on the right contain most of the piece's semantic content. Centered behind the word "METALHEART", and slightly above it, is a graphic construction forming an optical target of concentric circles and radial lines. The construction is both a strong focal point in its own right, and combines its circular capital and extended verticals with the long horizontal of the name to create a larger-scale optical target, concentrating the explicit focusing cues of the piece in this central cluster. This focusing device, however, rather than limiting the viewing to a dominant central reference, creates a delicately off-balance point of emphasis, ensuring a dynamic interaction with other elements and regions in the piece. The word "METALHEART" on which the optical target is centered, is itself slightly off-center to the right, with reference to the piece as a whole. Conversely its visual emphasis is to the left, closer to the true midpoint of the piece, where the word's first syllable is highlighted by one of the main vertical light effects. The compensatory tilt to the left which this suggests, however, is far outweighed by the visual pull of objects to the right.

The tentacled object in the right-most space stands out the most, at least in terms of size, brightness, and dimensionality. Its high resolution, sharpness of contrast and unusual form make it arguably the most commanding element in Gustafson's piece,

setting it in tension with the central optical target.   Less attention-getting than either point in abstract perceptual terms, but far more so psychologically, are the two fragments of human figures in between. The single eye and mostly-hidden face of a man, and the patch of image depicting a woman, elegantly dressed, in a gesture suggestive of dressing or undressing, establish complex dynamics in a region of relatively subdued visual values. Each element on its own is visually compelling, eyes and female figures being perhaps the two most attention-getting of all pictorial objects, while together they establish a poignant erotic/voyeuristic tension.   These elements, presented with the dim fragmentarity of mental imagery, introduce a charged, if undefined, human narrative into the otherwise abstract piece, and suggestively implicate the viewer as a third party.

Gustafson's piece, a tribute to Metalheart in its play with dramatic spatial shaping, high-contrast light effects and abstract, technological character, sounds another major theme of the collection. The use of transparency and layering demonstrate powerful devices for presenting images as abstract, internalized signifiers. The objective, external character of images is one thing that sets them off from words, which by their ultimately aural nature tend to be received more intimately by the reader, "heard" in an internal performance resembling thought. While images have tremendous power to absorb the viewer, and elicit a participation that may more than compensate for the differences in immediacy between an inner and outer performance, separate images in a collage context famously resist this absorption. Though applied essentially as collage elements—each image file necessarily begins as a discrete rectangular picture with sharp borders—images such as the two in Gustafson's piece can be faded, partially deteriorated and blended into the surrounding space in ways that mimic mental imagery or thought, approaching the visual presentation to that of words. This refinement in the visual delivery suggests possibilities for an intermedial textuality that capitalizes on the intersemiotic cooperation of different codes, while reducing the disjunctive effects of heterosemiotic conflict.

The shaping of space through light effects and the warping of wire mesh grids supports the potentials of visual reading in important ways, elaborating the "space between" as a framework for integrating the various meaning elements. While little is done with the few verbal elements in the piece to demonstrate these potentials for word delivery, we can see how space is called into play in reading the visual elements. The pattern of inward depth and outward projection, repeated across a sequence of similar but non-uniform spaces, creates a terrain encouraging exploratory movements of the gaze both laterally and saggitally into the alluringly recessed spaces. The asymmetrical arrangement of other visual elements similarly resists a static focus and keeps the gaze circulating among them. While no determinate reading or scanning order is established,

the spatial emphases applied to the various elements set up specific dynamics in how they are likely to be perceived. "Metalheart" thus receives an optical, and consequently aural, stress on its first syllable. Visually the effect of this as a probable early point of focus is to "pull" the gaze towards the empty pole of the piece at the same time as the commanding form of the tentacled object on the perimeter of vision draws it to the right. A sort of elastic tension is established between these poles, which overshoots the visually receded, but semantically charged imagery in between.

Within that receded space, the same type of effect is repeated on a smaller scale. Of the two images there, the woman's form stands out most clearly, emphasized particularly at the point of her left shoulder, the curved collar of which catches the eye with its angular form. Radiating lines of wire mesh behind the shoulder emphasize it as a point of focus, tilting the space it is perceived in to the upper right. The patch of image containing the male eye seems designed to be perceived only after the female form. While our attention is directed upward to the right, in a region of visually prominent elements, the eye is down left, receded into a "negative" space below the title, in a faint transparency that blends it with the background. Again an elastic tension is established between two spatial pulls, the one linking the woman by explicit perceptual cues to the bright elements to her right, and the other drawn between her and the hidden male figure. Even presuming a wide variability in how different viewers will perceive the piece, these effects seem designed to "present" the image of the male observer relatively late in the scanning process, or at least with a quality of emerging from concealment and intruding on the temporally prior context of the woman's privacy.

The ability to shape space in these ways, whether independently of representational elements or in support of them, is obviously not new to digital design. Among painters, Turner and Van Gogh in the 19th Century are famous for creating warping and energetically charged atmospheres, and in the 20th Century we can look to Matta, among others, as a precedent both for the elaboration of dramatic effects of volume, and for the abstract, mechanical aesthetic of these pieces, and to the Op Art of Bridget Riley for a technical mastery of spatial warping effects. And Robert Rauschenberg, of course, pioneered the use of overlapping silkscreens to produce textured fields with images that read as support-independent, conceptual objects, what Rosalind Krauss somewhat paradoxically labelled "the materialized image". Among graphic designers, Herbert Bayer, to take one somewhat unlikely example, produced works exploring effects of dynamic spatial warping. Though singularly responsible for establishing the classic "flat" aesthetic of Bauhaus typography during the 1920's, Bayer, who was also an architect and designer of immersive exhibitions,

later involved much more spatial depth in his graphic work. A number of paintings from the '40's show a preoccupation with spatial shaping similar to that in "Tribute to Metalheart", e.g. his 1945 piece "Convexing concavities". Attempts to incorporate these effects with typography, however, were not very successful.

What is new with computer-aided design, of course, is the automation of these devices. The wire mesh and line-tracing capabilities of computer graphics programs make the same effects far easier to achieve, and more visually convincing. Bayer's piece required thousands of carefully applied brush-strokes. Compare that to the spacescape in Golan Levin's visual music interface "floo". Once programmed, it required only the depositing of some dozen points in space, "sources" and "vortices" from which fluid lines then flowed out and into which they poured, creating a music visualized in complex curvatures and volume. Even simpler is the interactive tool on digital artist Yugo Nakamura's website, www. yugop.com. which with a simple maneuvering of the mouse allows the user to carve out similarly dramatic spaces with streams of fluid lines. These two examples are of interactive "toys" rather than compositional tools, but they demonstrate the extent to which the devices of sophisticated spatial shaping can be automated. Per Gustafson's piece, in the refinement of its image processing work, demonstrates how effectively such spaces can be deployed as a graphical base for integrating language and imagery in a uniform visual idiom without the collage-like fragmentarity that characterizes many composite texts, including Tim Jester's "Blood".

5. New Space

Suprematism 1913

The desire to communicate sensations of spatiality independent of representational imagery was fundamental to the Suprematist project, and several of the Metalheart pieces seem to invite this association. Lindholm's "Metalspread 02" and Cem Gül's "Technoshit Happens" both feature clustered fields of rectangular solids projected in an abstract void. Though Malevich rejected perspective in favor of spatial effects arising directly from perceptual tensions among two-dimensional forms on the picture surface, the device is nevertheless a classic signature of the Suprematist aesthetic. As the architect Kevin Rhowbotham points out, a perspective rendering merely "literalizes" the spatiality Malevich's "non-objectivist" paintings strove to "insinuate" (Rhowbotham 30,33). We see such a literalization of the abstract Suprematist spatiality in El Lissitzky's picture book,

Dwa Kwadrata (*Two Squares*) (1920), where the strict principles of "non-objective" painting were somewhat loosened, perhaps with the justification that the target audience were children.
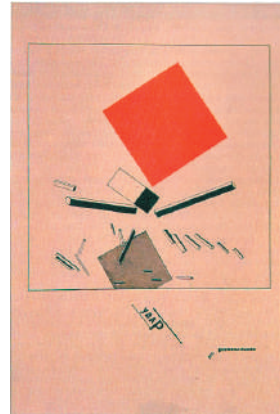
Cem Gül/Metropolis Design, excerpt from "Technoshit Happens".
El Lissitzky, from *Dwa Kwadrata* (1920)

On a formal level, the ability to "insinuate" space without recourse to perspective or other conventional strategies of representation was considered Suprematism's chief accomplishment. It represented a liberation not only from representation, but also from the physical limits of the picture plane. In his treatise, *The Non-Objective World* (1927), Malevich traced the formal/conceptual innovations, the "additional elements", marking the history of art from the mid-19th Century through Cubism, Futurism and Suprematism. It ended with these lines:

> Suprematism has opened up new possibilities to creative art, since by virtue of the abandonment of so-called "practical considerations", a plastic feeling rendered on canvas can be carried over into space. The artist (the painter) is no longer bound to the canvas (the picture plane) and can transfer his compositions from canvas to space. (*NOW* 100)

Suprematism famously took its direction as a formal revision of European art from a new experience of space. The experience of viewing the earth from an airplane, a founding inspiration also for Italian Futurism, amplified the range of spatial experience available to inform a painterly practice. As Malevich saw it, the vocabulary of abstraction, lines and planes discernible where their "meanings" as objects or architecture are not, is evident even in the most realist of views from the air. For Malevich, the experience revealed a new territory of sensation that could replace the field of mimetic references as the target for painterly expression. Space itself, as a "pure" abstract sensation, became the central referent of Suprematist painting.

Establishing an aesthetic project around this focus involved elaborating what Malevich thought of as a visual language of spatial expression, and of the conceptual and, ultimately, metaphysical contents which that supported. Malevich published his version of this language in the "Suprematism" chapter of *The Non-Objective World.* At the core of the chapter are 23 plates, a rough but methodical alphabet of abstract space. It progresses from "The basic suprematist element", the "Black Square" of 1913, through other foundational elements and on to a whole series of "expressions" produced by varying and combining the elements in syntactic relationships. These bear labels such as: "Composition of suprematist elements expressing the sensation of flight", or "the feeling of wireless telegraphy", or "of universal space", or, near the end, 'Suprematist composition conveying the feeling of a mystic "wave" from outer space'. It was such "language", elaborated variously by the various pioneers of painterly abstraction, that by way of Constructivism and the Bauhaus motivated the spatialization of text in the "new typography".

Perhaps more importantly than the specific visual novelties of flight, the technological empowerment involved, the manufactured ability to experience new perspectives on reality that suddenly open new dimensions of experience, provided a constructive analogy for arguing the millennial import of Suprematism as an avant-garde movement. For Malevich, the effort of evolving the language of "non-objectivity", as for the public the effort of comprehending it, parallels, and metaphysically supports, the grueling challenge of adapting to modern reality, a challenge manifest also in the grinding changes of a social and political revolution. The world is new in the technological era, and Suprematism is the exacting guide to catching up with it.

> The ascent to the heights of non-objective art is arduous and painful…but it is nevertheless rewarding. The familiar recedes ever further and further into the background….The contours of the objective world fade more and more and so it goes, step by step, until finally the world –"everything we loved and by which we have lived" – becomes lost to sight. (*NOW* 68)

A number of commentators have argued convincingly for Malevich's interest in the "fourth dimension," as a speculative concept whose geometrical description provides alluring metaphors for the transcendence of conventional (visible) reality. Geoffrey Broadbent, drawing on research by L.D. Henderson[13] and R.C. Williams[14], identifies Malevich's signature "Black Square" as a representation of higher-dimensional "cube consciousness" passing through the "plane of reality" characterized by "square consciousness" (Broadbent 49). Quoting Williams, he identifies the architect and theosophist Claude Bragdon as the local source of the image-concept, further permutations of which Malevich seems to have used in his backcloth designs for the Suprematist opera *Victory over the Sun* (1913), and in

the script for an animated film that would have depicted cubes tumbling through space and intersecting with a plane on which they register only as flat phenomena. If the connection is valid, even to a limited degree, it serves well to demonstrate the analogic range in which Suprematism functioned, addressing as the new experience of space both a technological empowerment afforded by modern industrial culture and its new political configuration, and a metaphysically correlated transformation in human consciousness, which through full-on encounter with modern realities would achieve a level of self-awareness and species-wide integration never before known.

In Bragdon's original treatise, *A Primer of Higher Space: The Fourth Dimension* (1913), the final section, "Man the Square, A Higher Space Parable" rehearses the geometrical explanations of four-dimensionality in the form of an allegorized scriptural parable, concluding with a vision of self-transcendence, immortality and cosmic union in the general realization of "cubic" consciousness. Through repeated existences as a "plane" being in the "film world", each life seemingly different and unconnected from the rest, the individual begins to discern a higher self, described in the compositing of variations, but itself self-consistent and unchanging. Identifying with this higher self integrates all the disparate, accidental experiences of limited existence into a necessary, supratemporal whole. The cubic consciousness, containing all past, planar experiences, can relive past lives as instances or iterations of its higher self, and by uniting with another cube (e.g. through love) in yet higher cubic forms, it can "share in all of the past experiences of the other as though they were its own. By multiplying these contacts until all the cubes coalesce, each individual consciousness might share the experience of every other, from the dawn to the close of the cycle of manifestation. This is Nirvana, 'the Sabbath of the Lord' (Bragdon 78). To say Malevich may have known Bragdon's book is not to say that he shared all the metaphysical attitudes it expresses. But it is suggestive of the range of meanings potentially associated with the issue of dimensionality in Suprematist art, all of which recur in the techno-futurism of digital technologies.

Suprematism 2001

The Metalheart aesthetic is also a response to new experiences of space. We could carry out the parallel with Suprematism at a number of levels. One obvious equivalence is between airplane travel and space travel as transformative cultural moments. By 2001, of course, the Apollo missions were ancient history and the experience of outer space was no longer a fresh symbol of humanity's new condition. The "deep space" theme I referred to in connection with "GR Dacca-Food Digital", and the baroque or gothic styling

of such pieces, suggests that the space age informs these works primarily through the distopic tradition of science-fiction films like "Bladerunner" and "Aliens". Where there is a more uniquely contemporary aspect to these sci-fi treatments, it often concerns the alien productions of artificial intelligence and artificial life, like the "Daccafood" probe, or the robotic fly in another Lindholm piece, "Develop/mental". Though outer space remains a symbolic setting for imagining our human future, the computer age has to a large extent eclipsed the space age in the cultural mythos.
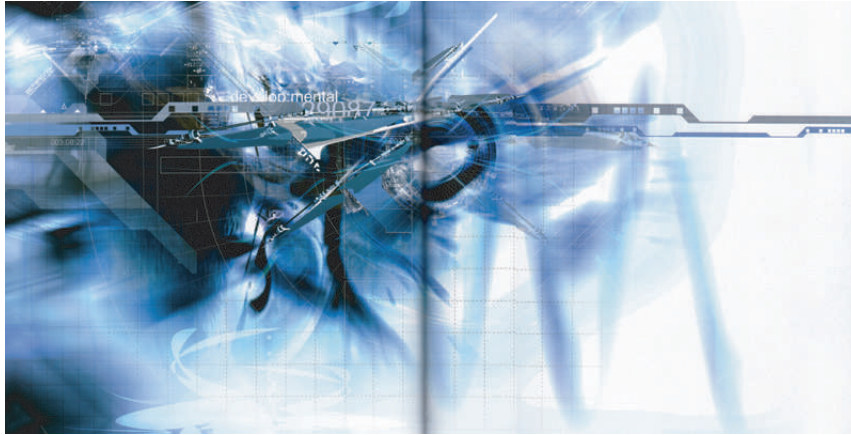
New experiences of the space of physics can also be ascribed as background to the aesthetic we see in Metalheart. The Einsteinian notion of a curved spacetime finds its image in the warped spaces we saw in "Dacca-Food" and "Tribute". The wire mesh effects of those pieces are variations on a kind of illustration found in every high school physics textbook, popularized by best-selling books like Stephen Hawking's *A Brief History of Time*. Similarly, I see suggestions of a quantum conception of space in "Tribute", where the space containing the tentacled figure and the empty space at far left seem identical or closely related, perhaps in the parallelism of matter and anti-matter, or as an instance of the wormhole effect whereby a particle can travel from one point in space to another without crossing the space in between.

The idea of wormhole space also links us to another aspect of the new spatial experience informing work like that in *Metalheart*, and that is the space-collapsing effects of information in the media age. Marshal McLuhan likened television, by which he meant all tele-communicative information channels, to wormholes in an analogy that has become only more apposite with the opening of the Internet. As Tony Robbin explains it, in the context of a treatise on the fourth dimension in computer art: "Watching television is like exploring wormholes where every point in space, say your television screen, has the potential to be connected to every other point in space without passing through

the intervening space" (Robbin 51-2). And for Robbin, whose computationally-planned, latter-day Suprematist paintings seek to project a four-dimensional spatiality from the flat surface of a wall or canvas, the issues of quantum physics, information media and the fourth dimension are part of the same millennial challenge, to comprehend a new scale and order of reality:

> We are on the verge of a new space, neither the rigid empty solid of the Renaissance nor the filled, aggressive field of the turn of the century, but one very different from both. The new space is pressing upon us in both art and mathematics, as both artists and mathematicians try to overcome the inadequacies of our previous models of space and to formalize their unconscious images of space (images based on McLuhan's "television"). In physics more and more of the new models of quantum wormhole space are derived from the ability of physicists to visualize and work in a space of four dimensions….As culture teaches us to heal the cut in consciousness and to experience the new subjective world whole (using mathematics as a guide), the four-dimensional world will become more real to artist and physicist alike. It is then that the true four (or more)-dimensional model of wormhole space will become manifest. (Robbin 55)

Cyberspace – Navigable space

While the new spatial realities of relativity, quantum theory, space travel and television have all been at least partially integrated into our contemporary world view, the challenges to our spatial concepts presented by digital information technologies and virtual reality are still only dawning. These challenges are complex, and require formulation from many different perspectives. They involve changes to our experience of external, social and physical space, as well as new experiences within computer environments. The Internet as a universe of potentials that almost inevitably invites spatial metaphors, is certainly the phenomenon that most conspicuously challenges us to evolve adequate conceptual and spatial models.

Early conceptualizations of the networked world of information latent in what was to become the World Wide Web often involved an immersive, virtual spatiality as the encompassing framework for accessing and exchanging information. William Gibson, whose 1984 novel *Neuromancer* gave us the word "cyberspace", pictured this world of information in terms borrowed from science-fiction visions of outer space. The "data cowboy", jacked in to his computer, experienced the navigation of code as a near total hallucination of otherworld travel, imagined on the model of a lucid dream or flight simulator. Movement in this realm registered on the body with all the stress of gravitational force on the body of a jet pilot in a dogfight. Only slightly less fantastically, Marcos Novak, a pioneer of architecture in the digital context, defined cyberspace in 1991 as "a completely spatialized visualization of all information in global information processing systems".

That the total information content of the Internet should be visualized spatially, however, is by no means obvious. This was especially the case in the 80's and early 90's when it was a restricted tool of, first, the military and government, and then of academic institutions, accessed entirely through verbal commands and a minimalist display allowing only the simplest forms of linear text. As Loss Pequeño Glazier points out in discussing poetry's entry into "the electronic landscape", despite the spatial metaphors, "the fact is that the electronic world is a world substantially of writing" (Glazier 31). The base reality of "cyberspace" is the radical linearity of binary code, with programming languages (principally HTML) constituting the level of our basic interface with that reality.

Though electronic textuality assumes a material, and hence spatial character in the grid conventions of displayed "pages", Glazier rightly points out that this spatiality is an artifact, and not inherent in the "medium" itself of HTML (Hypertext Markup Language) in which the information is coded and transmitted. The inherent spatiality of Hypertext consists strictly in the location and linking functions of the code. The locations (server addresses expressed as URL's) have no dimension, and the links describe no direction or distance. Such spatiality, it turns out, is well suited to the planar conventions of webpages, and can be adapted for 3D, but is too underdetermined in itself to supply an immersive spatial framework of the sort fantasized by virtual reality enthusiasts. In the terms proposed by Lev Manovich, this space is irresolvably aggregate rather than systematic: "The space of the Web in principle can't be thought of as a coherent totality: it is a collection of numerous files, hyperlinked but without any overall perspective to unite them" (Manovich 257).

Screen space, therefore, is a fiction of display. Digital information, like aural information at the dawn of written language, demands a visual form, but this form need be no more spatial than conventional print forms, and in the beginning was substantially less so. Interestingly, the visual forms of interface with the Internet have recapitulated the dimensional expansions of language. As the authors of VRML (Virtual Reality Markup Language) explained in 1994, arguing for an immersive, virtual reality model of webspace:

> Previously, Internet appeared as a linear source, a unidimensional stream, while now, an arbitrary linkage of documents, in at least two dimensions (generally defined as "pages"), is possible… It seems reasonable to propose that WWW should be extended, bringing its conceptual model from two dimensions, out, at a right angle, into three. To do this, two things are required; extensions to HTML to describe both geometry and space; and a unified representation of "space" across Internet. (Pesce et al. "Cyberspace")

With the development of HTML and the GUI (graphical user interface), the webpage quickly became the standard of presentation for web-based information. It

allows for the efficient integration of word and image (also sound and animation), and transfers the strategies and challenges of typographic design into the Internet context, but without increasing the spatiality of writing or reading. Because the integration of media was a principle demand made of the Internet from early on, a 2D format appeared as a natural minimum requirement, and as a vast improvement on the linear forms of FTP (File Transfer Protocol), Gopher or Telnet. The reasonableness of extending visualization of the Web to a third dimension, however, has not met with universal agreement. Bandwidth limitations still impose a strict economy on visual information, making 3D very "expensive" in download time and memory requirements, and the experience of many design experiments has biased much of the information graphics community against 3D visualization in general. Just as language has traditionally been considered to function best in a linear format, where its visual dimension is left out of play, so today the 2D form of the webpage and other informational displays is often reflexively defended against the perceived dangers of "information overload" and confusion in 3D[15]. The webpage, and not the fly-through 3D landscape, remains the standard of presentation, and neither the availability of VRML, nor the much anticipated arrival of "broadband" capacity is substantially challenging this paradigm.

In the context of a digital textuality whose planar character is a preferred convention, enforced by technical constraints, the impulse to elaborate a 3D, i.e. volumetric textuality to supplement or replace 2D browsers and the standardization of webpages, is equivalent to Mallarmé's ambition to expand the linearity of poetry with a (more) spatialized writing. If the increase in general functionality is questionable, it may be some more "poetic" quality that the expansion aims to accommodate. In retrospect, this seems to have been the case with the creators of VRML, whose new language first made it possible to generate coherent, 3D information environments inhabitable by multiple users. As Lev Manovich observes in the "Navigable Space" chapter of his book, *The Language of New Media*, "They saw VRML as a natural stage in the evolution of the Net from an abstract data network toward a 'perceptualized' Internet where the data has been 'sensualized,' i.e., represented in three dimensions" (Manovich 250).

To "perceptualize" and "sensualized" the Internet means to domesticate it, to humanize it according to an imperative of our embodied nature and desires, rather than to calculations of efficiency. Pesce, Kennard and Parisi say as much in the conclusion to the 1994 "Cyberspace" paper Manovich quotes, claiming that the components that make a virtual reality webspace possible

> make both WWW and Internet inherently more navigable, because they help to make Internet more human-centered, adapting data sets to human capabilities rather than

vice versa. This, thus far, is the single largest contribution that "virtual reality" research has offered to the field of computing; **a human-centered design approach that lowers or erases the barriers to usage by creating user-interface paradigms which serve humans to the full of their potential**.

The claim to address the "full potential" of human users seeks to place VRML and the possibility of a 3D navigable information space beyond a merely aesthetic or emotional/psychological value. Just as for Mallarmé there was a surplus of the expressible neglected by linear language, aspects of the "form and pattern of a thought" (Valéry) missing without a spatialization of verbal delivery, so in the display of digitized information there are comprehension and mental processing potentials that are not exploited in strictly 2D presentations. Pesce, Kennard and Parisi argue for the "reasonableness" of 3D paradigms not on the basis of a latent spatiality in the information, but rather on the basis of the inherent capacities of human spatial cognition:

> Navigability in a purely symbolic domain has limits. The amount of "depth" present in a subject before it exceeds human capacity for comprehension (and hence, navigation) is finite and relatively limited. Humans, however, are superb visualizers, holding within their craniums the most powerful visualization tool known. Human beings navigate in three dimensions; we are born to it, and, except in the case of severe organic damage, have a comprehensive ability to spatio-locate and spatio-organize.

The idea implied here, as had been voiced explicitly in Valéry's enthusiastic appraisal of *Un coup de dés*, is that a mode of writing could be conceived that would embody, or at least accommodate, the real-time spatial nature of thought, and hence yield a symbolic technology of unprecedented expressiveness and compatibility with the human mind. Behind the questionable functional argument, a somewhat more metaphysical ambition may be detected, namely that of evolving a form of text that would render thought itself visible, and through its use allow us at last a direct perception of mind. The notion of the computer as a meta-mind is older than the question of whether to embody the Internet in a two- or three-dimensional form, but certainly a large part of the fascination with virtual reality models consists in the hope of seeing mental space embodied as an explorable environment. Hal Thwaites, whose intimate technical involvement with 3D media design since the 1970's makes him very aware of the perceptual and engineering constraints involved, nevertheless comments:

> For the first time, the technologies of virtual reality allow media designers to externalize the processes of human thought. What was for thousands of years hidden within the realm of the mind is now exposed to the laws of digital and analog processing. (Thwaites 240)

Even the most sober of descriptions in the technical field of information visualization tend to refer to data space as an externalized mind. Barbara Pfenningstorff, for example, writes in an article lacking the techno-utopianism of many commentators: "The field of Information Visualization amplifies the internal cognition by constructing a spatial external working memory, supported by the computer. The interweaving of interior mental action and external perception is the essence of the achievement of expanded intelligence" (Pfenningstorff 2). While the practical functions of memory-enhancement seem well-served by 2D information displays, or by 3D displays with very limited navigability (like the "memory theaters" of classical mnemotechnics), the desire to visualize information as a "sensualized" model of mind requires something different. If the classic paradigm here is the Jamesian "stream of thought", or "stream of consciousness", whose base metaphor pictures the contents of mind as soluble objects in volumetric flow (James, 255), and consciousness itself as a bird-like pattern of alternating flights and landings within that flow (James, 243), then navigability and immersion are indispensable components.

The idea that information can be rendered in a form that reveals the workings of the mind brings computer science and interface design oddly in line with poetry. Because, of course, taken at face value Thwaites' comment concerning VR is extremely naïve. All cultural media externalize human thought processes to some extent, that being their purpose. And poetry has traditionally done so with the added ambition of raising these processes to consciousness, i.e. making them "visible". For Mallarmé, writing functions by "marking the movements (gestes) of the idea manifesting in the word (parole), and offering them their reflection" (Mallarmé, ???). The poem ("la fiction") that results, in a parallel to Thwaites' VR, thus comes to resemble "the human mental process itself" ("le procédé même de l'ésprit humain"), (Mallarmé 379) and functions as a tool of self-knowledge.

Visibly spatializing the text of *Un coup de dés* merely increased the resolution with which the mental process could be depicted, provoking Valéry to a realization he might have otherwise had reading *Igitur* or another of Mallarmé's pre-visual works. The spatial arrangement and intervening blanks, the visible "retreats, extensions, flights" ("retraits, prolongements, fuites") that trouble and attenuate the promised "guiding thread" ("fil conducteur latent"), are all features that in addition to the fundamental thematics of way-finding and navigation establish the text explicitly as a terrain or environment, in which reading becomes a form of exploratory transit. The Mallarméan model of visual poetics in this sense anticipates the mental speculations of VR and 3D information designers at the turn of the 20th Century, and the impulse to spatialize data as an immersive mirror of mental function. But so does much writing that doesn't seek to literalize as layout the spatiality it experiences in thought and language. Take for example Lyn Hejinian's

description of her poem "The Green":

> My intention (I don't mean to suggest I succeeded)…was to write a lyric poem in a long form – that is, to achieve maximum vertical intensity (the single moment into which the idea rushes) and maximum horizontal extensivity (ideas cross the landscape and become the horizon and the weather). … For the moment, as a writer, the poem *is* a mind. ("Rejection" 29)

Lev Manovich, who first published "Navigable Space" in 1998 as an independent article, proposed then to interrogate the computer-age impulse to spatialize all forms of information, and the desire to build the Internet as a virtual world of wormholes and immersive landscape, and found in these the contemporary manifestation of an old cultural form. He traces this form back through literary models in the Baudelairean *flâneur*, in New World exploration narratives and in the classical hero journey, and ascribes it to a perennial human fascination with the adventure of displacement and discovery. But only in the fresh environment of computer media, Manovich argues, does the "navigable space" phenomenon reveal itself as something more than a kind of human experience portrayed or reenacted in a kind of literature. Latent in the very root concepts of the computer age, (e.g. "cybernetics", from the Greek for "good steersmanship"), "navigable space" as a form pervades all areas of new media: computer games, flight and battlefield simulators, scientific visualization, architectural modelling, and, at some level, every kind of human-computer interface. Manovich's point is that, more than merely a literary form that has replicated itself as structural metaphor for certain new media applications, what we have with "navigable space" in these various embodiments is a new "media type", a new format in which any content (information or experience) can be presented, a new medium bringing to its messages characteristic benefits and distortions.

> For the first time, <u>space becomes a media type</u>. Just as other media types — audio, video, stills, and text — it can be now instantly transmitted, stored and retrieved, compressed, reformatted, streamed, filtered, computed, programmed and interacted with. In other words, all operations which are possible with media as a result of its conversion to computer data can also now apply to representations of 3-D space. (Manovich 251-2)

If this distinction can be made, between narrative forms that take you on a journey through space and the journey through space as a structuring logic potentially applicable to any information, then I think we can already see Manovich's new phenomenon emerging in the trend to spatialization in 20th Century poetry and graphic design. While the *flâneur* as literary protagonist, or the Mississippi as narrative framework thematize navigable space or reproduce it as experience, Mallarmé's *Un coup de dés* applies it as a media format.

The challenge which that work poses as visual poetics is a version of the same challenge posed a century later as cyberspace design, the adaptation of a linear symbolic system to an expressive spatial encoding. The connection with computing is even more direct when we consider graphic design, which in the early modern period saw the spatialization of information access as its primary evolutionary priority. Even in the flat, single-frame format of the classic modernist ad poster, the designer's task was often thought of in navigational terms. Jan Tschichold, for example, in *The New Typography* (1928), distinguishes the new from the old on precisely these grounds. His formulation is a functionalist restatement of Mallarmé's visual poetics:

> The form of the old typography could be taken in at a glance, even though this does not correspond with the reading process. Even if I succeed in recognizing the outline of the type matter I have not really read anything. Reading presupposes eye movement. The New typography so designs text matter that the eye is led from one word and one group of words to the next. So a logical organization of the text is needed, through the use of different type-sizes, weights, placing in relation to space, colour, etc. (Tschichold 70)

Graphic design since its beginnings as a profession has for the most part accepted the limitations of its traditional two-dimensional support. The use of perspectival geometries and photographic illusion has allowed some play with the possibility of a depth dimension, but the reality of the material constraints has made it non-sensical and self-contradictory for graphic design to pursue the notion of a navigable space beyond the surface strategies of organizing a two-dimensional experience. What we see with Metalheart, on the other hand, is the full, unrestrained emergence of navigable space as a formal desire in graphic design. I say "desire" because within the "old media" limits of print, the voluminous spatiality of Metalheart's worlds can only manifest as a longing for a totally different media context. The allure of cyberspace, as a new virtual universe in which the textual practice of graphic design might be freed of all spatial constraints, invades this experiment in typography with aesthetic priorities that are alien to typography's own material history. To the maximum of 2D potentials, the Metalheart works rehearse devices for expanding the spatiality of readerly experience, while calling on compositional strategies that can only fully manifest in an expanded field.[16]

By 2002, the year after both *Metalheart* and *The Language of New Media* were published, Manovich felt forced to acknowledge in another article that the 1990's vision of a 3D immersive Internet had faded in the light of actual developments. In "The Poetics of Augmented Space: Learning from Prada", he observes that the 90's fascination with virtual reality had given way in the first years of the new millennium to a less simply

spectacular situation characterized by the ubiquity of computing in external, physical space. Information space as it began to manifest in practical terms had less to do with the "inside" of database searching and virtual experience, and more with the "outside" of an everyday life pervaded by access to, and access by, information technologies. Cell phones, PDA's (handheld Personal Data Assistants), surveillance and the information kiosk are examples of a transformation of the familiar built environment by the unfamiliar influence of devices that can bring information to, and gather information from, any location in concrete space.

The challenges that "augmented space" poses for typography and graphic design are in some ways less obvious than the challenge of envisioning a systematic spatial "look" for the Internet. While virtual reality and immersive worlds continue to be developed in specialty applications, the design of flat graphical interfaces remains the norm, though with increasing opportunity to incorporate 3D visualizations. Ubiquitous, distributed computing requires compact devices, and the tight economies of graphical space have not been eliminated. The main spatial challenge in this context, though, is not one of screenspace, but rather involves a range of design issues best expressed in the term "information architecture", which has in part replaced "graphic design" as a major descriptor of the profession. More than simply communicating messages in a stylish balance of verbal and visual codes, the information architect must engineer the usability of data, giving it not only a visual-spatial look, but also a functional infrastructure and interface.

These tasks confront designers with the incongruity between data and the spatializations required of it. While certain problems may require 3D solutions, especially in the graphicalization of extremely large amounts of data[17], fly-through kinds of navigation involve a greater fictionalization in the graphical language, and are rarely found to be more efficient than the spatially more discrete operations of manipulating objects or clicking between views or pages. The hope motivating the designers of VRML, and many others interested in its applications, was to wed the complex reality of data, via a comprehensive isomorphism, to an abstract landscape that would make it intelligible, navigable, and eventually familiar to both the body and the mind. The reality that seems to be emerging is more vastly heterogeneous, "aggregate" rather than "systematic", in Manovich's terms, with separate challenges and separate solutions emerging in every situation. Standard graphical conventions and forms of spatialization are being established, but on the whole they do not involve the hyper-voluminous styling or strategies of visual flow we saw in Metalheart, and that may or may not yet have a future in giving shape to more immersive graphic realities.

It would be wrong to view the history of graphic design in the last century as that of a progressive spatialization, yet advances in the technological base, along with fashion in presentational effect, have inevitably produced shifts in that direction. Whereas the shift that occurred at the beginning of the century, purportedly from a "linear" to a "spatial", i.e. 2D, practice, can be seen as merely the (re-)activation of a spatiality that was always already present in written and printed forms of text, the shift at the end of the century was more fundamental. If Metalheart represents a spatial maximum of 20th Century typographic design, it is not only because one could hardly imagine a greater sense of spatial depth or articulation fitting into the 2-dimensional field of a printed page, nor merely because it points to the fuller realization of that spatiality in animated, immersive and interactive modes of presentation. More significant is the fact that behind the digital technologies that enable such design is the prospect of a world of data whose spatial properties, vastly exceeding the three--dimensions-plus-time of our familiar world, have no natural basis in human perception, and as such remain largely inscrutable to any but a mathematical awareness. Cyberspace, information space, the space of virtual realities and augmented environments are rapidly altering the nature of typographic practice by confronting it with new challenges. What role immersive 3D design will play in meeting those challenges will depend on how current technical constraints are overcome, and how the emerging world is construed in spatial terms. All that is clear from our current standpoint, is that at the end of a century dedicated to overcoming the "linearity" of printed language, the planar limits of page-space have been definitively reached.

References

[1] Lindholm's fonts can be viewed on his Brainreactor website, www.brainreactor.com, where, if he's still checking his email, they can be downloaded for a fee.

[2] Johanna Drucker's judgement of this transformation is particularly harsh: "The avant-garde poets of the 1910's became the graphic designers, teachers, and systematic theorists of the 1920's and 1930's while another generation emerged to follow their directives in the codification of design. There is perhaps no more perverse (and successful) transformation of the formal radicality of early modernism into the seamless instrument of corporate capitalist enterprise than this progression from radical graphic aesthetics into Swiss-style modern design. The process by which the very elements which marked the radicality of the early work and its utopian agenda of intervention through the means of mass production print media become ordered and codified into a system which enunciated an insidiously complicit and instrumentally enabling corporate style is duplicated by no other aspect of the early avant-garde" (*Visible* 238-9).

[3] For a critique of these views, see Ellen Lupton's "Language of Vision", *Design/Writing/Research* pp.62-65.

[4] For examples of graphic design in the context of its filmic possibilities, see the work of Viking Eggeling and Hans Richter.

[6] For Jens Karlsson's work, see <www.chapter3.net/portfolio/indexset.html>.

[7] "A quoi bon la merveille de transposer un fait de nature en sa presque disparition vibratoire, si ce n'est pour qu'en emane, sans la gene d'un proche ou concret rappel, la notion pure" (*Igitur* 251).

[8] Jester is in fact a graffiti artist, and was one before he learned graphic design, and so comes from an aesthetic culture that has largely displaced the techno aesthetic from the prominence it held in popular media during the '90's. Jester's greffiti work can be seen on the Aerosol website, at www.j6studios.com.

[9] See Scott McCloud, *Understanding Comics: The Invisible Art*, (New York: Harper Collins, 1994), particularly chapters 3 and 4. Also, Steve McCaffery and bpNichol's "The Search for a Non-Narrative Prose" in *Rational Geomancy: The Kids of the Book-Machine*, (Vancouver: Talon Books, 1992). The latter engages comic strip strategies as devices in a visual poetics.

[10] The distinction I'm making is the same Rosalind Krauss makes in referring to Robert Rauschenberg's work as forcing "an undeniable experience of syntax," and sharing "with language some of its character of discourse" (Krauss 40).

[12] See for example Darren Werschler-Henry's "Grains of Pollen" (www.chbooks.com), and compare that to Pierre's Garnier's earlier, spatialist poem of the same name, where the poet could play on the spatial distribution of grains in the air, but not on the full temporal cycle of their reproducing the plants that cast them (Gomringer, *Visuelle Poesie*).

[13] L.D. Henderson. *The Fourth Dimension and Non-Euclidean Geometry in Modern Art*. Princeton: Princeton University Press, 1983.

[14] R.C. Williams. *Artists in Revolution: Portraits of the Russian Avant-Garde 1905-25*. Bloomington: Indiana University Press, 1987.

[15] cf. Thwaites, pp. 242-3. Thwaites describes three problems, "information overload,

information-cascade break-up, and interruption, that occur if we simply transfer the information design practices of traditional media to 3-D design," and presents principles and examples for successful 3-D design.

[16] For an example of Metalheart-style graphics as animated navigable space, see Per Gustafson's website www.modernstyle,nu, under "projects" click "Neuroshape" for a selection of animations.

[17] Two examples are the data visualization projects, Walrus and Valence, discussed in Woolman's Digital Information Graphics, pages 30 and 24 respectively.

View: Chapter 3
TOWARDS A SPACE-ENABLED THEORY OF VISUAL POETRY

In chapter 2 I digressed from my discussion of visual poetry in two directions: historically, jumping to the far side of the long century that separates us from Mallarmé's foundational work, *Un coup de dés*, and culturally, crossing over into the extra-literary field of graphic design. Doing so allowed me to draw a wide horizon around the material practices and textual strategies available to a contemporary visual poetry. I elaborated a mode of verbal-visual presentation that exploited unprecedented technical capacities for 3D shaping in graphic space, yet without explaining how such devices might possibly translate into poetry. In this chapter, I want both to address the general grounds for calling anything visual poetry, and to propose some theoretical framework for understanding how spatial form as such can serve poetic functions. After raising some of the most basic questions concerning visual poetry, I will present the "very spatial" work of David Arnold, a largely unknown visual poet, as a test case, and then sketch out an empirical/phenomenological method for grounding a theory of visual poetry in the experience of "reading".

1. Approaching the Concept "Visual Poetry"

Visual Poetry

Here, I want to take up "visual poetry" as a pure conceptual challenge. The very notion is problematic, in that it hybridizes categories our traditions of criticism have been committed to keeping separate. If on the one hand this makes the possibility of such a thing (visual poetry) more intriguing, on the other it raises suspicions, suspicions all the more forceful given the practice's marginal-to-invisible status in literary discussion and education generally. At the core of the challenge is the suspicion that "visual poetry" is an irremediable contradiction in terms, embracing as "literary" a visuality that lacks the discursive capacities of language, on which, paradoxically, the vaguer, more elusive effects of poetry classically depend. Beyond ornamental verse forms or illustrated poems, where the poetry may be visual without the visuals being poetry, and beyond concrete poems secure in the "literariness" of verbal signs, what is a "visual" poetry? This is the question I want to ask at the start of this chapter, not with a hope of answering it, but with a view to opening the discussion to a broader engagement with the implications, and speculations, of visual poetry as a possible practice.

Visual poetry confronts us as a substantial and persistent cultural phenomenon before we are prepared to address it as a subject of theoretical study. And when we do address it, the sheer dispersive variety of the forms it takes argues against there being any it there. The work in question ranges from pattern poems to paintings to conceptual art projects to commercial design research to architecture. "Poetry" alone is hard enough to define, even where all the candidate texts are presumed to share a common medium. Where the medial basis is nearly as dispersed as that of "art" in general, and the generic grounding in "literature" correspondingly destabilized, the project of definition appears nearly hopeless. I share Eric Vos's impulse, in addressing the notion "concrete poetry", to abandon the "what is it?" question in favor of the question "what could it be?" (Vos, 241-2). Though, as he says, "rather silly" from a scholarly point of view, the question seems more to the point in tracking the persistently experimental and evolving nature of such practice, and in taking the incitement to create something that may or may not seem possible in

scholarly terms.

Many attempts to define visual poetry focus, for obvious reasons, on the mode of its reception, distinguishing it superficially as a literary mode that must be seen, that cannot be transmitted aurally without a critical loss of meaning. (cf. McCaffery, CORE, 110; Young, CORE, 149)1   Other definitions echo Dick Higgins' distinction between "intermedia" and "mixed media", and stipulate that in visual poetry verbal and visual signs are structurally integrated to produce the meaning, rather than simply juxtaposed in complementary but distinct aesthetic functions, (Higgins, "Strategy" 41); (Dencker, Wortköpfe 49–50); (Mayer, 5). Such definitions are geared toward specifying the "visual" as a material and semiotic condition for visual poetry, yet fail to pronounce on the poetic status or role of the visual as such. Is it merely that there is a visual component in the poetry, or is there a genuine poetic function in the visuals?

Eric Vos defines "concrete poetry" in the Goodmanian terms of "multiple and complex reference" (Vos 258-60), arguing that the intermedial nature of concrete poems comes down to a collaboration between the "denotative" function of verbal elements as such, and the "exemplificative"2 function of verbal elements (including potentially any marks related to a form of alphabetic notation) as visual (Vos 271-4). What he requires of a definition of concrete poetry is the rejection of any notion that the visual component can itself serve functions of denotative reference. While I like this definition for characterising the type of visual meaning carried by signs in concrete poems, and for demarcating the strict sense of "concrete" from the broader category of "visual" poetry, I resist Vos's inclination to spread the restriction to "visual literature" in general, if that is to include "visual poetry". He argues, in the context of establishing taxonomic distinctions for "concrete poetry/visual literature", that "to include both verbal and pictorial denotation in an integrated complex whole would imply that the work functions as a text and as a picture simultaneously, which is theoretically impossible" (Vos 271). Yet integrating verbal and pictorial codes, denotative functions included, is exactly what visual poetry, beyond the specific constraints of concretism, does.

Traditionally the line between concrete and visual poetry, while not absolute, has often been drawn between works that include only alphabetic symbols (widely interpreted), and those that include classes of visuals, e.g. photographic elements, drawing, abstract shapes, found imagery, mental imagery etc. (cf. Gomringer and Dencker and Weiss in Visuelle Poesie). According to Dick Higgins, in a passage which Vos quotes, the visual element in visual poetry can exceed the verbal up to a point where the poetic structure "is no longer dependent upon any verbal text, though something of a verbal method of experiencing the work remains—the process of reading, of abstracting a sort of verbal pattern from the

work and subsumption of the visual dimension into that verbal framework" (Higgins, 47). While the examples Higgins gives all still include words or letters, being thus independent of verbal text without being independent of verbal elements in isolation, other poets go further, and argue for the possibility of a "purely visual" poetry, free from any visible trace of language.

Deciding what visual poetry is, or "could be", consists precisely in questioning the degree to which the visual can achieve a poetic status of its own, a status that is hard to conceive strictly in terms of exemplificative reference. If a work cannot be both pictorial and a text, I would argue, "visual poetry" beyond concretism has no meaning. The theoretical challenge of specifying how this could be, how "something of a verbal method of experiencing the work" can remain in the absence or relative inactivity of words or letters, supporting a "process of reading" sufficient both to call the presentation a "text" and to call it "poetry", this requires more arguing. But we cannot approach visual poetry in anything like the full range of its possibilities with a definition that forecloses on this crucial set of implications.

Visual language

The possibility of defining "visual poetry" as poetry in or involving a "visual language" would seem to make easy sense of the term, and to open it up to a broad universe of possibilities. Ezra Pound's redaction of Ernest Fenellosa's "The Chinese Written Character as a Medium for Poetry" proved seminal for discussions of visual poetry in the 20th Century, and speaks to the power of visual language as an idea to inspire poetic innovation. Similarly modernist art pedagogy's formulation of the theory of composition in terms of a "language of vision" has fostered the idea that visual art and graphic design could take on certain of the functions of writing, perhaps including poetry. Today a huge range of resources and conventions are referred to as "visual language", not only in the arts and in commercial design, but as essential tools of science and education, and as truly vernacular phenomena within the mass media. And, without necessarily worrying the theoretical underpinnings, artists and visual poets since the beginning of the twentieth century have exploited them as resources.

Yet there's some false comfort in this definition. Visual language is a term with a broad range of applications, some loose, some rigorous, but none fulfilling the promise of providing a grammar and vocabulary for visual expression in general. Even semiotics, confident of holding the key to a universal theory of signs, has been unsuccessful in codifying the resources for visual communication with anything like the rigor of its primary

model, linguistics (Mitchell 1986 58; Saint-Martin, xi). Here the dilemma of articulating the resources for visual meaning-making as "language" reveals itself. While it is the adherence to a linguistic model that would seem to guarantee the literary (poetic) potential of a visual system, it is the effort to enforce that adherence that defeats the project, and loses the distinctiveness of the visual it had hoped to incorporate. In a "strong" formulation of the semiotic project, Roland Barthes argues that all signification ends with (verbal) language ("the world of signifieds is none other than that of language") (Barthes 11), which means that semiotics can only find in the visual field what already exists in the verbal. Under the pressure of this model, Fernande Saint-Martin points out, visual meaning tended to be reduced to the function of nameable figures, "determined and stated through the efficiency of words, and … the regions of the visual field which remained unnameable were excluded from any analytical visual discourse" (Saint-Martin xi).

The modernist project to articulate a "language of vision"[3], formulated in its strongest form with the apparent validation of gestalt perceptual psychology,[4] approaches
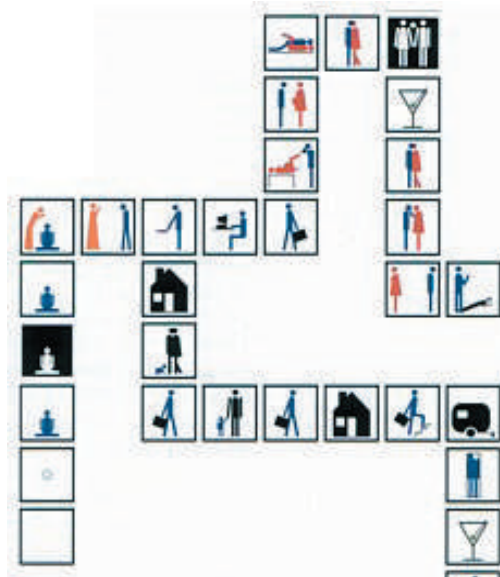

Fig. 1: Lars Arrhenius, excerpt from "The Man Without Qualities" (2001). The reading of this visual narrative is guided by its title and its ironic reference to Robert Musil's novel *Der Mann ohne Eigenschaften*.

the problem from the opposite direction. It takes the fullness of visual perceptual experience, and by isolating invariants in the mechanics of perception, claims to derive the grammar of a "language" whose universality is biologically determined. The fact that the perception of space and interpretation of visual forms generally turn out to be far more "conventional" and culturally determined than these theories had acknowledged, is not the chief argument against the "language of vision" project, for it was never a requirement of language to be universally intelligible. The regularity of interpretive response within

certain cultures and communities is enough to validate versions of the project on the virtue of more modest claims. Rather, it is on the basis of other characteristics that what gestalt-based design theories present us with may fail to qualify as language.

When Eric Vos insists it is theoretically impossible "to include both verbal and pictorial denotation in an integrated complex whole", or for a work to function "as a text and as a picture *simultaneously*", he is invoking criteria established by Nelson Goodman for distinguishing "between languages and non-linguistic symbol systems" (Goodman 130). It is not that pictures cannot denote, or that a language cannot be visual; both are possible and the former standard (for Goodman, representation in most cases is denotation (5, 25)). Rather, the way marks are created, deployed and permutated in "a system of depiction" is not "articulate" in the sense Goodman uses to define a "language" or "system of notation" (225-6). In a pictorial system, as the maxim goes, "every difference makes a difference", represents, expresses or exemplifies something different, however narrowly so, whereas in a language properly speaking, only those differences that decide between one specific character and another make a difference (135), e.g. between "a" and "d" or between two correct and distinct flag-positionings in semaphore. In-between cases are excluded or ignored in order to secure the possibility of determinate readings. In a depiction, the symbol scheme is said to be "dense", allowing the least possible syntactic variation to shift meaning within a "continuous" field of reference. In a linguistic system, the scheme must be "disjoint" and "finitely differentiated" (even if there are infinite symbols in the scheme) to enable utterances with precise, isolatable compliants in an "articulated" field of reference.

The rich perceptual basis of "language of vision" systems firmly commits these to syntactic (and semantic) density, and so automatically disqualifies them as language in any but very loose terms. Painting is for Goodman the paradigmatic "system of depiction", and while his argument turns on the "representational" functions of depiction, his analysis of pictorial density applies equally to abstract works of the modernist type. Yet the symbol systems we encounter in visual poetry include a more complicated assortment of graphic, ideographic and diagrammatic schemes that don't necessarily appeal to "raw" perceptual values as the semiotic basis, and that may or may not employ iconic resemblance, but that one way or the other manifest a level of "articulation" blurring the line between "system of depiction" and "discursive system" or "notational scheme". If used grammatically, a topographical diagram for example (Goodman170-1), which signifies not by virtue of iconic resemblance but despite it by virtue of formal syntactic rules and a sort of algorithmic permutation in the semantic counters, constitutes a non-verbal, visual language in the strict sense. Other schemes, (e.g. pictograms), have both a dimension of visual resemblance and

one of systematic articulation in the signifying features, such that the "dense" field of visual detail mediates a "disjoint" field of meanings. There are inevitably hybrid cases that trouble the more basic distinction between pictorial and discursive systems.

Visual poetry as a whole, in fact, works actively to interrogate and bridge distinctions such as those between "dense" and "articulate" symbol systems. From one direction concrete poetry and critical typographic practices focused on the *materiality* of language weaken such distinctions in practice, insisting that we read verbal systems densely, counting least variations in visible inscription as of direct semantic import in the utterance. And from the other direction, visual poetry as a hybrid genre is interested in discovering how visual, including pictorial, symbols can be syntactically articulated to manifest "language-like" functions. While few of the resulting "texts" would qualify as language by his standards, Goodman makes sure to point out that relative articulation or density are not inherent properties of "types" of symbol, but rather are functions of "the relation of a symbol to others in a denotative system" (228). In W. J. T. Mitchell's words, "The boundary line between texts and images, pictures and paragraphs, is drawn by a history of practical differences in the use of different sorts of symbolic marks, not by a metaphysical divide" (Mitchell 69). So, if the pictogram writing of Lars Arrhenius, or even the collage prose of Max Ernst, are not language in a strict sense, through generations of usage and functional refinement *they could be*. Language, in other words, remains an evolutionary potential in the field of visual materials.

Goodman's rigorous definitions, ably avoiding many traditional but trouble-ridden formulations of the word-image disparity[5], severely limit the ways we can think "visual language". But they say nothing to preclude a kind of textuality that would "include verbal and pictorial denotation in an integrated complex whole". And given that according to Goodman even verbal language, at least in its phonetic form, is itself only "an approximately notational system" (Goodman 207), we suspect that the criteria of "notationality" is not the appropriate standard for guaging the potentials of visual signification to support poetry. Literary language is a peripheral concern in Goodman's discussion, one that attenuates the notational hygiene of language even further. His efforts to formulate language on firm logical grounds don't preclude us from viewing pictorial reference, or any other form of visual meaning, as a viable aspect of (potentially) literary texts.

> There is nothing in Goodman's terms to prescribe what artists can or cannot do. Hybrid works are not only possible but are eminently describable in his system. (Mitchell 70).

Querying the potential poetic status of visuals in visual poetry, we are likely to encounter visual language(s) both rigorously and loosely, literally and metaphorically

defined. The rigorous are likely to be rarer, but the prospect of a visual poetry is no less likely for that. Notational rigor strengthens the claim to language, but may not improve the chances for poetry.

What would improve the chances for a visual poetry would be if we could identify a "natural language" of visual symbols, at best "approximately notational" like speech, its linguistic status less dependent on a formal description than on the proof of colloquial and vernacular usage. Sign language presents at least one example of a truly "natural" visual language, and sign language poetry is by default visual poetry; in practice it is a truly compelling, unfortunately little-acknowledged, kind.6 The interaction between "articulate" lexicon and "dense" gestural and pictorial reference make this a fascinating case, and another Fenellosa, signologist rather than sinologist, could no doubt write a fascinating poetics inspiring new directions of literary activity with the unique potentials it demonstrates. There are not many examples of "natural" visual language as adequate for colloquial and literary uses as sign language, however. The everyday strategies of visual communication we sometimes call "visual language", while perhaps more independent of an underlying verbal semantics than sign language, are by the same token less sufficiently articulated and cannot support the same degree of communicative function. And so again, the notion "visual language" fails to neatly solve the problem of visual poetry. But this makes it neither useless nor indeed dispensible for understanding what visual poetry is or could be.

In the most basic sense of the word, "language" means a means of communication; Saint-Martin quotes Iouri Lotman to this effect: "By language, we mean any system of communication which uses signs arranged in a particular way" (qtd. in Saint-Martin, x). Indeed, it is inconvenient to have to talk about an organized strategy of communication or expression without being able to call it language, and by the measure of organization and strategy the visual resources used in advertising or television clearly qualify as language. Though stricter, more discursively articulated forms exist, I would sooner call such a use of the word "loose" or "casual" than "metaphoric", as is generally done.7 Etymologically, the word "language" is specific in referring to verbal/phonetic modes of communication, but we already exceed this sense when we speak of written "language", since aspects such as punctuation and capitalization have a visual meaning, but no phonetic correlate. Furthermore, from a historical perspective, all written language seems to derive in part from ideographic forms (cf Ruthrof, Ch. 7), and it would seem pedantic to insist that hieroglyphs were not language until they became phonetic, or that Japanese kana are language while kanji are not. Similarly, it is an academic distinction, aimed at circumscribing one set of communicative phenomena, that separates bodily gesture and facial expression

from "natural language". Ultimately, to insist that "visual language" is "only a metaphor" is to give linguistics the authority of defining the "source" notion of language, while positioning the community of sign-users as late-comers who would extend that notion beyond its proper boundaries to designate modes of communication considered beside-the-point. I would leave it up to the community of speakers and visual communicators to decide what is worth calling language, and while stricter theoretical distinctions and descriptions need to be applied within the range of phenomena thus designated, I see these as articulating what are "literally" organized modes of communication, rather than more or less "metaphorically" phonetic sign systems.

In the rest of this chapter, as already in the preceding ones, I will use the term "visual language" sparingly, but without apology in a loose sense, remaining open to the communicative potential of visuals without the prejudice of formal requirements. Where a stricter definition of the term applies, I will say so, and where it doesn't I will specify the looser semiotic basis for the meaning being made. Since, as I will argue shortly, poetry depends more on details of the meaning experience than on the nature or structure of the codes that trigger it, the possibility of visual poetry depends crucially on how signs make meaning in systems, but not crucially on whether those systems function according to the rules of linguistics.

To point to visual language is not to simplify the task of specifying a semiotic basis for the visual in visual poetry. It gives us acces to no determinate linguistics in terms of which we could formulate "the poetic function" or even basic distinctions of style within a unitary framework. Instead, it challenges us to test our discriminations of "poetic" meaning against the full complexity of visual signification in all its forms. A broad range of theories (iconological, semiotic, hermeneutic, psychological) exist for exploring how visual meaning is made. Any of these, applied to the question of how visual information may be implicated in the production or experience of "poetry", is capable of opening up valuable avenues of research. But, more important than specifying in advance the nature or structure of the symbol systems we may have to deal with, is a clear grounding in the experience of meaning, and flexible access to this heterotopic assortment of analyses.

Poetics

What we give up along with any simple sense of "visual language" is recourse to any simple account of poetry as a linguistic function. In a classic structuralist approach, we might have taken a linguist's formulation of "poeticity" (Jakobson, "Poetry" pp?), and by translating it into the terminology of "visual linguistics" produced the magical notion, "visual

poeticity". By virtue of semiotics' claimed status as a supra-ordinate theory covering both language and non-verbal sign systems, Jakobson's famous postulate, "The poetic function projects the principle of equivalence from the axis of selection into the axis of combination", could presumably be adapted to this purpose. To have done this, of course, would merely have been to repeat the mistakes of Formalist and Structuralist linguistics by essentializing the notion of poetry and entrusting it to a structural description. Though it might have facilitated description in specific cases, a visual linguistics would no more likely have yielded a once-and-for-all definition of visual poetry than Jakobson or Todorov managed to do for verbal poetry.

An approach with more promise is the conventionalist one of considering poetry not an inherent property of texts, but the outcome of applying certain conventions and strategies of reading. If, as Higgins suggested, the poetry of visual poetry may persist independently of verbal text, but will continue to depend on "something of a verbal method of experiencing the work", it is reasonable to look to conventions and strategies of this sort for the thread of continuity. In fact, according to the strong version of this theory that sees the finding of poetry as a matter ultimately independent of any purpose in its creation (Schwitters, Stanley Fish), we could invent visual poetry even if it didn't already exist, simply by adapting Stanley Fish's famous in-class experiment8: give poetry students a random "text" of visual signs, and ask them to apply a literary analysis to it. As a guide, we might give them Jonathan Culler's list of the reading conventions constituting "literary competence", or knowledge of how to read a text as a poem:

> (i) The rule of significance/primary convention: read the poem as expressing a significant attitude to some problem concerning man and/or his relation to the universe.
> (ii) The rule of metaphorical coherence: attempt through semantic transformations to produce coherence on the levels of both tenor and vehicle.
> (iii) Inscribe the poem in a poetic tradition.
> (iv) The convention of thematic unity: read the poem as coherent.
> (v) The convention of binary opposites: look for terms "which can be placed on a semantic or thematic axis and opposed to one another".
> (vi) The fiction convention: read the poem as fiction.
> (from Culler, 1975: Chapter 6, extrapolated by Pilkington, …)

Applied to "known" visual poems, the conventions Culler enumerates would provide an interesting test of how thoroughly the familiar aspects of verbal poetry translate into visual forms. The value of the list may be more anthropological than literary theoretical; in other words the items on it may say more about how people were taught to read poetry in a certain culture and historical period, than about the nature of poetry or how it is really discerned and experienced in texts. And, the characterization it gives

of poetry isn't necessarily more comprehensive or definitive than Jakobson's.[9] Yet still, allowing for amplifications and emendments, it usefully describes a very mainstream sense of the term "poetry", and one that would certainly have to be taken into account in seeking any widespread acceptance for the idea of a visual equivalent or counterpart. That said, however, it's unclear what applying such conventions to a visual text would tell us. With the possible exception of (iii), they could all presumably be applied successfully without giving us any reason to think what we're dealing with is "visual poetry", rather than just "visual art", or for that matter, "visual prose".

The lesson of an analysis of reading conventions is that what counts as poetry, and what criteria should be considered relevant for deciding, are matters determined by what Fish calls "interpretive communities". Groups of readers who share basic assumptions and interests will generate a community of opinion as to what should be considered poetry, and what aspects and qualities merit attention. In this sense the anthropological perspective is as useful as any other in "defining" poetry or visual poetry. The cultural story of what gets taken for poetry and by whom will include serious academic discussion of single words, fragments of words, even letters and fragments of letters. Interpretive communities willing to take seriously the works of Lettrist or "dirty"[10] concrete poets, for example, implicitly dispense with any linguistic measure of poetry, and all but the most rarified aspects of conventionalist theory, in considering as poetry works that are either illegible or without a functioning verbal semantics.

The criterion or reading convention most relevant to these cases is (iii), taking the work as part of a literary tradition, in which case visual poems need no further credential than that of having been created by someone known to be a poet, or in dialogue with works, ideas, or issues of poetry. Here poetry becomes more of a family resemblance, or genealogical question, and reception of a work as literary has become possible on what previously would have been considered slim conditions. Claus Clüver points to three in particular:

> Since the 1950s, it has become possible and acceptable to receive as "poems" texts consisting of single words or word fragments or single letters, even though illegible or unintelligible. This reception was based on three conditions: the text had to have a recognizable connection to verbal language or its oral articulation or visual representation, it had to be understood as connecting with a literary/poetic tradition, and it therefore had to be acceptable within an "arts" discourse. These conditions have also marked the discourse on visual poetry, although in a number of instances the connection to verbal language has become tenuous, and the tradition has turned into that of the newly discovered long line of visual poetry through the ages.[11]

Understanding the cultural criteria that allow works to be received as poems (or

visual poems) is useful for reframing the basic category of "literariness". One implication is that many of the linguistic functions visual poems may fail to demonstrate, verbal poems are themselves no longer required to fulfill. The trend away from representational language, carried out in discontinuous and diverse poetic projects since the late 19th Century, necessarily leads to forms of "writing" that eschew the distinctively linguistic use-values of language. Understood this way, concrete poetry (as opposed to visual poetry) is less a matter of introducing a foreign "additional element", of hybridizing the literary with alien visual codes, than of following an organic development of the literary itself, a development consistent with the main priorities of contemporary "verbal" experimentation in a tradition connecting DADA, Lettrisme and "Language" poetry[12]. The move in both verbal and visual "literatures" is analogous to painting's emancipation from representationalism, once photography was there to take over. The Spatialist poet, Pierre Garnier identifies concrete and spatialist trends as the outcome of such a process:

> Donc, nous passons de la langue allégorique (réprésentant elle-même et les choses) à une langue-matière, dans laquelle les fonctions représentatives ne sont plus dominantes.
> Nous passons d'une langue avant tout descriptive à une langue concrète, sensible, vibrante, aux significations possibles mais non nécessaires. De la langue-avant-tout-communication à la langue-avant-tout-réalisation. (Garnier 15)

Visual poetry as a historical phenomenon derives partly from this same history of a turn to the "material" of language, and partly from a different history of the relativizing of semiotic codes (Pound/Fenellosa, Barthes, collage, photomontage, Rauschenberg), and understanding these histories helps us track the shift in critical attentions that happens with concrete and visual poetry as experimental trends. But to address the more conceptual question of what makes, or might make, visual poetry poetry, we still need a different approach.

What I am most concerned with in this chapter is how the notion "visual poetry" might be validated, not by reference to the nature of texts or to the codes, conventions or criteria applied by interpretive communities, but in experiential terms. How can we describe the experience of meaning in a visual text, with or without words, in ways that might relate it to how we experience poetry in language? In a verbal literary context, phenomenological or "reader-response" approaches present an alternative to structural descriptions identifying literariness in the text as a linguistic object. Instead they target reading as a real-time interaction of reader and text, and seek to describe the mental acts of reception and construal that make up literary experience. Wolfgang Iser's *The Act of Reading* (1978), grounded in the work of his predecessor, Roman Ingarden, provides a

valuable example of how the experience of reading can be modelled in phenomenological terms. Iser applies his analysis to literary prose, and so speaks only indirectly to the question of poetry, let alone visual poetry. Nevertheless, he situates the discussion at a conceptual level, rather than strictly at a linguistic one, and so presents a mode of analysis potentially more suitable to cross-application outside of verbal domains than even semiotics.

Toward the end of this chapter I will return to Iser's model as a basis for imagining a reception theory for visual poetry. His terminology of "chunks", "blanks" and "horizons", of "protension" and "retention", "reciprocal spotlighting" and "the wandering viewpoint", provides useful analogs for building an account of visual reading, and will help give shape to the "attentional analysis" I will elaborate based on empirical methodologies. But the project of describing the experience of reading, while very usefully framed by phenomenology, is today being significantly re-tooled in light of cognitive science and related theories of language and literature, and I want to take a look in this direction before moving on to the next section.

In his book, Poetic Effects: A Relevance Theory Perspective (2000), Adrian Pilkington describes an alternative formulation of the question of literariness, updating both linguistic and phenomenological approaches with the help of recent pragmatic and cognitive theories. The relevance theory Pilkington adopts13, as a corrective to structuralist accounts of communication, adds a layer of articulation to the basic "code model" of Jakobsonian linguistics. Instead of viewing utterances as decoding directly into communicated thoughts, poetic or not according to intrinsic properties delivered as structure within the code, this approach postulates two phases in the communication process: first a "decoding phase" in which "utterances decode into semantic representations which radically underdetermine the thoughts communicated" and a second "inferential phase" in which semantic representations are adapted to fit contexts, and explored for relevance, implicature, propositional attitude and illocutionary force (Pilkington, 54, 67). It is by means of distinguishing this second phase, a psychological process of getting "from semantic representation to thought communicated" that it becomes possible to discuss "literary properties, not as properties of texts, but as cognitive properties, resulting from the effects of texts upon readers" (189).

> What this approach to language and thought offers, which the [formalist, structuralist, and poststructuralist] approaches referred to above do not, is the possibility of characterising poetic thoughts as distinct kinds of thoughts (or poetic thinking as a distinct kind of thinking). (45)

> I have argued that, theoretically, literariness should be defined in terms of cognitive events triggered in minds/brains by linguistic stimuli. It can be characterised in terms of a

> distinctive kind of mental process involving extensive guided exploration of encyclopaedic entries, which results in the marginally increased salience of a wide range of assumptions…. (189)

Pilkington's description of poetic kinds of thoughts relies heavily on the pragmatic linguistic notion of "weak implicature", which for him helps differentiate the poetic meaning experience from a prosaic one.

> I have characterised poetic metaphor here in terms of complex thoughts communicated as a wide range of weak implicatures. (106)

When confronting a metaphor in normal communication, an addressee or reader will examine the semantic representation (e.g. of "I could eat a horse") and make assumptions as to what possible interpretations are relevant. In a conventional situation, a narrow range of assumptions will emerge as "highly salient", i.e certain possibilities will appear obvious and likely, limiting the search to a narrow range of correspondingly "strong" implicature, and ensuring the effectiveness of the communication; ("I am very hungry").

With "creative metaphors", on the other hand, the fit between the semantic representation and possible meaningful ways of taking it will be less obvious, and require more effortful processing. The assumptions that will emerge through this search will be more numerous and correspondingly "weaker" or less salient, lacking determinate confirmation (100-101). But the diffuseness of this field of weak implicature, as Pilkington describes it, is what allows a poetic metaphor its compelling power. His point is not that vagueness is poetic, but rather that the textual material can be prepared (by the poet) in such a way as to yield a rich, subtle suggestiveness as the reader carries out the inferential processing. The "art of creating a successful creative metaphor (or other rhetorical device used for poetic effects)" (109), consists in providing direction in the reading, along paths that provoke "intense subtly discriminated and precise qualitative states" (191), without allowing the field of implicature to consolidate into simple, prosaic thoughts. So, this account also supplies a basis for aesthetic judgements. A metaphor or other device that fails to delay inferential conclusions, allowing only a narrow range of obvious or stereotypical assumptions to emerge as strongly salient, will be a weak or "dead" metaphor by poetic standards.

What is valuable about such an approach is less the specific interpretation it provides of the poetic experience than the cognitive level it locates as appropriate for analysis. Pilkington's observations about metaphor are not original; poets and critics for centuries have been pointing to the same qualities of metaphoric suggestiveness and

indeterminacy. And the cognitive pragmatic framework he deploys does not ensure a more correct or comprehensive definition of poetry. Reuven Tsur, for example, is more circumspect in elaborating his analogous notion of "delayed categorisation" to point out that metaphors and other devices can function poetically by a wide variety of strategies (Tsur, "Aspects" 6-7). In other words, "strong implicature" no doubt also has its uses in poetry, and Pilkington's account falls short if it excludes this possibility. Indeed, a cognitive poetics of this type risks formulating definitions every bit as reductionist as structuralism's. But by focusing discussion of poetry and poetic devices at the level of "on-line" cognitive processing, and within a pragmatic framework, this approach at least brings the conversation firmly into the lived moment of the meaning experience, where formulations are more directly subject to contradiction and correction by the fluid, lived realities they target.

Cognitive science as a source of theory complements the phenomenological, introspective approach, which preserves its relevance as the primary approach, by definition. The point is not that cognitive methodologies and formulations ensure "objective truth" in the literary analysis, but that subjective discernment (which is the only place poetic effects exist) is thereby given a means to confirm or contrast its intuitions against a broader, more structured field of observations. Subleties or tendencies of reader response that would escape any individual reader can be targeted under experimental conditions to reveal a level of definition no phenomenological analysis could elaborate. On the other hand, experimental conclusions are meaningless without the individual experiences they draw on and refer to. In this light, the tremendous body of research that already exists in perceptual psychology, psycholinguistics and cognition generally provides a basis for reframing many old literary questions, and for asking many new ones.

As far as the poetics of visual poetry is concerned, what is most interesting is not any particular way of describing poetic thought, that might then be transferred for comparison to the visual context (though these may be useful), but the fact that such cross-modal description and comparison find a firmer theoretical basis in cognitive theory than they ever had in classical semiotics, for example. Distinguishing the conceptual level at which thought is represented from the level of linguistic representations, or of spatial or visual representations, identifies a cognitive domain which language and visual signification share (at least partially) as common ground. Fodor's "language of thought" hypothesis[14] would suggest that while language and imagery encode meaning differently, both kinds of meaning are realized in a common set of conceptual primitives. Though this doesn't make linguistic and visual meanings equivalent, it suggests an "interface"[15] between the two that could be decisive for our understanding of poetic meaning in non-linguistic

systems. At the very least, it refutes the semiotic argument that all meaning is ultimately verbal meaning (Barthes); in this view there is a primordial organization of meaning and conceptual understanding (a "language") at a level "above" the specific signifying strategies that depend on it to signify. One school of cognitive linguistics would go further, to insist that that conceptual level of meaning is itself inescapably body-based (Johnson, Ruthrof), drawing on "non-verbal readings" to "fill in the empty schemata of language" (Ruthrof 42). For theorists like Ruthrof and those he draws from (Eve Sweetser, Gilles Fauconier, Mark Turner, George Lakoff and Mark Johson) some meaning is activated by verbal signifiers, some of it eludes these. What exceeds verbal expressions and propositional theories of meaning consists largely of "corporeal" and "experiential" readings. According to one researcher Ruthrof quotes, it is in particular "'the essential spatial character of human cognition' that is at odds with propositional theories" (qtd in Ruthrof, 40). "Spatial meaning" in this view is more specifically the contrary of "lexical" or "word meaning"; though verbal expressions can encode spatial meanings, they inevitably fall short, omitting what in perceptual terms is the bulk of the information.

If poetry is a property of thoughts or pattern in the ordering of non-verbal significations, not delivered fully in the structure and lexicon of the language but experienced in the process of constituting meaning from the given materials, then the mode of original presentation ceases (at least theoretically) to be decisive in the question of what can and can't be poetry. The patterns and dynamics of the meaning experience are determinate, and a cognitive/phenomenological description of these may reveal enough similarity between verbally- and visually-derived experiences to make concrete sense of the claim that visuals themselves, so to speak, can do poetry. The goal is not suggest that there is not a verbal-visual distinction within the wider experience of meaning, nor to deny the specialness of verbal "natural language", but to establish at the outset that meaning is a universe of informative ordering exceeding the referential reach of words, and the formal grasp of linguistics, both great.

Meaning as a universe of possible cognitive effects is activatable by both "verbal" and "non-verbal" means, and we might expect that both means can be employed systematically enough, perhaps even "notationally" enough, to do language. As Ruthrof suggests, language is not so much a certain *kind* of symbol system, as it is a state or a use of symbol systems, a "metastructural and economizing role" played by terms and classes of terms in a scheme for meaning (40). Without contesting the extreme efficiency of the phonetic alphabetic system for communicating, we can therefore say that any symbol system can be exploited for its potentials to perform articulated semantic functions, and, we can propose, any articulated communicative system can at least make a shot at making poetry. The same

world of non-verbal readings that makes empty *verbal* schemata meaningful are available to visual signs, and the same modes of linkage, by assignment, by resemblance, by contact and association, are available for establishing reference in the perceptual markers. Whether we call a particular performance with visual signs "used" in these ways "language" or not depends on the kind and degree of systematicity we require of a symbol scheme, to do what we consider it to be to do "language". Similarly, its sufficiency for poetry will depend on what aspects of the poetic experience we need to carry over into the new medium.

Without arguing the relative literary merits we can expect of such a thing, we can certainly imagine "poetry" as an effect or complex of effects produceable by relatively "articulated", relatively "metastructural and economizing" and relatively "poetic" usage of any sign system. It comes down to how an individual or a readerly community happens to respond to a given work. Which comes down both to how they individually, in the mood, state of mind and opinion they're in, respond, and to how they over time and in dialogue in communities recognize and evaluate that response. Though the collective reception can be studied anthropologically, and the individual one tracked by certain measures empirically (as I'll discuss shortly), the core of judgement, and hence the core of "poetry" as a notion and experience, is the private awareness. What any poetics requires, therefore, independently of the specific medium and "kind of language", are articulations that serve to clarify the subjective awareness phenomenologically. If language is the awareness of language, poetics is an awareness of the awareness of poetry.

So, where we won't find a poetic "essence" revealed through structural analysis of the code, we will find something only somewhat less vague, a "feeling" or response of judgement that decides the question, when and how that the question is being answered. And where we can't expect to fix it in a formula, we can theorize the ingredients as they articulate themselves to experience, the variables factored in to the determining "this is poetry" for anyone. Whether as students of poetry we are interested in the code and rules of language, the strategies and conventions of reading, the formal strategies and constrainst of writing, or the cognitive effects that constitute the experience, the poetic assessment will be weighted according to certain conditions, criteria or variables, the factors a reader would say are salient in their experience of a work as poetry or in the judgement of it as such, factors that if different, would change the judgement. The kind and number of factors can vary enourmously, but in actual practice they probably don't. The most likely factors in the judgement "poetry", representing traditional notions of poetry in the modern, mainly western context, would be things like: lyricality and rhythm, emotional value, humanistic value, imaginative use of "language", unconventional use of "language", holism of structure and content, "density" of "language" use [in Pound's sense; that "dichten = *condensare*"],

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freshness of aesthetic perception (of life/the world) demonstrated in or provoked by the "language" use, and the recursiveness of referential function, attention being drawn back onto the means of communication as part of the communication.

These, in various combinations, are "essential" to various ideas we have of what makes poetry poetry. There are other variables that account for other experiences of poetry. To be informative, a poetics of visual poetry would therefore need to support the introspective assessment and the articulate evaluation and reporting of visual meaning experiences. It will rely on awareness of how visual meaning is constructed, and of how visual meaning is experienced. In particular a visual poetics will need to help us articulate how particular visual and attentional factors motivate poetic meaning experience.

2. Test Case: David Arnold's *Situations*

As a way of testing the idea of a visual poetry in more concrete terms, I want to look at the work of David Arnold, and particularly at his book *Situations* (1983??). The work in this book presents a useful case study partly because it is virtually unknown, and has no history of critical reception that I am aware of. Arnold's training as a poet, and his history of publication and editorial work, give him the credentials of a visual poet, but still we are able to approach his work innocently, asking whether, and on what grounds, we can these photographs poetry.

Background

David Arnold studied creative writing at San Francisco State in the 1970's16, at a time when the public readings and critical discussion there were dominated by the then new kind of writing now known as Language poetry. Arnold reports being turned off by the academicism of the work and the dialogue surrounding it, and eventually gave up writing poetry in favor of more visual practices. Since the mid-80's he has worked exclusively in photography, but in a vital transition period he produced two unique and compelling verbo-visual works, and with his wife Patty Arnold edited a journal featuring poetic experiments well beyond the visual and material limits of concretism. The first of his two books, Chain of Letters (1976), locates itself explicitly within a visual-poetic tradition, invoking Apollinaire with an epigram on the first page, and concrete poetry in the visual use of letterforms throughout the work. The quote from Apollinaire relates the theme announced in the title (chain letters) to the invisible social and semantic forces alluded to in Apollinaire's poem "Les Liens": "We are only two or three men/ Free of all chains/

Let's join hainds". While the visual patterning of texts in Arnold's work is done on a very different basis from the figurative strategies of the Calligrammes, Arnold acknowledges Apollinaire as a primary influence in entering the field of visual poetry.

Chain of Letters uses typography, stencil-cutting, masking, photo imagery and xerography to produce a richly textured environment of language. The predominance of white-on-black creates a sensuous spatiality backing the text and, as in this example, establishes the basis for counterpointing between language as sound or communication, and language as particulate visual material. The letterforms dictate figure-ground relationships more effectively than any other visual feature, alternately borrowing the materiality of the inking as a support and effectively negating that materiality by standing out as energetic forms on the dark ground. The grainy photographic imagery, generally of people in crowds, but also including newspaper clippings and pages from telephone directories, occupies an intermediate range between the poles of dark and light, figuring the human realities mediated and linked by language.

Situations, while preserving some aesthetic resemblance, is a very different case. The texts were not prepared as pages but as physical environments. Written, stencilled and sprayed text covers surfaces of diverse materials, threading a presence for language amid the detritus of domestic architectural ruins. Each piece is set in the interior of an abandoned house in the foothills of the Sierra Nevada or at the edge of California's great Central Valley. The houses by themselves hold a range of potent meanings. They speak of the death of rural communities, of the American culture of transience and waste, of the bust of Gold Rush economies and the impacts of industrial agriculture, also of the specific decay of lives lived in these spaces, and of the landscapes that no longer support them. As photographs they invoke the dustbowl documentation of photographers with the 1940's Public Works project, but without the nostalgia of historical distance. While many of the houses are old, their decay is contemporary and banal. The aesthetic blankness, or

bleakness, reminds us of Robert Smithson, whom Arnold talks about as an inspiration; like Smithson's land-art and installations, *Situations* consciously stages entropy as a dynamic force. The human manifestations of this entropy, embodied in artefacts vaguely suggestive of personal tragedy and the aftermath of destructive violence, activate a further field of associations, namely the genre of crime-scene photography.

Media Analysis

The first task in confronting this work as a possible text, preliminary to identifying anything we might be able to call its "language", is to identify or characterize the materials in it as media. Each piece in *Situations*, is constituted by the simultaneity of:

a. a found architectural environment (interior)
b. materials, objects and images found or placed and arranged by the artist
c. graphic elements drawn or painted onto interior surfaces
d. text elements written onto interior surfaces,   and
e. the landscape surrounding it all

all of this unified in:

f. a black-and-white photographic print with a single perspective

The "writing" of these pieces consists in the choices made within each of these fields. Together, as simultaneous areas of articulation potential, they constitute the media/um of these works, and so delimit the realm of the possible 'poetics' at work in their composition.

It is important to emphasize that these are categories of convenience, corresponding to where I imagine the meaningwork of these pieces to have been focused. It does not make sense to say definitively that the pieces contain, or combine, 6 media. A property which mediality shares with space is that of infinity by virtue of scaling. By sharpening focus within any one region, (e.g. within region 'b' above, onto the role played by boards and other wood debris in the compositions vs. the use of poster images or stenciled lettering), or by expanding the focus to include further external frames (e.g. the collection of these B/W photos in a book, or the occurrence of this visualpoetic book within a career making other visualpoetic books) we multiply and shift the media frames relevant for a particular observation or appreciation of the work.

A first usefulness of the analysis of intermedial works into different contributing media should be the clarity which that sheds on exactly where and how the poetic effort is either focused in or transverses those category boundaries. Many of the effects in

Arnold's pieces are achieved precisely by a coordination of elements which fall into different categories. In one piece, "not his real name", a principle unifying effect is the layering of horizontal lines throughout various regions of the photographic space. Here venetian blinds to the right, lines of black spray-paint to the left, and two depths of exposed wood-slat walls, brought into the center of the frame by a mirror hung so that they appear a continuation of the painted lines, all serve a common effect:
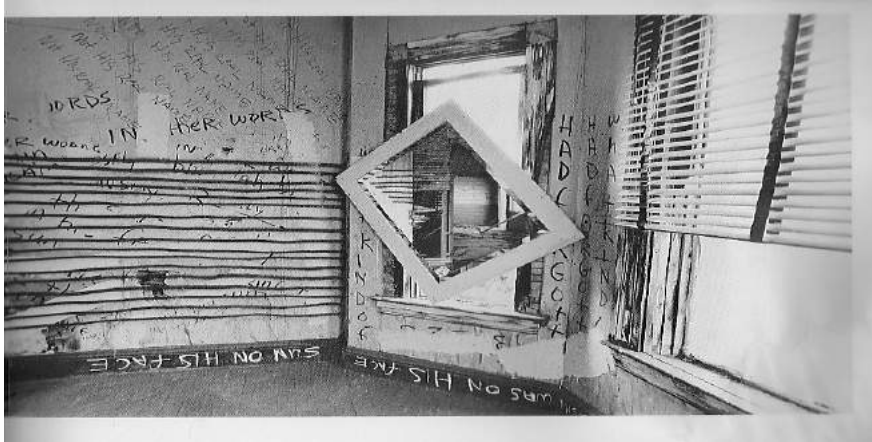
A single effort of articulation can be seen at work in the different materials. In the end, the material categories lose their primacy in relation to the abstract affiliation of qualities or common functions such as the artist perceives them and aligns them in the work.

Similarly, there is no place in the *Situations* where textual elements do not at the same time serve graphic functions. This is of course always true of readable text, and as a practical principle is the foundation of concrete and visual poetries. The sheer variety of functions served by the textual elements in these pieces shows the extent to which their role in the work was kept independent of preconceptions based on their category as a medium. At times the words serve principally as texture for a certain surface, at times, and depending on the viewer's habits, a story or image they suggest is foregrounded and insinuates more strongly into the viewing experience. Very often the lines of handwritten text establish paths for the eye to follow through a piece, or in other ways determine possibilities of movement into and through a given area. Stenciled lettering is common in the pieces, sometimes functioning in the manner of concrete poetry, in other cases adding words or letters onto scattered surfaces as if it were just more rubble, though without them ever entirely losing their semantic or syntactic potentials. In yet other cases, for example the particularly fine "he couldn't feel anything", judicious use of repeating M's and

B's adds to the work a clear dimension of sound.

I want to hold off for now, however, on the question of how verbal language functions in these texts, and focus on the visual to see where and how poetic functions might be identifiable to any degree independently of the verbal. And within the realm of the visual, I want to start at the "bottom", so to speak, at what I presume to be the most language-independent level of meanings that might figure in these texts. While the objects and imagery more clearly represent potentials for pictorial denotation, and so offer more obvious grounds for locating poetic functions in the visuals, they are also to the same extent more dependent on the linguistic meanings of their labels. Starting there might make it harder to distinguish the visual from the verbal, and though I am willing to accept that the verbal as a semiotic category may not be entirely extricable, focusing at the level of basic chromatic and spatial values can ensure a better framing of the visuals as such.

"Language" Analysis: Locating Writing

If we observe, to start with, the function which brightness plays in articulating these photographed fields, we can get a good idea of the physiological grounds of the meaning we are reading in(to) them. In many pieces we see dots and lines of paint drawn messily among the boards and debris. If we evaluate carefully how these affect our viewing, however, the mess soon appears more methodical. However complex the intermedial situation of these works, they were made with the aim of being photographed in black and white. This being the case, brightness value was a key constraint Arnold could manipulate

for articulation and expressivity. Whatever else an element might bring to a piece, its b/w value would allow it to be weighted against other parts of the composition, giving it a particular expressive value in its position. B/w value thus becomes an axis unifying the composite intermedia/um as a single "language". It does this precisely by enhancing the articulation of the visual field as a semiotic ground, upping the contrast, eliminating intermediate cases, economizing, disjointing the density of photographic capture, and rendering it discursive.

The spatial meanings leveraged by brightness, like everything else, depend on context, but have principally to do with depth of field. A white dot on a black field, if it is small enough, will give an impression of being deep in the field, and if large enough, of nearing the foreground or emerging from the field, unless it is so big that it appears as a space in itself framed by the white and extending through it.

Arnold's use of this basic graphic principle allows him to make very particular spatial impressions on the viewer, impressions which interact forcefully with the spatiality proposed by the architecture itself. In one notable example, five or six vertically stacked blotches of white spray paint partially collapse the effect of a hallway 30 or 40 feet long. In "this falling, tumbling, etc." the upright black boards at the end of the hallway are the deepest surface inside the house.

In the foreground our attention is dominated principally by the bullseye pattern the artist has spray-painted onto a patch of ground after carefully clearing it of debris. That provides one resting point in an environment where little else stands so neatly out to our visual grasp. Wherever else one looks in exploring the space, this remains a perceptual anchor. As a spatial force, it seems to hold us and the objects in that front room in a sort of gravitational field. The open closet doorways to the right draw our attention, but the lawn chair blocks our sense of access to them. Similarly the bright outdoor spaces are not ones our sense of placement can comfortably extend into. On the left side the least skeletal suggestion of a base wall is enough to contain us within the room where we, like the lawn chair and two striped boards, align towards the center of the circle.

If we imagine the wall at the end of the hallway as it originally was, we find one region into which our attention can wander unobstructed. While there is little there to arouse or hold interest, the offer of a second space, with its own center independent of the bullseye, is pleasing. Further, the wall there provides a terminus for attention which both rests the gaze and extends the overall spatiality of the scene. Another room, or set of rooms opens up if we tighten our focus and read more depth out of the image there. These five or six dots, the apex of a sort of cone whose base is the bullseye, it stretches the effect of those circles into supporting the openness of that space, counterpointing the traction effect they exert on their nearer surroundings.

The addition of the five or six white spots, however, while not entirely canceling this impression, counteracts it to a significant degree. The brightness of the spots projects

them forward from their background, and our gaze moving up that channel of space is met by them coming the other way. The hallway is suddenly not so open and spacious, or its spatiality is obstructed. While on the one hand we still sense or "read" depth there in the dark background, relative to brightness values in the rest of the scene the white spots occupy a position closer to middle ground, only their size and height keeping them from advancing further. An ambiguity is established in the spatial meaning of the scene, all the more due to the difficulty in telling whether the white spots are really paint or light coming through holes in the boards. The top dot, for instance, might be the effect of a widening in the crack separating the dotted board from its neighbors; and considering the other lighting variables that come in when we consider exposure options and decisions made in the darkroom, there are probably several other ways of accounting for those dots. However interpreted at the representational level, at an earlier perceptual level, the dots have this ambiguity, which is that by position they belong to the perspectivally furthest space of the house, by brightness value and scale they belong more to the wall surfaces and vertical posts enclosing the near-ground room. The eye seeks to assimilate the spots to this place, but there is no direct contiguity and the scaling keeps them at a certain visual depth. By involving the dark, receded portion of the house with the flattened front room in this way, those five or six dots effectively collapse the depth offered by the hallway, or allow for ambiguous readings while interfering with the stable construal of either option. They are a precise interventions in the semantic field, shifting the meaning experience not "densely", but between highlighted positions in articulated spatial and chromatic polarities (deep/near, dark/light, compressed/distributed). The constraints imposed in the choice of black and white photography as a medium supply it with this basis for articulation, and the viewer's experience of the space as a perceived world supplies it with semantic differentials for articulating between the experience of particular subspaces, and among conflicting or corroborating visual signs.

To see spatial detail playing a more evolved semantic role, we can look to the piece "the white sky or a gentle rain". In this piece, boards are nailed at odd angles across the large empty frames of a living-room window. White lines have been drawn around the ends of the boards where they overlap with the wall bordering the window. Since the photographic exposure used here renders the plane of light entering the window a uniform white, the effect of these white lines is to suggest that the outlining is actually an effect of light showing through around the contour of the boards. This contradicts the restraining plane of the wall, and creates ambiguity as to the depth of field of the boards. If you look straight out through the middle of the window, the boards appear to float. As the width of some boards is thicker towards the outside than towards the middle of the

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window space, and as the lines highlighting these vary in thickness, the boards may appear oriented also at different front-to-back angles, and to contradict their actual parallelism.
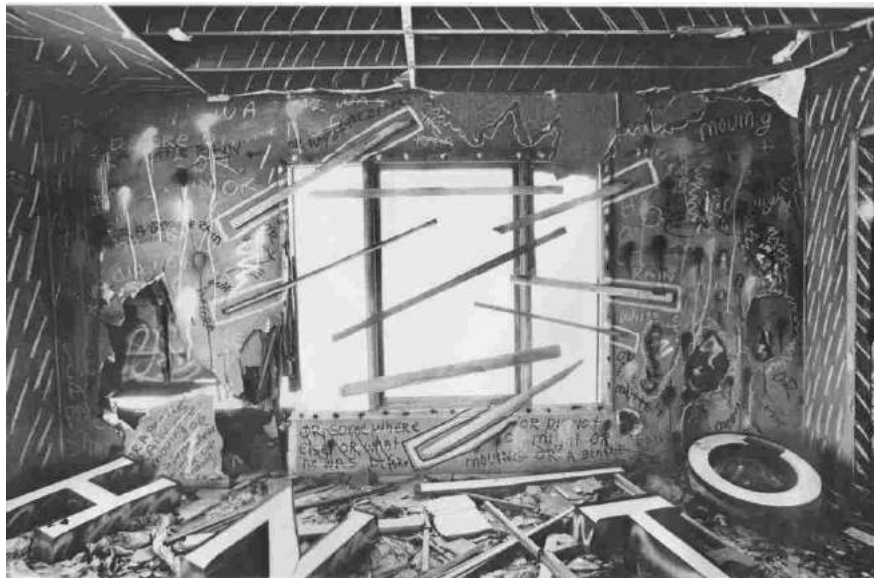
The impression this makes possible, of rectangular shapes floating weightlessly in space, is reminiscent of suprematist painting and deploys spatial meanings to similar effect.[17]   Activating the higher-level meanings of boards and windows, the ambiguity effected by the outlining establishes rich suggestions in the simultaneity of two readings: one, of a boarded-up window in a room of piled debris, and the other of planks breaking through the wall plane and floating freely in space. And most significantly for my purposes, this is not done by illusion; it is clear that the boards remain nailed to the wall. Rather, it is *signified*. The second reading suggests itself as a possible meaning of Arnold's marking as an intentional writing.   It arises to "salience" as an assumption in the inferential process, absent any more plausible or determinate assumptions, and so represents the kind of "weak implicature" Pilkington associates with poetry. Whether it might count as poetry or not, by his standards, would depend on the quality of the thought experience this gives rise to, and so ultimately on the interest of seeing these two contrasting visual meanings set in tension this way.

Poetry Analysis

While this articulateness and expressivity may be admitted, it remains to be seen in what way their function here serves the kind of meaning construct we would bother calling poetry. If five or six white dots, or the rough outlining of boards in spraypaint

can be considered acts of writing, in what way can an artist of such means be said to be making poetry with this language?   As I just said, it depends on the quality of thoughts communicated, which depends on the materials such devices present to the reading eye. *Situations* draws on spatial meanings as its primary field of reference; not only at the raw perceptual level, but on the fuller plane of the human experience of space, and to architectural space in particular. If the poetics of the physiological level are resumed by modernist formulations of the "language of vision", the other level is represented famously by Bachelard's *Poetique de L'Éspace* (195?). The values of space as habitable or inhospitable environment give human-scale spatial constructions a near-endless range of potential human meanings. Where Bachelard studies the poetics of intimate, sheltering spaces, Arnold plays on emotional values in the decrepit and the decaying. The polarities of shelter and exposure and of inside and outside fail to map consistently, and the tensions between these terms, experienced during the process of figuring the spaces out, are the basis for more fully-developed semantic articulations. It is perhaps in the meanings experienced at this level that we can begin to discern the "intense subtly discriminated and precise qualitative states" Pilkington sees as qualifing "complex thoughts" communicated in "weak implicatures" as poetry.

"Because" is different from most of Arnold's other pieces in having mostly black walls and in the absence of any direct view to an exterior. In the middle of the central wall is a poster of a pleasant wooded park or glade. Given the decay by which it is surrounded, this image becomes a field of attraction, almost offering a spaciousness and comfort which the rest of the scene denies. The inferential dynamic this set up is energized by the ambiguous nature of the image which, while probably a poster, seems it might just possibly be a window onto a real park behind the wall.

The play of brightness values in this piece supplies the possibility of enhancing the fantasy of a possible immersion or escape. Notice that the tree in the left foreground of the wooded scene meets up with a dark patch of approximately the same width and angle in the wall surface below it, just as its branches disappear into a space of the same darkness above. This breaks the already ambiguous frame of the scene ever so slightly, and with it diminishes a little bit more our separation from the perceived world it contains. Similarly the blotchy area underneath the poster, sloping down to the left just as the forest slopes, and echoing just enough the blotchy texture of the forest floor, roughly suggests the extension of that ground into the space of the room, even adding a suggestion of snow which further softens the impression of the poster space.
If you blur your eyes the impression of continuity is clearer, as it would be if the grain of that wall texture were finer or the ground in the poster slightly brighter. What is

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provided is an indeterminacy in the spatial significance of that blotchy patch of wall space. In particular the plane it's on is not strictly fixed, as, for example the text surfaces are. The patch's being wider at the bottom than at the top can appear an effect of foreshortening, tilting that plane on an angle aligning us with the forest. The blotchy patch continues almost exactly the gentle slope of the forest floor, extending it into the room even along the shafts of light cast from the open roof above. All these details in the spatial articulation captured in black and white, support the possibility of conflating the concrete space of the room with the ideal one of the poster.
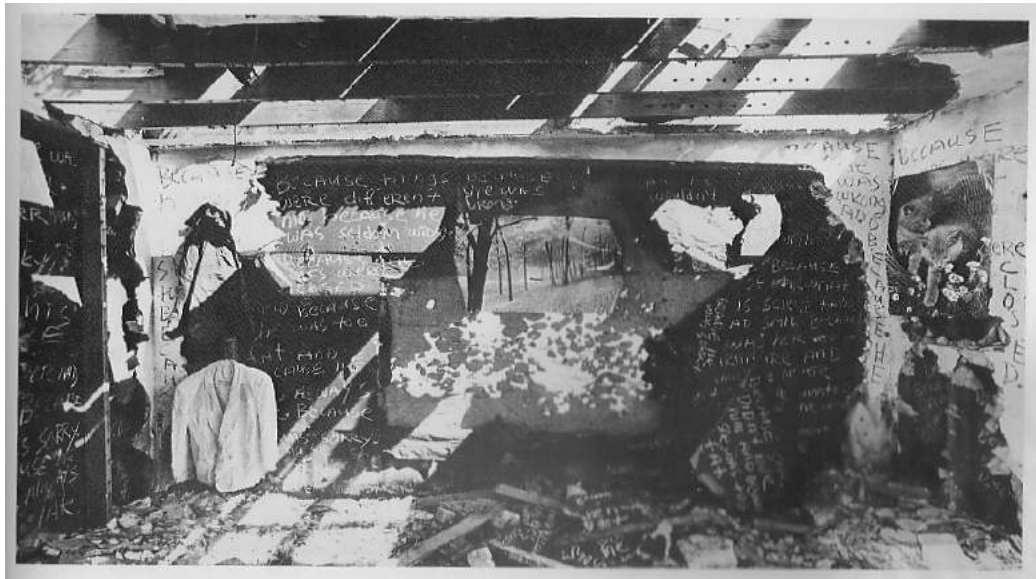
If we find ourselves doing this, conflating these spaces, those moments of "meaningless" chromatic articulation are having a thematic significance, drawing awareness to our desire to reimagine the environment, and to the perceptual efforts and material factors on which doing that would depend. If in our visual construal of this scene we can unify that field of white information slanting across the back wall, we can find ourselves on a path out of the wreckage of this house and into the intact quietness of the wood, in which, invisible to the eye, a boat awaits at the dock of a small pond[18]. Similarly if we can unify the black background of the room into a positive volumetric space, especially in the back right corner, then we can imagine the kittens coming in to us through that other poster.

If "because" is poetic, it is by virtue of the emotional complex it sets up, not simply an affective scene, but a scene apparently "written" to set ambiguous and indeterminate readings in dynamic tension. Again, the indeterminacy is not a product of convincing effects of illusion, but rather of devices that point to such effects, "stating"

them as if propositionally, perhaps ironically, yielding a "semantic representation" that underdetermines the thought this text will ultimately be construed as communicating. The process of searching for assumptions that will make sense of these signs is delayed by the perceptual ambiguities and incongruity of the elements assembled in the piece, and far from being totally arbitrary, the iconic value of the poster image and the spatial values of the room supply meaningful contexts that direct the search into fields of weak implicature, but strong poetic potential.

Though emotional meanings are the greater part of much poetry, Pilkington defines the poetic in terms of "complex thoughts" communicated in weak implicatures, and it would bring our observation of spatial/visual meaning effects to another level if we could identify devices involved in establishing poetic meanings of a more clearly conceptual order. In "and all the whining sounds" the spatial forces Arnold brings into play preside over a temporally extended presentation, developing a theme in conjunction with language, and then visually restating it with a new expressive focus much like a classic poem of words might do.

In "and all the whining sounds" there is less clutter than in most of the *Situations*. The elements are much more unified in their thematic suggestions. It is clearly a piece about death.
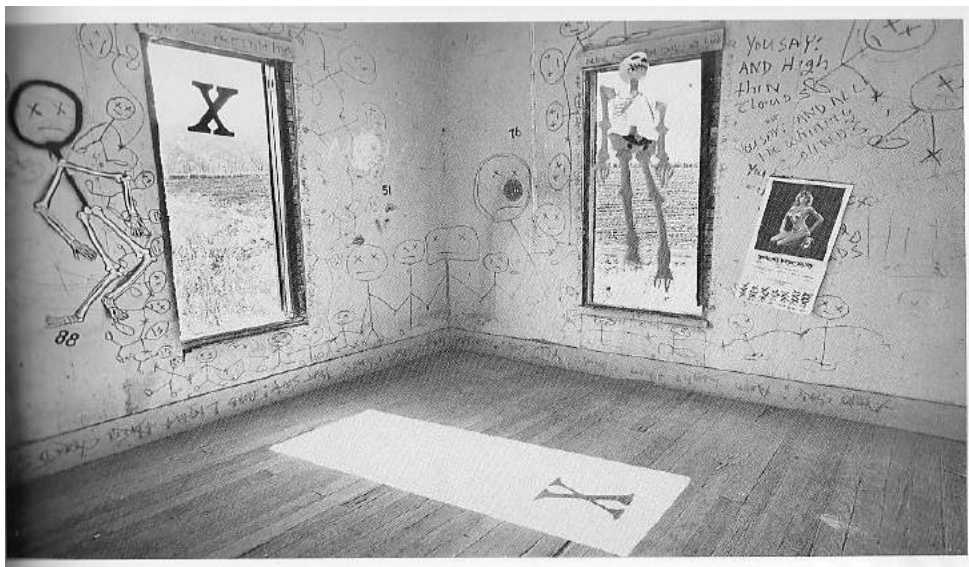

The blow-up skeleton hanging in one window, the large stick-figure at far left with cut-out skeleton limbs, and the other stick-figures with x's for eyes and all holding hands across the wallspace fill the space with a community of the dead. Outside, the fields are turned and lifeless, suggesting the dead season of nature and even supporting such mythological

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associations as the field Jason was ordered to sow with dragon's teeth, from which armies of skeletons then sprouted and advanced on him. If we look to the calendar we notice it shows October, with the days crossed out approaching Halloween, the night when the dead walk abroad.19 Mysteriously, the 31st itself is missing. Even the girly picture on the calendar can be integrated into the theme as the maiden half of the archetypal "death and the maiden" duality, the tempting delusion of carnality that weds us to death. As for the text, "you say and high thin clouds…you say and all the whining sounds," repeating sporadically throughout the piece, its indeterminacy adds easily into the impressionistic landscape, as a report of sights and sounds from the land of the dead.

As these suggestions reinforce each other over the period of our viewing, the rectangle of light on the floor comes to stand out more strongly. The emptiness of the floor texture distinguishes that surface sharply from the walls. The impression of a coffin becomes very apparent. The shadow of a volumetric letterform, x, affixed to the lefthand window, falls just about where a cross would be on a casket, and the slight foreshortening makes the rectangle narrower where the feet would be and wider by the shoulders. Already the tensions and associations among the three surfaces of the room have something of a poetic structure, but there is one effect remaining.

Along the base of the two walls is a line of detail which seems intended to be the last to draw our attention. It is after exploring the floorspace and perhaps discovering the suggestion of a casket that we are most likely to try making out this line of text, written dark on a dark background, upside down and crossed out. To read it we are compelled to turn the page so that the righted text becomes more discernible. When we do, the space we have been exploring is transformed. Where before the floor presented a strong gravitational surface, suggesting hard ground into which a coffin had been lowered, the same boards now lose their density in the suggestion of a ceiling backed by sky, and the same light, instead of falling from the window to suggest a coffin lid, now seems to rise through the boards into an exterior of air we had not suspected.

If the piece can be experienced this way, then that one line of text, not as text but as visual lure, sewn like a seam through the space of the composition, generates an effect much like that of the *volta*, or 'turn,' in classical poetics, whereby a form (traditionally a sonnet) breaks in its presentation and shifts the ground of its argument, often summarizing or recasting its material from a different angle. And the semantic import of this turn is perfectly in line with the sonnet tradition, a stock subject of which is death, classically reversed at the volta with a reminder of the promise of eternal life.
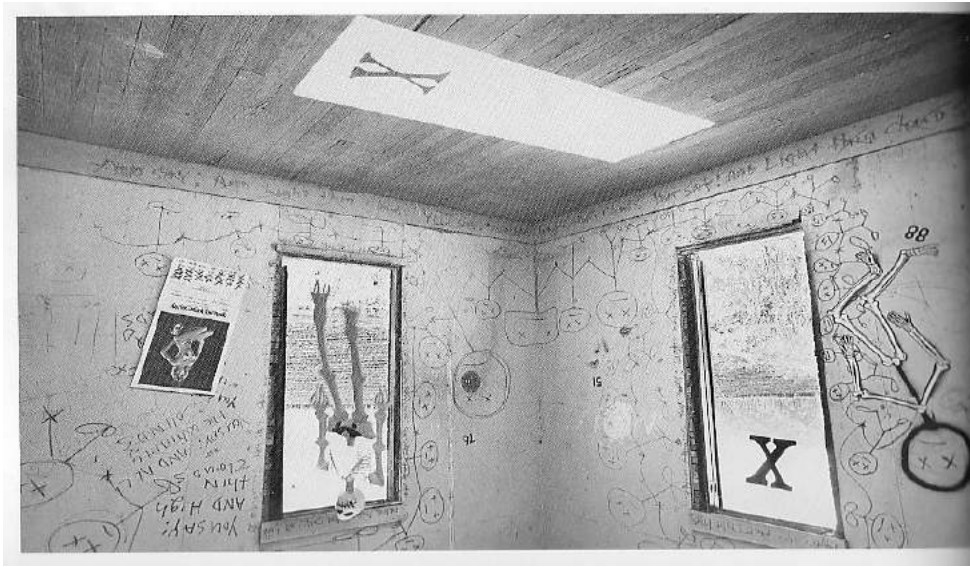
Verbal Reading

Ultimately, no such pseudo-literary readings are needed to qualify David Arnold's Situations as visual poetry. If we need to clarify the grounds for calling them visual poetry, we can point to the artist's previous output as a visual poet (Chain of Letters 1974), to his alignment of that work in a tradition going back to Apollinaire, and to his and his wife's editing of the journal Café Solo, p;ublishing experimental visual work by many key visual poets. The work also resembles the class of "poèmes-objects" which Pierre Garnier discusses (and judges for the most part failed experiments) in his history of poetics up through. As art it also participates in the genres of installation art and land art. Arnold acknowledged Robert Smithson as a contemporary influence, and Situations shares both a thematics of entropy and an aesthetics of contrasty and glanular black-and-white documentation with Smithson's work. Interestingly, though, the project was not intended as an installation but as a book primarily. The rooms were whited-out upon completion of the project, so that the space captured photographically exists only in the documentation, and differentially in the imagination of visual readers. What resulted is essentially a typographical production, where the articulation of letterforms, the materiality of things, and the density of photography are joined in an elaborte type-setting or mise-en-page, after which the landscaped reality required for it is dispensible. It represents a clear choice to leave the spatial reality of the piece, what Arnold experienced over a period of days constructing and photographic a space, like the world of a literary text, in the realm of

virtuality, and is poetic by this standard as well.

What's more, the project has a prominent verbal dimension in the minimalist, repeating fragments of text spread throughout each space, according to a clearly improvisatory and evolutionary plan. The effect of this text, not so much read as encountered repeating itself throughout the viewing/reading process, is a compound lyricism of a very particular order. I have ignored this dimension here so far only as a way of highlighting the role that visual and spatial values play in supporting/constraining the poetic effects. The verbal texts are more prominent in certain texts than in others, but in each one verbal meanings are there to interact with the visual meanings in detail, according to what factors get attention in the flow of visual reading. A reader who focused only or primarily on the verbal text would report a different pattern of attention, supporting a correspondingly different reading. To ask how the meanings from a text-first reading relate to those from a visuals-first reading is to question the works coherence.

What is perhaps most interesting about the verbal elements in these pieces is the way in which they are made to integrate with the visuals, presentationally, as objects fragmentary and scattered in a manner analogous to the visualss. Rather than a block of text that would command priority in the informational hierarchy, short phrases are repeated in a dispersal throughout each piece, insinuating a verbal rhythm which 'turns' and returns, often with slight variations, in a way that is almost inescapably lyrical. The effect is both to start up the verbal meanings as a music that threads the viewing, and to insinuate, by virtue of a kind of braiding in the stream of attention, visual signs in with the verbal mode of presentation.

When we come to speak about the verbal element of these pieces, and here there is only room for a brief, general impression, we are at a level of analysis somewhat discrete from the "poetic" analysis applied to the visuals. The meaning experience in this case is subject to the rules of linguistics, phonetic performance, and to a different, though not

incompatible aesthetic judgement. A unique feature of these pieces, in combining spatial and object meaning experiences with verbal meanings, is the almost palpable oscillation between these two registers. In my experience, the cognition of lexical meanings in these pieces and the perceptions of the spatial field and its qualities do not blend. Comparatively, the objects I see and try to make something out of are an external world, a silent foreign situation, which, however, hits a sudden intimate volume the moment I perceive a word or phrase and hear the pronouncing voice it calls up inside me. The meanings that come are unfixed and out of place like the objects, evoking moods and weathers brought here from some other occasion, and as I continue to pick up on the same words or phrases scattered elsewhere in the scene, without settling as a functional information that voice repeats, accompanying my viewing as an ambient presence, an alien thought in my own mind.

In the alternating effort to attend to it and to attend to the objects which have their own ambiguities, I said I feel a flickering between two minds or kinds of attention. This flickering for me is hard to describe, and inadequate as a comment on this last, verbal level of Arnold's poetics, but it produces a large part of the unique and moving atmosphere of these pieces, an atmosphere that flickers also in the black and white as I view them, thereby further testifying to how effectively David Arnold here has fused his materials, debris of language and debris of the visible environment, into a single poetry.

3. Visual Poetics: Constructing a Reception Theory

Obviously, the kind of readings I have just demonstrated can only posit, and not prove, the sufficiency of visual/spatial devices in creating what we might reasonably call a visual poetry. My account elaborates one example of these works being read as poetry, but to have any broader validity such readings require either statistical confirmation in the experience of other readers, or some grounding in general principles of visual reading and interpretation. Lacking anything like a genuine theory of semantics for visual language, we have to look to the phenomenological immediacy of interpretive response for clues as to how possibly-poetic meaning is made of visual texts. Like visual language, visual reading is not the province of a delimited faculty performing according to more or less known rules, but is rather an activity that calls into play the full range of visual perception and intelligent response, including everything from lexical processing of verbal signs and iconic recognition of objects to the awareness of space and situations. Because of this, I do not hope in the space remaining to provide anything like a thorough theory of visual reading,

but only to offer one possible starting point, and from there to sketch a few steps in the direction of a reception theory adequate to describing the moment-by-moment construal of meaning from visual texts, in terms that might convincingly account for the experience of poetic qualities in that construal. The methodology I will demonstrate is empirically grounded, and so could potentially support a robust theory of visual literary experience, but it is also designed to strengthen phenomenological observation, and so supports a visual literary education of the kind that could foster the development of an informed "readership" and critical reception.

Reading Order

Classically, reading and the viewing of pictures have been distinguished on the premise that one occurs sequentially and the other "simultaneously". There are good reasongs for arguing that more visual information is taken in at a single moment of viewing a picture or a scene than at a single moment of reading lines of text[20], but aside from this it is misleading, and for the most part meaningless, to describe picture viewing as simultaneous. Picture viewing is every bit as sequential (or temporal) as verbal reading, if not as geometrically linear, in the sense that even a small image can only be satisfactorily perceived by means of multiple fixations of the gaze, constituting a total image only through a series of discrete perceptual acts. What may be experienced as simultaneous is the outcome of this process, a stabilized representation of the viewed object or field, which is however a mental construct, an internalized correlate of the physical object, and not the actual live input of perception. This internal representation, furthermore, is not necessarily more simultaneous or static than the equivalent representation constructed internally during verbal reading. A verbal text describing a static image, however sequentially delivered, will be constructed as a static, or simultaneous image in the mind, though even there, it would seem, a kind of internal scanning is required to perceive the various parts. On the other hand a painting, even while simultaneously present as a physical object to the view, will often be perceived as a pattern of movements, and so represented internally as such.

As Gyorgy Kepes explains it, the visual coherence of a picture is itself the product of sequential dynamics:

> The Final task of plastic organization is, then, the creation of an optical structure of movement that will dictate the direction and progression of plastic relationships until the experience reaches full integration…The kinetic basis of plastic organization—the linear paths of the eye on the picture-plane—is the common measure that binds into a unity the changing plastic relationships (Kepes, 59).

The possibility of theorizing visual reading depends on the possibility of reconciling the procedures of sequential visual attention with the internal dynamics of information processing and "construal". The interaction of these two processes defines reading, and because picture viewing is also sequential, the notion "visual reading" has none of the problematic quality of "visual language" or "visual poetry". Even Nelson Goodman, whose firm distinctions between pictures and paragraphs I have already discussed, has no problem saying that pictures are to be read (Goodman, ???). The challenge of a visual reading theory that would answer the questions of visual poetry, however, is to observe in the reading process itself the crucial continuity between the verbal experience called poetry, and the visual one for which claims to poetry are made.

Many of the readings I have offered so far, whether of David Arnold's visual poetry or of the graphic design texts of Metalheart artists Tim Jester and Per Gustafson, have relied heavily on the role of visual features in determining a temporal order to at least portions of the viewing. In Jester's "Blood", I observed a counter-clockwise flow that helps channel the eyes' movements in a pattern sharpening the semantic focus of the piece. And in both Gustafson's "Tribute to Metalheart" and Arnold's "and all the whining sounds" I pointed to effects established by delaying presentation of certain details until certain others have been perceived first, and the construal process carried far enough to effect a surprise or reversal on that basis. The possibility of such effects is vital to a robust conception of visual poetry as I want to portray it here, even if such effects themselves are not necessarily characteristic of the genre as it exists. They are important because of their potential to fulfill the requirement of a sufficient "language-likeness" in visual texts, as one way of substantiating the notion that pictorial signs can be organized to perform discursively.

Reading order is critical to the functioning of verbal syntax and to the directional build-up of meaning in verbal poems. So, one possibility for recognizing visual reading effects as poetry, is if visual texts can establish some analogous mode of ordering. Rosalind Krauss sees even a non-directed sequentiality as approaching Rauschenberg's "flat-bed" collages to the condition of language, generating "an undeniable experience of syntax" that shares "with language some of its character of discourse" (Krauss 40). Adding to this a more determinate temporal/spatial ordering should go even further, and may answer adequately to Higgins' condition that in a poetic work where the visual element predominates, "something of a verbal method of experiencing the work remains—the process of reading, of abstracting a sort of verbal pattern from the work …" (Higgins 47).

Willard Bohn sees reading order as a crucial aspect of effective visual poetry, though the judgement is self-selecting in his case, since the corpus he constructs is made up almost entirely of verbal-intensive examples. He argues at considerable length that the individual calligrammes that compose Apollinaire's "Paysage" were designed to be read in a certain order, and that that order both facilitates fluid reading of the parts, and purposefully constrains how the piece gets interpreted. Elsewhere, he criticizes poets for falling short of this basic requirement of visual poetics by failing to establish a clear reading order in their poems. While I think it limits our reading of "Paysage" to insist that there is a single right order in which to sequence the pieces, in the case of a predominantly verbal form of visual poetry looking to reconstitute a strict linearity in the lines of text may indeed make sense. But for the majority of visual poems, and particularly for the "very visual" range that concerns me here, it would be wrong to either expect or require anything so determinate. In winning for poetry a measure of independence from language, the rules of linear sequencing are among the first to go.

Poets often insist on the value of visual poetry as a "non-linear" mode, and a chief virtue of being non-linear is allowing for a variety of reading orders. La Charité makes this point about *Un coup de des*, though the spatialized layout there only minimally impedes following the poem as an obvious sequence of lines. The forms of visual poetry that emerge after Mallarmé include many in which any possibility of deciding a sequence for reading is studiously eliminated. The enthusiasm surrounding early literary experiments with hypertext centered largely on the possibility of unlimited and unconstrained possibilities of sequencing. Much, even most, hypertext poetry, however, failed to yield interesting results precisely because the possibilities were left too wide open, making uninteresting compositions as or more likely than interesting ones. When Pilkington points out that successful poetic devices depend on establishing a "directed" search of weak implicatures, he is merely reformulating a basic lesson of 20th Century experiments with indeterminacy in art and poetry. The so-called LANGUAGE poets, for example, who sought to maximally challenge the ordering regimes of conventional language use and thus continually advocated indeterminacy as a poetic strategy, show themselves to be equally preocuppied with closure as a crucial ingredient. Ron Silliman concludes his essay "Migratory Meaning" with the observation that the primary need in formulating a contemporary poetics focused on indeterminacy, is an understanding of the devices that motivate closure. And Lyn Hejinian's now classic essay "Rejection of Closure", similarly argues that the trick lies in walking a fine line between total absence of constraints, and fatal fixity of meaning. She writes:

I want to say this at the outset and most emphatically, in order to prevent any misunderstanding. Indeed, the conjunction of *form* with readical *openness* may provide a version of the "paradise" for which the poem yearns—a flowering focus on a distinct infinity. ("Rejection" 27)

Eyetracking

Speculating on the reading order of a visual poem, or on general principles of how visual texts are scanned and processed, is of little use without some means of verifying how viewers in fact view texts. Naive theories that assumed pictures are scanned left to right like text, or on a diagonal from upper left to lower right, or clock-wise by right-handed and counter-clockwise by left handed viewers (Saint-Martin, 189), have not been borne out by empirical studies. Eye-tracking technologies that allow precise recording of the rapid-fire movements the eyes make when viewing anything reveal no "normal" pattern of viewing. Eye movement research is slightly older than the modern tradition in visual poetry, dating back to psychological studies of reading from the latter 19th and early 20th Centuries (cf. Rayner, 372). Since the 1970's both the technology and methodologies for studying eye movements have developed dramatically, and extensive, sustained research has been conducted, yet still no simple or standard viewing procedure has been identified. Researchers today are still uncertain whether eye placement is decided more on the basis of semantic or perceptual properties of the candidate objects (Rayner, 398-9).

Nevertheless, eyetracking would seem a promising means for confirming hypotheses as to how a visual text gets read. By recording the eye movements of a group of readers viewing Apollinaire's "Paysage", we could statistically confirm, if not the order Apollinaire intended us to read it in, at least whether there is clear consensus among viewers in following a particular order. Of course for such a simple example we could presumably rely on the readers' own memory of how they read the poem, and save ourselves the effort and expense of using the complicated devices and procedures of eyetracking. For more complex works, or where the question is not In which sequence were these four calligrammes read?, but rather Where did the eyes go in reading this piece?, sophisticated technologies are required. The speed and number of eye movements easily exceed our ability to keep track of them ourselves. To confirm the optical flow I observed in Tim Jester's "Blood", for example, or to determine what visual elements were viewed and in what order, we would need precise data on where each subsequent fixation landed, and since eye movements as revealed by eyetracking technologies are notoriously jerky and stuttering, we would also need some means of statistically averaging the results

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to discount distracting data.

Though I am unaware of any previous study to apply the methodology of eyetracking to visual poetry, its possible relevance to graphic design has long been recognized. Despite Rudolf Arnheim's pessimism concerning the usefulness of such an approach to formalist study – "there are very few links between the order and the direction of the fixations and the compositional structure of a work" (Arnheim 364; qtd in Saint-Martin: 189) – eye movement research has seemed promising for understanding the efficacy of information delivery in graphic design. In the 1980's the journal *Visible Language* devoted a two-volume issue to eye-tracking research[21], most of it clinical work that still required extrapolation to possible applications for design theory and practice. Since at least that time, eyetracking has been a tool in the high-stakes business of attention-getting and messaging, serving to confirm or correct the visual strategy of glossy magazine covers and advertisements. More recently, the new field of webdesign, whose interactive variables are beyond the scope of conventional industry wisdom, has sought to benefit from the scientific observations of eyetracking. The California firm, Eyetools, Inc., for example, offers eyetracking services to companies eager to maximize the impact and efficiency of their on-line presence. They use the techniques of eye movement research to "capture and depict customer viewing patterns and behavior", and answer the vital client questions "Is advertising being viewed? Where am I losing customers? Do viewers recognize branding elements?"[22]

The two main areas addressed in eye movement research are reading and scene perception, offering insights relevant to both aspects of the intermedial "language" of visual poetry, though until recently, relatively little research had been done directly considering mixed verbal and visual forms of reading, e.g. cartoons or mechanical diagrams (Rayner 392). Recently the interest in user interaction with websites has spurred a great deal of such research. The basic picture we get from this research, applicable to both reading and viewing, is of a gaze in constant, irregular movement. The viewing gaze is literally in constant movement, even during the relative stillness of a fixation, due to a phenomenon called *nystagmus* which involves a continual slight oscillation of the eye to keep renewing input on the retina (Rayner 373). The more significant eye movements, made in search of new information, are called *saccades* and occur on average 3 to 5 times per second (Henderson 260), interrupted by pauses for processing, called *fixations*, lasting an average of 200 to 300 microseconds each (Rayner 372). The field of vision, continually shifted and repositioned by eye movements, is divided into three concentric regions of variable acuity. The *focal* region, spanning about 2° at the center of vision (about the size of a thumbnail at arm's length), is the highest in acuity, surrounded by a *macular* or *parafoveal* region of significantly reduced acuity, extending approximately 5° beyond the focal core in all

directions, in turn surrounded by the *peripheral* region of very limited acuity extending to the edge of vision, some 120° in diameter (Rayner, 374).

The behavior of the eyes in reading shows many irregularites. Studies show that 10 to 15% of fixations actually go backward along the string of text, 15% of words get fixated more than once (Rayner 387), and about 40% of words in a text never get fixated at all (Underwood 118). These irregularities are due in part to the fact that looking and seeing, fixating and reading are not the same thing, and the key challenge in using eye movement studies to build a theory of reading is to discern within the blur of physical evidence about looking, something of the invisible processes of seeing and making sense.

One crucial distinction that emerges from the research is between where we are looking and where we are directing our attention. William James, and no doubt others before him, had already noted that we can direct attention to objects in the periphery of our visual field without focusing the eyes there (cf. Henderson 260). This manifests, in empirical studies of reading, in a distinction between the size and shape of the ocular focus (based on acuity factors in the retina), and what is called the *perceptual span*, or the "region from which useful information is acquired during an eye fixation" (ibid), based on the freedom of movement of attention beyond the foveal region. Studies since the 70's have shown conclusively that the perceptual span is asymmetric, stretching in the direction of movement (e.g. to the right when reading English) and beyond the scope of ocular focus. When the eye lands on a particular point in a word or sentence, it can discern up to three or four characters to the left of the one fixated, but up to 15 characters to the right (Henderson 261; Rayner 380). The *word identification span*, i.e. the span within which words can not only be discerned but also read, is slightly narrower, extending perhaps 7 or 8 spaces to the right (Rayner 380). These facts help explain how we might skip 40% of the words in a text and still understand it. They also explain how we might know ahead of time what words we can afford to skip; according to one study, we skip only 18% of "content" words but fully 62% of "function" words (Underwood 118). At the same time, most studies conclude that no information is gathered from below the line being read, suggesting that the reading span is purposefully shaped to the task and material conventions of reading. In reading, the viewer makes efficient use of this shaping, restricting attentive activity to the narrow slot of "incoming" text, and keeping attention slightly ahead of the eyes to help strategize effective placement of the next fixation. And when the eyes land on a word, they do so in accordance with the asymmetry of the perceptual span, its momentum pushing on in the direction of reading: the *preferred viewing position*, or the position at which a word is most likely to be fixated, is about half-way between the beginning and middle of the word, only slightly off from what has been identified as the *optimal viewing position*

given the forward-looking structure of attention (Rayner 385).

Acknowledging the divergence between eye movements and internal cognitive processing, a number of theories have been advanced to explain how phenoma such as fixation placement and duration relate to the task of reading (Rayner 388). Though countervaling theories argue that eye movements reveal little to nothing about internal processing, a general model of eye movement control emerges that provides a starting-point for an empirical theory of reading able to address both verbal reading and the reading of visual texts or scenes. Building on a framework laid by R.E. Morrison[23] and further developed by several others, John Henderson elaborates what he calls a "Sequential Attention Model". The basic assumptions of this model are as follows:

> The sequential attention model contains five basic assumptions.... First, at the beginning of each new eye fixation visual attention is allocated to the stimulus at the center of fixation. In reading, the attended stimulus is likely to be the word…, though in the case of longer words it may be just one part of the word. In scene perception, it would presumably be at the level of the object. Second, attention is reallocated to a new stimulus when the foveal stimulus is "understood." The simplest interpretation of "understood" here is that attention is reallocated when the foveal stimulus is identified.... However, attention could be reallocated when activation from the foveal stimulus reaches a critical threshold prior to recognition, or alternatively could be reallocated when a process following identification such as syntactic parsing (in reading) or semantic interpretation (in scene perception) is imminent or completed. Third, the reallocation of attention is coincident with two aspects of eye movement programming: (a) when attention is reallocated, the system begins to program the motor movements necessary to bring the eyes to a new location, and (b) the new locus of attention is taken to be the location toward which the eyes should be moved. Fourth, the reallocation of attention to a new location gates higher level analysis at that new location. Finally, the eyes follow the shift of attention to the attended location following the eye movement programming latency. (Henderson 263-4).

To summarize: Attention aligns with the foveal focal-point of the eyes to get high-resolution information from a particular spot or object in the visual field. When the information from that spot has been processed sufficiently (whether simply to the point of word/object-identification, or to the point of threading that word or object (as sign) into a larger project of construal) attention moves off of the spot even while the eyes remain there. Using something like a "preattentive map" (Henderson 264), a peripheral awareness of the rest of the visual field, attention chooses a new spot to focus on, and begins perceiving what it can there without the extra acuity of ocular fixation. At the same time, the oculomotor system receives neural commands to relocate to the position chosen by attention, and when the system is ready the eyes shift the high-acuity core of vision to align with attention and complete the information gathering from that spot.

Such an account, as Henderson and others make explicit (Henderson 266; Rayner 402; Underwood 116), rough as it is, should apply equally to reading and to scene

perception or visual information processing more generally. In both cases, movements of the eyes and attention are taken to serve functions of sequential uptake, parsing and construal, and to offer a view-from-without onto the internal processing taking place at each stage. As such the model offers us a promising basis for an intermedial theory of reading. From the cognitive standpoint of eye movement research, reading and viewing are basically equivalent, or more to the point, viewing *is* visual reading. This equivalence would presumably be made even more apparent if, in addition to the bulk of work done on object recognition and "scene perception", more research were focused on more semiotically "articulated" types of visual text, for example the pictogram writing I discussed in the first section. The differences between reading and viewing, as revealed by eye movement research, concern mainly the unique requirements of linguistic processing as opposed to "simple" perception and recognition, and it would be interesting to observe whether eye movements on articulate, "text-like" stimuli show up as notably more like verbal reading than eye movements on dense, "picture-like" scenes.

The possibility of using eye movement research to ground a theory of reading rests on some version of what is called the *eye-mind assumption,* which applies to both reading and scene-viewing, namely "the assumption that the direction of our eyes indicates the contents of our mind" (Underwood 111). The limitations of eye movement research for this purpose arise with the margin of error in that assumption, namely the discrepancy between the easily-perceived direction of gaze and the harder-to-perceive direction of attention. If attention can move independently of the eyes, and it seems it can wander even farther in picture viewing than in reading text, and not just left-to-right, but in any direction (Rayner, 399), then the most meticulous recording of occular fixations and saccades may or may not tell us anything about what gets read. As it is, even where the eye-mind assumption appears justified, the only direct link of any strength that can relate eye movement data to inner experience is the duration of fixation, which in normal reading situations is likely to respond to difficulty, or simply amount of processing (Underwood 111); hard words or words in hard sentences require longer processing times, and should correspondingly produce longer fixations, though extended fixation on a given word may also be motivated by retrospective processing of previous information, or even by integration of information noticed peripherally, but not yet fixated (113). Beyond that, eyetracking can tell us little about reading, without some means of observing the conceptual activity that accompanied the fixations; and what could even this tell us about poetry?

We can imagine an experiment observing fixation duration as an empirical measure of an elusive reader-response phenomenon such as "delayed categorization" or "extended

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exploration of weak implicature", which Reuven Tsur and Adrian Pilkington, respectively, identify as central to poetry as a kind of thought experience. Such an experiment might give us a behavioral angle on poetry as a cognitive effect or experience. But such an experiment would require an elaborate methodology of compensatory testing, probably relying on subject interviews or other retrospective reporting, to gain any insight into the crucial semantic aspects of processing, and because pictures tend to be informationally denser than text it would be exponentially harder to constrain for useful results in studying viewing as opposed to verbal reading.

A number of researchers have questioned the usefulness of eye movement research to yield insights into viewing and scene perception at all. The fact that viewers, unlike readers of text, seem to "get the gist of a scene very early in the process of looking" has seemed to leave researchers with little to study, and to make eyetracking methodologies "a high-cost, low-yield endeavor" (Rayner 398). Furthermore the main liability of eyetracking (the marginal non-coincidence of eyes and attention) is presumably exacerbated in general viewing. In reading we can at least presume that attention to a word is attention to its meaning, whereas in viewing attention to an object or area could indicate attention to any range of perceptual properties, category identifications or semantic roles. If the "scene" or "picture" is a visual poem, however, the case is an intermediate one, where every object is to be taken as a sign, and we can never tell, especially after the very first fixations, whether the "text" was being viewed as a dimensional, scenic whole, examined as a flat field of objects, or read as articulated code for thoughts.

Even when verbal script is integrated into a scenic environment, as in the case of Arnold's *Situations*, it has something of a different mode of appearing than objects or scenes as a whole. Isidore Isou, founder of Lettrisme, commented on this difference, observing that linguistic signs always overpower images and scene. This may only have meant that words attracted his attention more than visual perceptual detail, yet there is a substantial difference in the "feel" of each class of signifiers. I observed that in Arnold's work as a flicker between modes of perception. Through millenia of reading text, the visual experience has been one of dark marks on a white ground, excluding other visual variables from the area of focus in reading. The visual background, all depth dimension, has been whited out, so to speak, eliminated to aesthetically support the ideality of print transmission. The visual background noise, so to speak, of reading has been to a certain aesthetic palette and texture, discrete dark markings on a white-to-tan ground, or occasionally the reverse. Something of this experience remains in the characteristic feel of attending text, which almost inevitably involves a sudden "nearing" or "focusing in" on the spot of the reading, as well as a different ratio of visual perceptual to inner conceptual

attention in the experience.

Though a record of eye movements is clearly useful in determining viewing order, to observe anything about reading requires us to take further steps, confirming by performance in an experimental task, or by verbal report, whether and how a fixated area also received attention, and suggesting how information from that area might have figured in construal. As a result, eye-movement research must tackle very basic questions about reading if it is to have any strong results. According to the research review I have been citing by Rayner, for example, through the late 90's a major question in eyetracking studies of reading was still what factors, informational or perceptual, had the greatest influence in guiding eye movements. Certain influential studies suggested that the most "informative" regions drew the eyes first, and others that out-of-place or incongruent elements did, amounting to much the same thing. Other studies, however, questioned these results on the basis that "informative" was often unintentionally confused in the studies with perceptually "distinctive", and suggested that visual factors of distinctiveness and salience may actually be more influential (Rayner, 398-9). Such questions and their answers are of course far from producing anything like a theory of reading at the cognitive level.

Attention Tracking
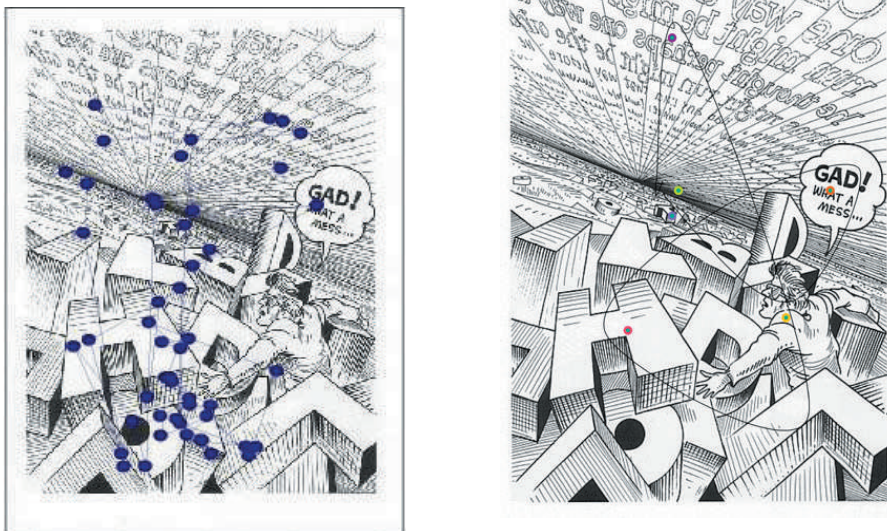
Eyetracking (left) and attention tracking (right) results on a page from John Riddel's *Criss Cross*.

The study I conducted with Dr. Barbara Tversky in 2001/02, on a grant from the Center for the Study of Language and Information (CSLI) [24], a research institute affiliated

with Stanford University, took a major open question of eye movement research as its point of departure. Interested in reading order and reading paths in visual poetry, I assumed that visual factors could play a determinate role in attracting and guiding attention within a visual text, and thereby in influencing the process of construal and the outcome of visual reading. By observing the viewing behavior of subjects "reading" visual poems, I hoped to discern patterns explicable by the spatially constraining influence of visual factors. Where a majority of reader viewing paths overlapped, taking in the same visual elements in the same sequence, the piece would be revealed to have a *de facto* reading order, a layer of textual structure not visible to the "naked eye". Furthermore the visual features that showed up as the most influential in constraining viewing order would by that token reveal potential *devices* for creating visual rhetorical or poetic effects.

In 2001 I had conducted a pilot study with similar aims. For that study I used a conventional eyetracking approach, showing 25 subjects a series of 17 visual poems on a computer display, and recording the eye movements and fixations they made as they read/viewed each piece. The results, predictably, were hard to interpret. The jerky scatter of fixation-points showed little strict repetition between viewings, and the majority of fixations fell ambiguously on spots not easily identifiable with distinguishable semantic units, nor immediately explainable on principles of visual salience. As in the example above, on some stimuli there was a marked preference for fixation at or near the edges of objects, but there seemed no consistent way of explaining what edges or what objects. Subjects reliably fixated certain types of elements, notably text, and in some cases there was substantial consistency in what objects of a particular piece got fixated even where the order was different. Elsewhere, particular regions of the field seemed to reliably guide viewing along roughly invariant paths, even where the sequence of fixations along that path was logged by different viewers at different points in the viewing process, contained different numbers of fixations, and did not touch on precisely the same "landmarks" along the path. It was these cases of sporadic and approximate invariance that seemed must promising among the results of the study, but without a more focused, statistical analysis to target the constraining power of, say, three-line convergences, maximum brightness areas, or other pre-selected features, the research questions could not be convincingly answered.

One reason eye movement research has not focused on visual poetry, not the main one, is that the difficulty of interpreting the results rises exponentially with the detail and complexity of the stimuli. To limit the complexity of the stimuli, or narrow the scope of enquiry, would have merely been to reproduce studies better conducted by psychologists. It would have been possible to narrow in on the perceptual constraints involved in

determining first fixations, for example, but the issue of reading and of the semantic sequencing of visual elements would have had to be abandoned to make the eyetracking results more determinate. And there still would have been the problem of distinguishing between where the subjects were looking, and what they had in mind.

With questions as to the value of its results, eyetracking is a hard methodology to recommend for cross-disciplinary applications such as mine. The technology is extremely expensive and therefore hard to access, and requires sophisticated programming and statistical analysis to produce useable results. As an alternative to this, I had devised a vanishingly simple method that would allow subjects themselves to record their reading path by marking-up the on-screen image after an initial viewing. In the planning stage of our CSLI study, Barbara Tversky observed that this technique would likely give the results we were interested in, and probably more clearly than in eyetracking data. Crucially, this technique, despite or partly because of the inevitable inaccuracies in subjects' reporting, promised to improve our experimental focus on what the readers attended, rather than merely what they looked at. Both for this reason and for the ease of collecting the data, we used this methodology for the entire experiment.

Though subjects would clearly be unable to precisely reproduce the sequence of their fixations, the error that would result would simplify in favor of those items that were actively attended. Instead of remembering exactly where they looked, we expected the results to show us what they took as significant, what they noticed consciously and involved in making sense of the piece, telling us more about the "text" as they experienced it than precise eye movement records would. In a number of eyetracking studies it has been shown that, while impossible to predict a subject's viewing order, the "scanpath" established on first viewing is encoded in the memory of a scene and tends to be repeated in subsequent viewing for recognition, even where subjects were not instructed to do so (Rayner, 399). Thus there was reason to presume subjects would be reasonably successful in recalling the general path of their viewing. What would differ most from the data an eyetracking method would collect would likely be the number and specific placement of fixations. And since memory is classically a function of consciousness – we remember best what we were most aware of – the likelihood of a subject remembering a particular fixation should correlate directly with the amount of attention and conscious processing they applied to that spot. What we would get, therefore, rather than a record of eye movements would be a record of the movements of attention, the elusive goal of eyetracking methodologies. Attention tracking, as we called the procedure, would trade the technical complexity and objective certainty of eyetracking for a method any gradeschool teacher can apply and a measure of subjective error that promises actually

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to reveal more directly than the precisions of eyetracking what most such research is ultimately after.

The Study: Stimuli

The stimuli I selected consisted of visual poetry and related visual art. The pieces, covering a range between very flat and very dimensional, were selected for their spatial articulation, or the degree to which spatial effects were integral to the meaning. Aside from Haroldo de Campos and Jiri Kolar, the visual poets represented were all "post-concrete", engaging visual space as such more actively than the poets of classical concretism or even much avant-garde work. Jiri Kolar's piece represented a transitional case between concrete and visual poetries and yielded interesting results. The Arakawa painting, while not generally associated with visual poetry, is a verbal/visual text thematizing spatial meanings and viewing patterns explicitly. And Duchamp's "Grande Glace", even further from association with the genre, demonstrates attentional guidance and discursive, textual structure in a visual art context. I included a total of six pieces selected from David Arnold's *Situations* to prepare a test case for studying the role of attentional guidance within the "very spatial" work of a single artist. And I added three slides representing architectural work by Arakawa and Gins, one a 3D computer rendering of an abstract space, and two photographs of built spaces. The Reversible Destiny project from which they derive activates spatial meanings via architecture as devices within a "built discourse" that represents the extreme development of spatial poetics emerging from experimental trends in 20th Century art and literature.

Procedure

The testing took place in two phases, an initial viewing phase and a repeat viewing and reporting phase. First, subjects were shown a Powerpoint slideshow containing each slide in the order they would appear in the reporting phase. They viewed each one for 10 seconds to familiarize themselves with the piece.

After previewing all of the slides, subjects were instructed in the use of the simple interface I designed for reporting their viewing paths. They were told to view the slides again, this time marking the path they followed using a curved-line tool in the Powerpoint tool palette, and then placing up to seven dots on spots they remembered looking at, in order, starting with the first. The dots were color-coded to mark the numerical order.

For the first eleven slides these were the only instructions. For the rest, there was

an extra step of verbal reporting. For five of the David Arnold pieces, subjects responded briefly to two questions after each slide: "Please narrate where you looked from spot to spot?" and "What was most interesting about the space?" These questions were designed to elicit verbalized correlaries to their graphic reporting, allowing me to confirm what subjects were looking at for a given dot-placement, and to observe how features or objects were identified and preliminarily construed. For the abstract structural piece by Arakawa and Gins, and for the sixth David Arnold piece, the follow-up prompt was switched to "Describe the scene in your own words". And for the last two Arakawa and Gins slide, instead of tracing their viewing path on first revisiting the slide, subjects answered the question "If you were here, where would you go?" using the curved-line tool to answer, and in a follow-up slide responded verbally to the question, "Why?" The choice of questions for follow-up, verbal reporting can make a great difference in what kind of information is gleaned from the graphically reported attention paths, offering the possibility of comparing two very different modalities of response. In this study, the last variation proved unclear and did not produce useful results.

Data

The data produced took the form of graphical records of the subjects' recollected viewing paths, plus the verbal reporting from the later slides.

Each treated slide represents an individual "reading" of the piece, and collectively, a composite of all readings of a single slide provides a statistical indicator of the piece's structure as experienced by a community of readers. By limiting the marking task to a maximum of seven dots, I necessarily constrained the results to reveal only the initial portion of the viewing. In considering the possible perceptual factors affecting attention, it is these early moments that promised to be the most revealing, as later exploration is presumably increasingly motivated by developing thought and observation patterns unrelated to gestalt perceptual cues. The same method, however, could be used to study an extended reading, though in that case it would be important to design the interface such that dots and lines disappeared from the subject's screen during marking, so as not to crowd the screen and distort viewing (a revision that would also improve the present study).

The first question of interest in reviewing the data is whether the viewing patterns appear random or motivated, and if motivated, by what factors. Jiri Kolar's piece, "Hommage [tribute?] to Ladislaw Novak" presents a convenient case for studying the role of strictly perceptual factors, as the wavy field of i's is what Steve McCaffery would

call a "proto-semantic" construction. The first image presented below is a composite of the viewing paths recorded by all 21 subjects. While chaotic, certain patterns stand out even to an initial visual analysis. Clearly a majority of all first placements coincide in the region, center right, where the letterforms are most widely dispersed, creating the impression of a raised, spherical form. A slightly narrower majority of second placements are concentrated in a region up and to the left at an angle of about 45° from that focal center, in a direction accounting for all first placements not falling in the central region. And most third placements landed directly below the region of majority first placements, though percentage deviation increased further between second and third placements. The other notable pattern is that most viewings took a clearly circular pattern, moving off that first region and circling around it; figure 2 below shows the counterclockwise viewings.

Clearly the subjects responded to this piece as a specific topography, a field of material resistance, and not as a screen of white noise. The three regions mentioned consistently drew early attention, regardless of the exact order. Though the pattern was more likely for viewers who scanned in a counterclockwise trajectory (2), the constraining influence at work at those points becomes even more interesting when we notice that some of the viewing paths with nearly identical results for the first three placements were moving in opposite directions (3,4). In the absence of distinctive objects at those locations, we have to consider the field properties of density and shaping. The piece creates the spatial impression of a field of raised spherical embossures and sunken troughs between them. What the viewing records suggest is that the gaze is engaged in construing this shaping *as terrain*, and thus follows paths responding to visual features as constraints on imagined movement.

A full statistical analysis of the viewpaths, based on an information analysis of the stimulus field, would be required to formalize the factors prompting attentional response, e.g. relative density, rectilinear versus curvilinear alignment, formal salience over a given area and apparent depth or elevation. The central lesson for a strategy of visual poetic composition, simpler than that, lies in the connection between viewing and imagined moving, which I will return to. As regards this particular poem, the movement itself turns out to be a meaningful interpretive response, when we relate the piece to its literary reference. "Individualista" is the name of a concrete poem by Ladislaw Novak. It consists of a strictly rectilinear grid of i's in the same typewriter font we see in Kolar's poem. One of the i's, at an unremarkable position in the grid, is turned upside down, in what the title leads us to read as a gesture of individualism and non-conformity. Kolar's piece, by recasting the i's in a more liquid formation redefines identity and social relation as phenomena of field dynamics. Each "individual's" position is distinguished along smooth

gradients of proximity and overlap, rather than according to the rigid assignment of coordinates. The field of individuality is "dense", to extend Goodman's terms, rather than "articulate", and characters occupy all possible positions and degrees of relatedness with each other. The prominence of the embossed regions appears a property of fluctuations in the field, subject to fate and responsive to nature in a way refused by the militarized grid that provokes Novak's character's act of resistance. The viewing paths, by noticing certain regions over others, individuate the field, yet respond fluidly and non-hierarchically to its contours. The circular movements of attention the piece invariably provokes are themselves a refutation of the authoritarian coordinates of Novak's grid, not to mention of the linearity of conventional text, and convey in the very process of reading at this proto-semantic level, an "exemplificative" reference to the subtle blendings between separateness and connection, individuality and crowd.

Reading Reading Order
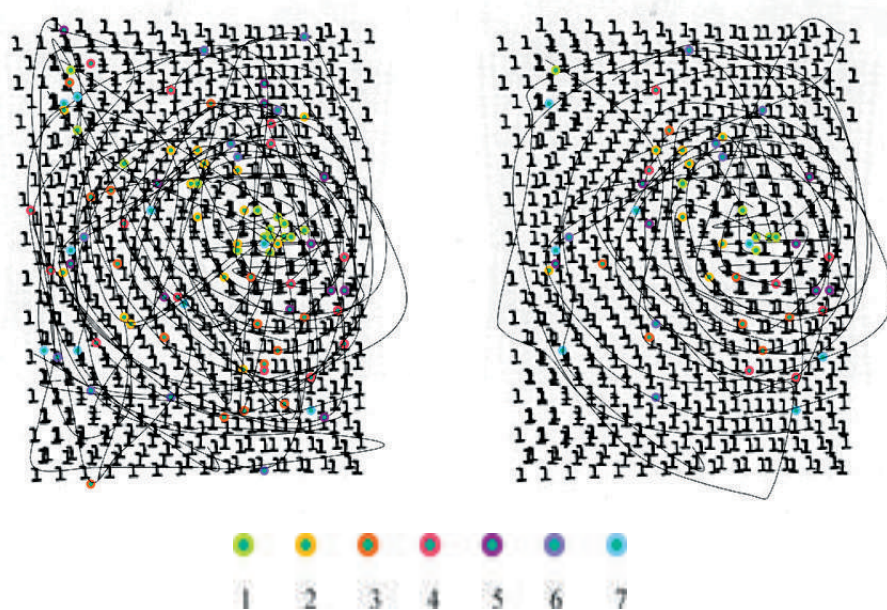
Where the visual elements are semantically invested, we get something more explicitly informative. As attention takes up unit after unit, we observe something equivalent in visual terms to the "chaîne parlée" or "verbal chain" (Saussure) in linguistics, the sequence of signs syntactically ordered and available for decoding. We might call it

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the "chaîne visée" or "attentional chain", though as I will continue to explain shortly, the parallel is of course not exact.
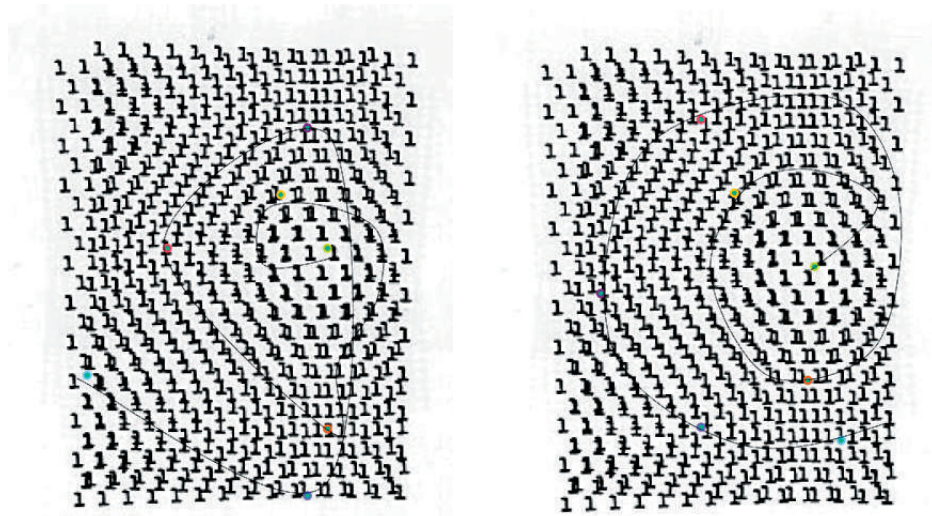
In the case of a spatialized verbal poem, evidence of the order of reading has obvious value in guaging the determinacy of the verbal sequence in the composition. In reading the page from Jed Rasula's *Tabula Rasula* (19??), below, just as many subjects started from the large text at bottom left as did from the text beginning in the upper left. Both approaches can be seen as accomodations of the top-down, left-right reading conventions for standard text, though other visual factors also played a role: a number of the subjects starting at upper left registered their first gaze in or adjacent to the large circular form of the "G" rather than at the actual start of that line, and nearly as many subjects looked first at the central conjunction of the main lines, where two adjacent O's serve as a similar focal attraction, as did at either probable sentence beginning.

The significance of the indeterminacy in where to start reading comes down to the possible differences in meaning between the two ways of sequencing the lines. Would Rasula care whether his readers parse the page as "The distortion is prior to the text/ where she's pure gloss", or "Where she's pure gloss/ the distortion is prior to the text?" More likely the ambiguity is evidence of a successful device employed by the author, mixing signals to remove reader certainty: "Where she's" is highest and leftmost, but "The dist.." is actually further left and larger. If not, it is evidence of a failure to constrain attention more precisely. Either way, the ambiguous reading order is part of the distortion the text says is prior to itself, wrapping the reader in a knot that cannot be untangled from without. For this particular poem the simultaneity of possibilities is more important than the question of where one is supposed to look first, but the same strategies are available for a case

where precise order and timing are more crucial.

1   2
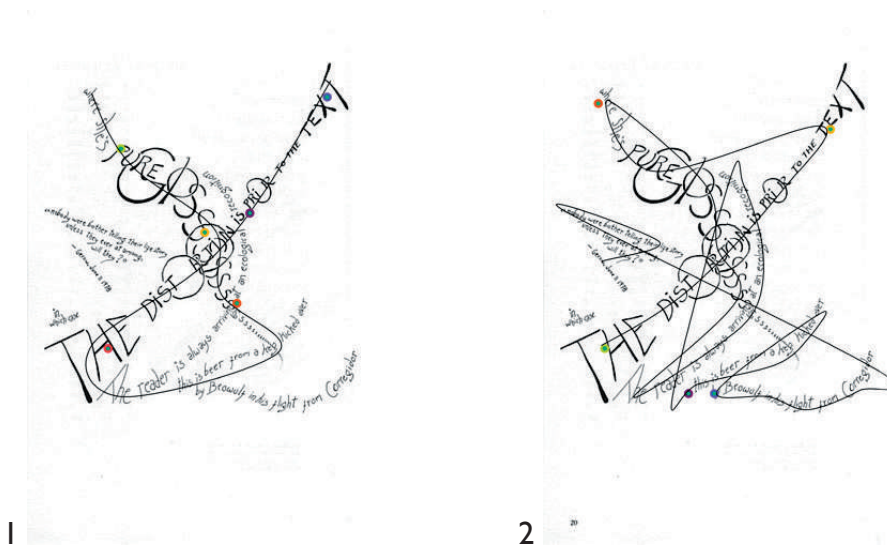
Where the significant elements are all or primarily visual, the importance of viewing order is not so clear. The more semantically articulated the visual elements, the more like reading we can expect the viewing to be. Certainly the pictograms in Lars Arrhenius' "The Man without Qualities" are meant to be read "in order", and it is interesting to note how readily we project the expectations of left-right, top-bottom reading into the verbal context. Visual texts not so explicitly sequenced present more difficulties. Duchamp's "Grande Glace", for example, casts the question of reading order in a different, and very interesting, light when we consider the discursive semantics undergirding its visual forms. Though wordless itself, every element in the piece has a verbal label, representing a focus of 'pataphysical references elaborated in the characteristically Duchampian musings of his "box" projects, notes and interviews25. This supporting structure of verbal meanings, no less suggestive or resistent to interpretive closure than the imagery, amplifies our experience of the work, particularly when charged with the non-random specificity of a subjective reading order. Translated according to Duchamp's own labels, the perhaps confused viewing experiences of this enigmatic artwork yield articulate, if no less enigmatic texts:

> 1. Chocolate grinder necktie/ malic mould of the stationmaster/ crossing the horizon, the Bride's garment/ (unlabelled support behind) the Bride/ central draught piston/ back through the Bride's garment at the vanishing point of perspective/ scissors
>
> or
>
> 2. The Bride's stem/ central draught piston/ milky way/ the Bride's wasp/ crossing the horizon, the Bride's garment/ chocolate grinder rollers/ sieves (or parasols)/ towards

the malic moulds/ past the ocular witness, around the chocolate grinder/ up past the revolution of the bottle of Bénédictine in the sleigh/ malic mould of the waiter's assistant/ crossing the horizon, the Bride's garment again/ past the wasp, towards the Bride

1   2
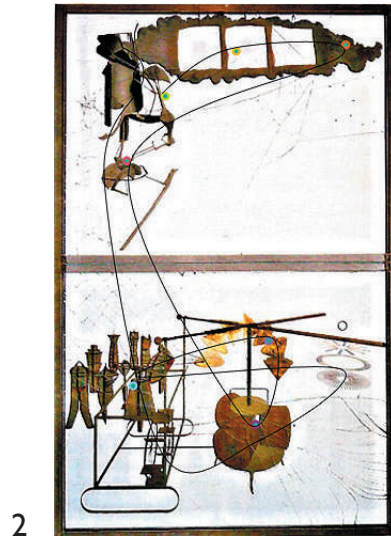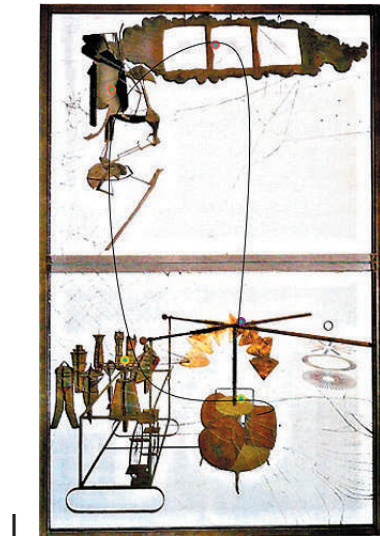
The second reading is clearly more spiritual.

Attentional Analysis

Barring a sufficient immersion in the Duchampian esoterica, such a demonstration may be more entertaining than informative. There is obviously a fallacy involved in assuming, outside of certain highly specialized cases, that visual elements as signs align in a definitive mental order once fixated, that a sequence of visual attending amounts to the firm syntax of words concatenated to form sentences. If the *chaîne parlée* is a one-dimensional sequence of words strung end to end, the *chaîne visée* is a two- or three-dimensional threading of distributed points into a fabric, looping, crossing, and linking in many directions. Though specifics of the temporal sequencing, and qualities of the movement of the gaze (direction, arc, rhythmical patterning) can play a meaningful role in the textual experience, the more basic question of syntax comes down to the network of relations established in a free exploration. Kepes and other commentators on compositional theory in the visual arts stress this non-linear, exploratory character of visual reading:

> The ultimate aim of plastic organization is a structure of movement that dictates the direction and progression toward ever new spatial relationships until the experience

achieves its fullest spatial saturation. As new relationships progressively unfold, the spatial integration of the image gains momentum until it finds final clarification in the plastic image as a whole. (Kepes, 52)

Saint-Martin, observing that eye movements are of limited value in elaborating a visual semiotics from the perspective of the viewer/reader – "since these movements are potentially infinite and open to aleatory unfoldings leading to opposite conclusions" (Saint-Martin, 188) – similarly turns her focus to the pattern of interrelationships established through free exploration:

> Visual semiotics proposes that the composition, or rather the structure of the work, can be deduced only from a series of equilibria established between the elements. The [optical] energies and the regions they form, which are taken up and modified with a view to producing superior and more complex equilibria, can finally produce a state where the ensemble of movements and transformations produces a system which can then be offered provisionally as an adequate synthesis. (189-90)

While basically a restatement of Kepes' point, Saint-Martin articulates this notion of compositional structure beyond the basic gestaltian observations. For her, the "ocular circuits" manifested in viewing, rather than an additive concatenation of significant units, reveals a topological structure of relationships. The notion of topology allows Saint-Martin to consider the spatial structure of viewing without positing a definitive order or measure to that structure. While any and every spot in the visual field may receive attention, in any possible order, and while every perception associates the current spot of attention with everything previously attended, at least to test it for relations, perceptual equilibria (balances of light and dark, relative positioning, etc.) eventually establish a relative invariance in the structure experienced. Tensions and relations become apparent and emerge as the structure of the piece. Saint-Martin, true to the boundaries she draws for visual semiotics, discusses this process only at the level of primary perceptual processes, but clearly something similar happens at the semantic level, with items linking up in a network of possible iconic relationships and conceptual associations. Kepes makes this point explicitly:

> As one searches for spatial order, and through the interrelationships of the plastic forces creates a unified spatial whole, one also searches for a meaning-order and builds from the different association-directions the common, meaningful whole. (Kepes 202)

So, except in special cases, what attention tracking reveals should not be thought of as the reading order, but rather as the attentional terrain of the piece in a viewer's experience. Since my experiment concentrated on the viewer's first few moves in each piece, the examples I have given reveal only the most salient aspects of this structure.

Another approach would be to let viewers keep looking and marking their attentional path until they feel they have seen everything. Most likely this would not cover the screen with dots and lines uniformly; rather a distribution would emerge thoroughly marking the topology of interesting and uninteresting areas. The frequency of returns to a certain region would give a topographical articulation of this space, registering intensities of interest. Most likely such a map would reinforce the predominance of the first items attended, though it might equally reveal the importance of items only noticed later.

The first useful information from such an attentional analysis is simply whether a particular element was or was not attended. Where items consistently evade attention, they can hardly be said to figure in the reading of a piece, though unattended items can impact a reading peripherally or subliminally. Looking to the test results for a confirmation of my reading of David Arnold's pieces, for example, I discover that in the case of "this falling, tumbling, etc" (pp. 40-42 this chapter) I was wrong, at least as regards the five white dots at the end of the hallway. While nearly every subject focused obediently on the bullseye of spray-painted rings, only six out of twenty-one subjects recorded a gaze on or near the spot in question. In the written follow-up, only two subjects (one of whom had not marked the spot) mentioned the dots directly, referring to "the three [sic] white dots in the background", or "the far dots of light". Two others mentioned the "hall" or "corridor", while one other identified "dark doors at the back". What spatial effect or meaning these few subjects perceived the dots to have is largely irrelevant to a formal reading of the piece, since statistically almost no one took them as significant elements. If everyone who did notice them had interpreted them the same way, we might argue that the detail is meaningful but hidden, and likely to be noticed by more subjects upon longer viewing, but the one subject I asked about them read them precisely the opposite way, i.e. as deepening rather than collapsing the hallway. Admittedly, there was no elaborate interpretation riding on the issue of these few dots, but the example goes to show how individual perceptual responses can be, and how useful an attentional analysis that can take a larger community of responses into account.

A second level of information revealed by this kind of method involves seeing whether one particular item was associated with another. If both items were attended, we know the association was possible, but as it turned out in the last case, we need the confirmation of a verbal report to be sure the association happened. In the case of the David Arnold piece, "because", where I read the central forest scene as an ambiguous element, temptingly interpretable as a real space, but possibly or probably only a poster, my reading was widely confirmed. Unsurprisingly, almost everyone (19 of 21) focused on the scene in question, which was at the center of the piece, though they did so at widely

varied points in the temporal order. Of the 14 subjects who responded to the follow-up questions, 12 mentioned the scene among the "most interesting" features. So, there is no question as to whether it figured in their reading of the piece. But my reading depended on two other factors: the parsing of the scene itself, and the syntactic relationship that set it in contrast or conflict with the surrounding environment.

Here the verbal reporting proves very useful, in that in addition to indicating whether a subject noticed the scene, the words used to refer to it reveal how it was identified. Of the 13 subjects who mentioned the scene in response to either or both of the follow-up questions, six clearly perceived it to be a poster, while five seemed to take it as a view to a real exterior, and two acknowledged it was ambiguous. Descriptions in the first case used the words "image", "poster" and "cutout of the natural scene". The responses on the "real" side varied in how definitively they indicated the subject's interpretation. I list the expressions here in decreasing order of certainty:

1. "the hole in the wall" / "the row of trees and the bridge you can see through the wall"
2. "window through to the distance"
3. "window"
4. "the trees in the background"
5. "what appears to be a window"

The two unsure subjects each made a different first guess, one referring to "the picture – or is it a window" and the other asking "was it a window or merely a photo?"

So, the ambiguity I ascribed to the poster/window is statistically substantiated. But my reading of this piece relied also on a particular valuation of that ambiguity in the context of other elements. I argued that the question of whether it was a real place or a poster made a difference because of the claustrophobic decay around it, that this semantic framing drew a particular emotional investment in the scene and its possible identifications. I even made the claim that the decay made the viewer *want* to interpret it as real. One way of seeking confirmation for this would be to investigate whether subjects who paid more attention to the elements indicative of decay (e.g. the rubble on the floor) were more likely to read the scene as real, or precisely the contrary. The results, particularly from the attention tracking itself, are inconclusive on this, though of the six subjects who directly mentioned features of decay in their verbal report, pointing to "trash", "messiness", "graffiti", "chunks of wall on the ground" etc, only one of them identified the scene as a window, while one saw both possibilities.

While the results do not support any statistical conclusions as to the prevalence of the reading I offered – a different approach with the follow-up questioning might have yielded more -- verbal reports from two of the subjects strongly confirm my reading. One

subject, narrating his experience of the piece, wrote:

> The sylvan scene in the center of the frame trying to figure out how it fit, was it a window or merely a photo, the contrast with the tidy peaceful forest creating marked tension within me when contrasted with the disturbed and disturbing space which frames it

The other, asked what about the scene was most interesting, answered:

> The tension that arises from untainted (the picture of woods) clashing with the disorganized room

These responses at least show that the tension I identified as the semantic core of the piece is there as a possible content, and in the similarity of their phrasing suggest the perception was probably more widespread than reported.

I did not include "and all the whining sounds", David Arnold's "holloween" piece, in this study, and so cannot comment on the objective validity of my reading there. That reading relied on the timing of perception of the upside-down text along the baseboards of the room, the impulse to invert the picture to read the text, and the changed range of associations surrounding the rectangle of light on the floorboards once the picture was inverted. Reading behaviour of this sort was beyond what the testing procedure would allow me to observe, but I want to make a few comments on the notion of time-specific reading effects before concluding this section. The first aspect of my reading would have been easy to test, simply by observing whether attention to the baseboard text was consistently logged after the other, more prominent, features I enumerated. Compositional strategies for hiding or delaying detection of an item are obviously just the inverse of strategies to assure that an item is noticed right away. And, presumably, if it is crucial to a particular rhetorical or poetic effect that an item be perceived after one item but before another, within certain limits of precision the appropriate strategies can be arranged.

Although visual reading neither relies on nor limits itself to strict linear orders of the kind essential to verbal reading, temporal sequences and effects are both possible and pronounced in visual texts. One kind of significant temporal effect that does not depend on precise viewing order is visual rhythm. The page from Klaus Peter Dencker's *Wortköpfe* below shows a distribution of elements that sews metrical qualities into any pattern of viewing. The space is asymmetrically filled, with a concentration of items in the lower, and particularly lower right portion. An approximate diagonal from lower left to upper right divides this region from the emptier upper portion, characterized by larger figures and more continuous lines. Figure 2 below shows the viewing paths of the first seven subjects, which, typical of the results as a whole, highlight the different visual weighting of these two

regions.

1   2
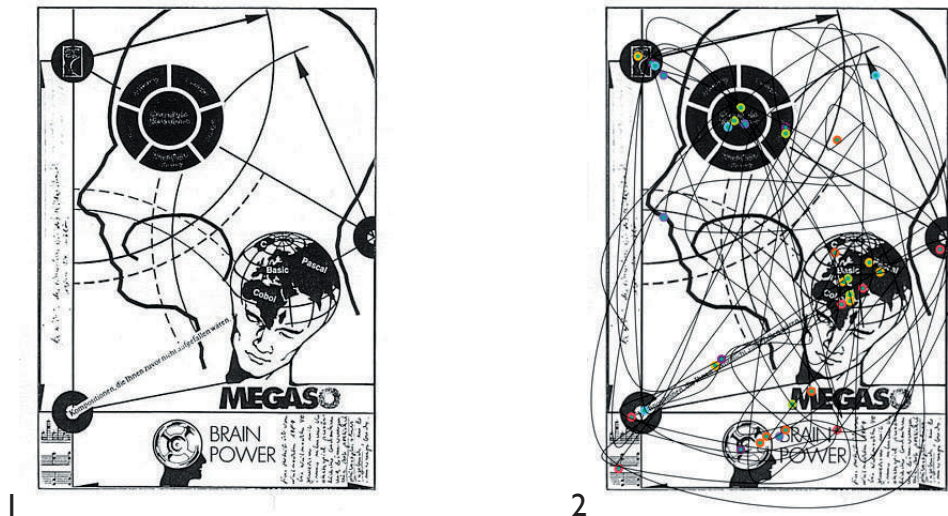
With rare exceptions, everyone viewing this piece recorded their first gaze at one of two locations, either the large segmented circle at upper left, or the globe-head figure lower to the right. Of those who looked at the circle first, most looked at the head next, but no one who looked at the head looked next at the circle. Invariably two or three further fixations went to items in the lower right portion before attention again found its way up into the "quieter" region of the circle. This suggests two things. First, while viewings followed widely varied patterns, a basic current drew attention downward to the right and kept it occupied in that region, from which it might continue only later to explore the less dense region in the upper half. Secondly, it suggests that the head stands in "tighter" relationships than the circle, characterized by a greater number of near-neighboring attractors, and shorter distances of movement from one to the other, than is the case for the circle.

A gaze to the circle is a relatively leisurely gaze. Attention landing there finds less to draw it away, partly because of the focusing effect of the frontal, radial form of the target, partly because of the lines and arrows which do not draw attention so much as offer it traction, and partly because of the distance to cover between the circle and any next point of interest (other than the owl). Conversely focusing on the head, which does not meet the gaze but deflects it in the direction of the clustered elements, immediately leads to a series of fixations elsewhere, on the particular continents (labelled with names of computing languages) depicted on the surface of the globe, on the portions of text, or the other salient graphical elements. The effect of this difference, on a gaze that will

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eventually move back and forth between the two regions as it begins re-visiting items already focused on, is a metrical alternation, between close, quick movements, and a more singularly-directed, protracted gaze to the circle or empty region around it. The pull downward and to the right, even beyond the initial viewing, will be noticeable as a visual weighting whether the gaze at a particular moment is moving with it or against it, and the relative rest or relief of the upper region will counterpoint this, whenever it enters the stream of attentive acts. As the various visual elements are discerned and associated, the topology built up among them will contain these dynamics as part of its articulation. The scanning procedure as it moves from spot to spot, in whatever particular order, will activate them as a meter or rhythm, establishing a baseline of alternating aesthetic qualities to underly reception of the semantic units, just as sound patterning does in verbal poetry, though more random in its sequencing.

If a kind of meter in visual poetry is conceivable, a sequencing of beats either iambic or trochaic, anapestic or dactylic according to the reader's own timing, a more obvious temporal effect is the general flow of viewing among elements. Attention tracking revealed the inherent circularity of viewing in Jiri Kolar's piece, and I suggested a possible thematic relevance for that. Similarly I pointed out a clear directionality in Dencker's piece, drawing attention directed at the upper region down toward the concentrated materials in the lower right. If there is any thematic significance in this, I would suggest it concerns an iconic contrast paralleling the formal one I have been emphasizing. The globe-head, more fully rendered and dimensional, more detailed and "loaded", iconologically bearing the whole world and the bulk of information technologies, is impressively serene, yet more compressed and burdened than the broad, thin outline of a head containing the segmented circle. The one stands out as figure, while the other disperses as field. The one looks down, the other up, buoyed peripherally by arrows and a focus on the perched owl logo, suggesting wisdom rather than processing power. In this context, the downward draw has an effect of gravity, and movements against that pull aquire the semantic valence of release or relief, coming into more spacious territory where the pull is upward and away.

Reception Theory

Attentional analysis of the kind discussed here permits us to track the specific impacts of different signifiers as they mingle in the stream of meaning. It allows us to observe scene-perception and verbal reading as contiguous behaviors of reading, and track attention as it handles signifiers of different kinds. If I want to isolate the meaning-impact of words in the Dencker piece, for example, I can observe how, when and where words

appeared within the currents of attention recorded, and track both verbal and visual reading in the sequence of acts of attention that supply construal. If I want to observe the interaction between visual and verbal meanings, I can start from observing the pattern of attending to each. If I want to home in on the spatial details and how they are experienced, I can observe roughly what spatial information received what kind of attention, (focal, macular or peripheral, indogenous or exogenous, covert or overt[26]), and how the material reported in visual attention shows up later in the verbal reporting. The "topology" yielded by tracking visual attention gives us the attentional "footprint" of a visual reading, from which a fuller picture of the experience corresponding to attention can be developed.

The main value of such a methodology, however, beyond confirming any particular verbal reading or targeting general literary-semiotic truths by means of careful testing and statistical processing, is that it furthers the articulation of readerly awareness. It has a powerful demonstrative effect for the subjects participating in the study, and many of them reported "meta" level observations about how they paid attention to their paying attention to the text. In this sense the study itself *is* visual poetics, performs critical awareness of visual poetry for the subject even as it analyses the attentional patterns of that awareness. Depending on the value you ascribe to the recursiveness of such an experience, you'll call the test that supplies it either "art" or "education". Mallarmé, we recall, saw recursive awareness, as the peak achievement of language as a spiritual instrument.

The test can also be thought of as the empirical (behavioral) contact-point for a reception theory of visual poetry. Reception theory, especially in the psychological version espoused by Wolfgang Iser, has the virtue of basing literary discussion on a highly-articulated model of construal, meaning-making, as a process and experience. It models the perceptual, attentional, imaginative and conceptual acts behind "consistency-building", the work of construal, as it takes place over the course of attending to the textual materials (Iser 16–18). The model Iser elaborates in *The Act of Reading*, regardless of how satisfactorily it describes the reading process, suggests many ways of building an analysis of attentional patterns into a fuller theory of reading, and because of the conceptual level at which it discusses the process of meaning making, the model presents much that could apply to visual reading. The notions of construal and consistency-building themselves, Iser acknowledges, come originally from visual reading theory, in fact from Arnheim in the "language of vision" tradition. Certainly once we've reevaluated the criteria distinguishing linguistic from non-linguistic systems, we can assume a model than integrates both verbal and non-verbal factors in the construal.

One central concept in Iser's model which seems inherently promising is that of the

"wandering viewpoint", or focus of attention, including perspectives, horizons, retention and protension, moving (left to right, top to bottom in Iser's cases) through the sequenced field of materials that mean things (Iser 108–18).

> "Instead of a subject-object relationship, we have a wandering viewpoint which travels along *inside* that which it has to apprehend".

If only on the strength of its root metaphor, this concept seems eminently usable as a resource for theorizing the reception of visual texts, and for imagining a visual phenomenological literature.

Theory is, etymogically, a visualizing, an imaging, since in the Greek notion it is the *eidoΣ* (*eidos*) that stands forth to the mind, a schematic, economizing, superposition on perception, accessing perception for meaning and order. In this way of taking it "idea" is "image", and theory the articulation of a view through certain optics. Though it follows the viewing subject only one step into the process of reading, the empirical method of attention tracking takes advantage of that step to map the field of encounter, and something of the encounter itself, for thinking in visual/spatial terms. It is interesting that this tendency of theory to emerge as visualization repeats itself in poets at polar ends of the 20th Century. In Mallarmé, for example, the epiphanic moment, literally as the Greek Fathers would have called it qeoria, referencing Christ's appearing to his disciples on Mount Tabor, is the "standing forth" of Logos, (le Verbe) from the blank of chance, and for Mallarmé the path of pursuing that epiphany via literary craft inevitably led to the spatialization, visualization of the language and the practice of poetry. Similarly, within the "language-centered" poetics of the language poets, even what may appear to observers as an ascetic and extreme investigation of strictly verbal language, the theory often manifests in highly resolved, spatialized, imagable, conceptual figures.

> The meaning of a word in its place derives from the word's lateral reach, its contact with its neighbors in a statement, and from its reach through and out of the text into the outer world, the matrix of its contemporary and historical reference. The very idea of reference is spatial:… (Hejinian, "Rejection" 34)

So it may not be illegitimate to imagine the construction of a theory as the building of a mental image, a schematic mounting on the basis of an avowed metaphor, especially one as picturesque and friendly-sounding as the "wandering viewpoint". I think of the wandering viewpoint as a sort of "phenomenology capsule", as a schematic scaffolding for laying out the critical distinctions deployed in a visual analysis, phenomenologically conducted. It allows us to collect in a convenient, modular and functional metaphor the

critical parts of the model as we build it.

The first element of what we might call a wandering viewpoint theory of reading, one supra-modal to any specific kind of language, is a notion of the unit of meaning that is neutral with regard to the materials, codes or modes of usage being taken for meaningful. Saint-Martin demonstrates the requisite delicacy in theorizing this when she establishes that the unit of visual language cannot be found at the level of either iconic identity (representation) or fundamental shapes (abstraction) like Kandinsky's , the point-line-plane morphology, or by any smaller amorcellement of the "parts" or "pieces" of graphic matter. Rather, the semiotic unit can only be thought as the correlate of an occular fixation (Saint-Martin 5–10), just what gets seen, since any visual material may be relevant in many different ways and within many different projects and sub-projects of construal.

A notion of the "unit" should be basic to any theory of visual meaning-making, as to any poetics. But in the context of visual poetry the notion of the unit is very hard to determine, unless like Iser and Saint-Martin, we re-grasp the question phenomenologically. Where in verbal language the meaningful units are specified in the alphabet and the principles of morphology, with visual language there is no way of specifying in advance just what constitutes a meaningful object or a meaningful area of light and color, and what doesn't. Anything that falls beneath the gaze may figure in the process of visual sense-making, and so the unit of visual language as an abstraction can be materialized no further than the percept as an energetic point of encounter, the "coloreme", "a patch of light energy" and the visual variables into which it resolves under attention.

Saint-Martin's framing of the coloreme seems very useful for anchoring a reception poetics, also because it effectively parallels in a visual model Iser's literary notion of the "chunk", the variable amount of verbal information taken up in a single act of reading. While in verbal cases the unit is pre-specified as a linguistic phenomenon, Iser acknowledges the attentional grasp as a variable. He borrows from psycholinguistics the idea of an "eye-voice space", and designates the unit of reading as "that span of the text which can be encompassed during each phase of reading", centerpoint of a decoding process that proceeds, not "in units of single words" but rather in "chunks", articulating the syntax of the sentence.

The notion of the coloreme, chunk or spot as literary unit brings with it a larger system of organization that constrains the task of reading, namely the division of the field into focal, macular and peripheral regions at each repositioning of the visual attention. We know further from research into the properties of the *perceptual span* (some 15 letters or equivalent degrees arc ahead of moving focus) relative to the *word identification span* (some 7 or 8 letters ahead)(Rayner 380), there is further articulation in the structure of

readerly contact with the text. Perhaps the most interesting aspect of this is the degree to which the concentric structure of visual perception is consistent with the structure of awareness observed in any sense modality. While with vision the geometry is materially embodied and optometrically measurable, it would be harder to guess the dimensions of the center of proprioceptive attention onto the surface of your thigh, or the ratio and thresholds between sharp focus, surrounding field and peripheral, though physiologically the pattern is topologically consistent.

Attention is said to multiply the tuning curves of a perception, and it does so with this footprint. William James elaborated the "structure of awarenness" in general to be a concentric ordering, and the near-synonymy of that structure with the structure of visual perception has fascinating implications for a visual poetics. Most conspicuously it empowers visual devices involving this structure to articulate a great range of concepts relative to the structure of awareness in other modes. The chief difference between models at these two levels of structure concerns the role of the "macular" region. While the focal core in both models serves focusing and grasp, the field just outside, which in the perceptual model just gives a dimmed version of the same information, in the mental, psychological level, it provides different categories of information from that in the core. The focus grasps "features", while the fringe displays non-feature awarenesses, associations, opinions about, senses of knowing and feeling. Since clearly non-feature awareness, while fringe to cognitive grasp, is central to the processing of construal. It is where the options of matching and referral between an item and its field of referents are presented. A visual diagrammatic model that could successfully integrate terms for both kinds of attention, grasping and reading, would be able to display one more level of the reading process, the meanings emerging from attending to the things attended to. It would also literalize the notion of a visual poetics, a "science of language" as Mallarmé envisions that, visual language about visual language.

The dynamic aspect of the notion "wandering viewpoint" echoes another prominent formulation within a visual arts context, namely Paul Klee's notion of the "shifting viewpoint" as it appears in his teaching notebooks (e.g. Klee, *Thinking Eye* 142, 173ff). Klee's analytic drawings show a concern with the effect a displacement of the gaze has on configuration of the whole visual field. Multiplications of gaze events with their
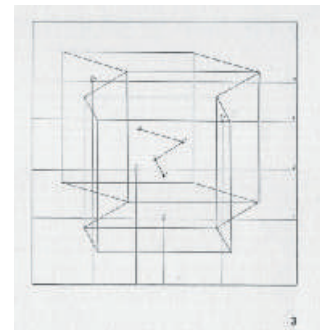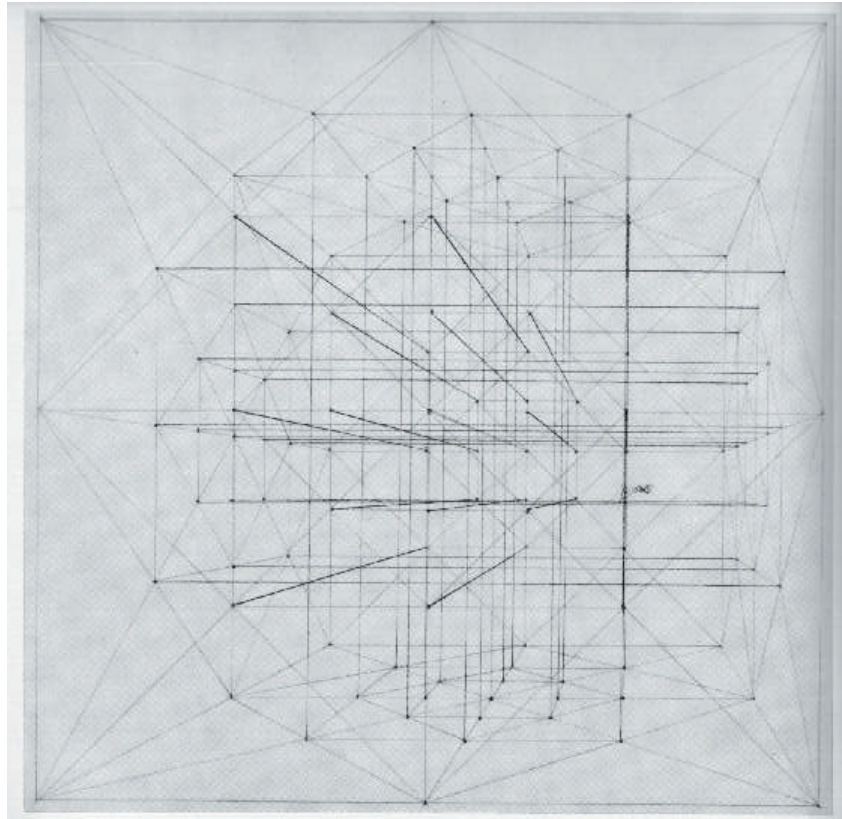
Paul Klee: nodal points in space

structure of ocular focus, mobile attention and a field organized outwardly in concentric regions of diminishing acuity, quickly dimensionalize the field, as in Kepes' classic description of spatial meaning, as alignments of focus and surround alter at interlocking angles with repositionings of the gaze.

A visualization like this helps dramatize how the movement of the gaze takes its macular field with it when it moves, adjusting features in parafoveal access around new centers to support inspection of figures projecting at different apparent depths within the visual field. Over a period of a few fixations shifting the viewpoint evolves a sense of space which mental imagery and perceptual input conspire in projecting.

One of the most compelling aspects of graphical spatiality is the thrill of sensing that projection, prepared by the geometer and artist but completed by a reading in your own mind, take shape. It involves a visceral gasp at suddenly sensing the depth emerge. To talk this way dramatizes it a bit, but such dramatization can be earned; the mid- to late-90's craze for "Magic Eye" 3D puzzles demonstrate an extreme and highly effective instance, where a field of apparent digital chatter suddenly pops out to, for example an

underwater scene of intertwining dolphins and distant coral ridges. The reason for this frisson is both cognitive and physiological. Just as perception and semiosis are continuous, kinaesthetic, body-wide perception of a scene is continuous with its tactical or semiotic parsing and interpretation. Much recent work in cognitive linguistics and psychology points to the bodily involvement in even the most abstract thinking. Visual poetry plays on the full volume of those potentials, and the impulse naturally leads to tendencies towards an architectural poetics. Before such a notion can feel "far out", let us notice that the reading of a two-dimensional page is already architectural. As dimly as it may show up in the neural firings, the body's tactile/kinaesthetic system, one's sense of positioning and of one's surroundings as environment that can impact your body, is alert during reading as


topology of a visual reading

Simulation of the phenomenological "topology" of a visual reading of "it was green, it was black" from David Arnold's *Situations*. The topology reflects the structure of visual awareness, with each foveal region of high focus surrounded by an area of more diffuse macular vision.

during a walk in the park. Since there's so much less chance of falling or getting whacked in the face, reading on a tidy page can retire all that protective attention, and give corresponding power to processing the percepts as signifiers, i.e. as pointers away from percepts, via frames, to coded meanings. (entschlusselungen). In terms Madeline Gins and Arakawa supply, perceptual landing sites yield space to imaging landing sites and the images are allowed to break the laws of gravity and physical collision. The situation of immersed textual vision is so polar to that of scanning ruins in a strange environment, that even between just letters on the page and a little picture the jump in bodily feedback

is substantial. Current immersive technologies, obviously, expand this to an unimagined potential in VR and navigational spaces, but essentially the process is active and palpable in examples like these.

Visual perception projects through the visual system to the body as a whole. What impinges the surface of the retina in a similar way impinges the surface of our kinaesthetic sense to register the spatiality of the percept. The spatial meaning of a scene, however amorphous or abstract, derives from our body's need to make sense of it as an environment of possible access or hindrance, shelter or exclusion, obstacle or availability. The articulation of this sense for spatiality and its conceptual, emotional and visceral significances rivals anything possible through verbal language, and is the true basis of visual poetry's potential. Who "reads" a scene like this, if not the body? Who else would have the motivation to make sense of it? What other decoding could get the point, or the drift.
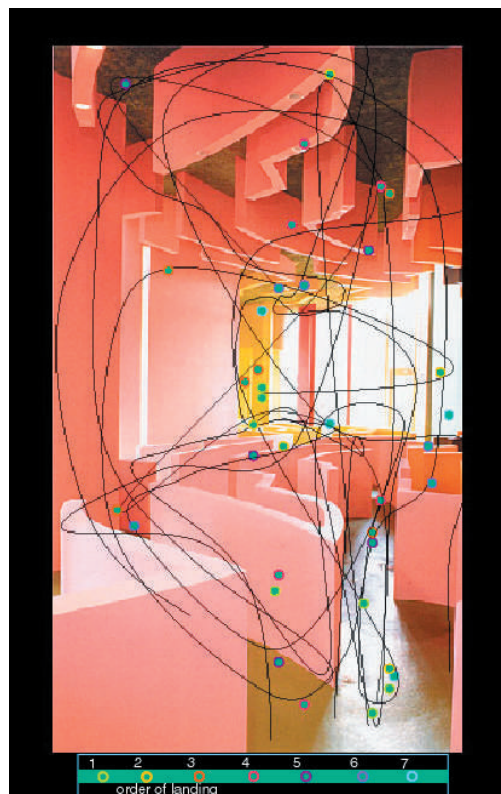
Arakawa and Gins, "Reversible Destiny Office", *Reversible Destiny House II*, Gifu, Japan

The scientist Alain Berthoz reinforces this point with years of research on the sense of movement in the body and the brain. A central point of his is that "perception

is simulated action", i.e. viewing a scene is to some dim or vivid degree a planning or imaging your transit. This can be as true of the left to right top to bottom reading of letters as of exploring photographic spaces like those by David Arnold. Knowing this, it is potentially relevant to all genres of poetry that the body feels its reading like a material field, and certainly the American "Composition by Field" poetics engaged this fact. Actively deploying the full repetoire of spatial articulation, even just within graphic, i.e. two-dimensional, paper-based, limits, makes not only "allows the body in" to the text, but requires close reading of the bodily response to make the most interesting sense of a text. Such a poetics requires a systematic articulation of somatic perception, as it requires its linguistics. Metrics and a terminology of scansion would require precise coding of the region and surface in three-dimensional space where the impact is registering, and a precise measure of its moment by moment pattern of impressions. The modularity I suggest for constructing this sort of theory would allow us to add onto it, for example, the incredibly intricate and precise system for articulating bodily movement elaborated by Rudolf von Laban. Thus we could speak of the surface of visual contact with the page, tri-partate, concentric and already projecting depth into the surface, as mapping to the "kinaesphere" as a whole, especially frontally where the body maps the panorama of its possible confrontations constantly. Thus the fact of things appearing in an upper quadrant of the body's "near" field, where things that can hit your head appear, effects the way they are experienced on first contact.

To draw the frame skeleton of a notion like the "wandering viewpoint" into this degree of embodiment may seem a stretch, but it is a natural implication of so much of the work we might call visual poetry. Mallarmé intuited it as the implication of his departure in poetics when he wrote:

> Je crois que pour être bien l'homme, la nature en pensant, il faut penser de tout son corps, ce qui donne une pensée pleine et à l'unisson commes ces cordes de violon vibrant immédiatement avec sa boîte de bois creux…il faut cela pour avoir une vision trés-une de l'Univers. (Mallarme, *Igitur* 352)

And if poems are the product and occasion of certain kinds of thought, it no doubt belongs to poetics to account for the somatic in addition, not in surplus but in essential partnership to the semantic. The links between reading and being in space go both ways, and after the cognitive linguistics of "embodied" meaning, and the poetics of the landing site, it is impossible to ignore the body actively living everything you're reading, and thinking.

References:

1 See, for example, Steve McCaffery's and Karl Young's responses to the CORE questionnaire (CORE 110, 149). This publication is a very useful resource, compiling the responses of 63 contemporary visual poets to a set of 12 questions concerning visual poetry in theory, culture, and practice.

2 Vos characterizes "exemplification" as "the type of reference that occurs whenever a symbol functions by presenting some of its own properties, rather than by pointing toward something extrinsic to it" (Vos 258).

3 For a critical overview, see Ellen Lupton's "Language of Vision" in Design/Writing/Research, pp.62-65.

4 cf. Gyorgy Kepes, Language of Vision and Rudolph Arnheim's Art and Visual Perception.
 Mitchell's chapter, "Pictures and Paragraphs: Nelson Goodman's Grammar of Difference" in Iconology: Image, Text and Ideology", highlights Goodman's uniqueness in the context of critiquing traditional distinctions, e.g. "nature/convention", "space/time", "eye/ear".

5 ASL poetry - "winged words" website.

6 e.g. Ellen Lupton in her essay, "Language of Vision".

7 Fish's students successfully, and convincedly, read five names of theorists as a 17th Century religious lyric.

8 cf. Pilkington for a discussion of the inadequacies of Culler's theory (Pilkington 25-27).

9 Claus Clüver, personal correspondance, June 2004.

10 Consider Steve McCaffery's notion of the "proto-semantic".

11 Kiparsky 1987, Sperber & Wilson 1986, 1995.

12 J.A. Fodor. *The Language of Thought* (Cambridge: Harvard University Press, 1975).

13 I take this term as an extension of Ray Jackendoff's concept of an interface between space and language in conceptual representation. cf. Peterson et al. "Space and Language" p.554-555.

14 All biographical information from personal conversations that took place in 1999 and 2003. I want to thank David Arnold directly for his openness and cooperation.

15 The fact, which the artist insists was not intentional, that the large signage letters arranged on the floor happen to all be characters which English shares with the Russian Cyrillic alphabet, spelling HNTC (*nits*) if you read the broken O as a C, reinforces the Russian Futurist atmosphere. When asked if he had Malevich in mind at all when making this piece Arnold said no, but noted that at the time he had had a Malevich poster hanging on his wall at home.

16 As this piece is reproduced in the book, we can discern at most the suggestion of a clearing. Only in the original 18"x15" print can we make out the water and the boat, which add a whole dimension to the idyllic allure of the scene.

15 It is, incidentally, Halloween the day I write this.

16 For example, the fact that for an individual focusing of visual attention, peripheral vision is effective in gathering meaningful information at a significantly wider radius when viewing scenes than when reading text; cf. Rayner, p.399.

17 I'd like to thank David Arnold for a generous gift of books that included these two volumes.

18 From the Eyetools, Inc. website, http://www.eyetools.com/new/applications/htm. Accessed July 27 2004.

19 R.E. Morrison, "Manipulation of Stimulus-Onset Display in Reading: Evidence for Parallel Programming of Saccades", Journal of Experimental Psychology: Human Perception and Performance, 10, 1984, 667-682.

20 This study, entitled "Spatial Meaning Constraints in Visual Reading", was funded by a grant from CSLI in the first year of what is now the Media X project, focused on interdisciplinary research involving new media and interface technologies; see www.stanford.edu/mediax. It was conducted from September 2001 to September 2002.

21 The list of labels I use here was compiled by Jean Suquet, in his Miroir de la Mariée (Flammarion).

Overview

Buckminster Fuller says about space that it takes four fixes:

1044.11   The four corner fixes of an environmental tetrahedron may be pointed toward with adequate communicability to visually inform others of a specific tetrahedral presence. This is accomplished as follows: Two sky fixes must have a most economical linear interrelatedness but no insideness. Three sky fixes define a triangle between whoe three edge-defining, interrelationship lines is described by the three sky fixes plus the position of the observer on the ground altogether describe the four corners of a tetrahedron that has six lines of observably inductable interrelatedness defining four triangular planes that observably divide all Universe into the included insideness and the excluded outsideness.

 1044.12   One fix does not have insideness. Two fixes define a no-insideness linear relationship. Three fixes define a no-insideness plane. Four fixes define an insideness-including and outsideness-excluding tetrahedron, which is the minimum cosmic system and which cannot have less than 32 unique and differentially describably generalized cases of the nine irreducible-in-number unique topological aspects of the minimum system, but which in special frequenced cases may have more.

This dissertation has been about 20th Century visual poetry, though only literally. Poetics is always "about" poetry in the sense of being focused on something else. But this dissertation literally skirts its topic at the peripheries. The first chapter was about Mallarmé, who, as my tradition goes "spatialized" the poetic text in 1897. The second was about a book published in 2001, displaying a state of the art in 3D graphic design, and showing just how "spatial" spatialized writing has become over the hundred years since *Un coup de dés*. The third chapter conducted a theoretical discussion, taking "visual poetry", purely on concept, as a specific kind of challenge to our notions of literature and poetic experience. As part of that chapter I included a case study, or demonstrative reading, of works David Arnold made in the late 1970's and early 80's. Those works, from the book *Situations* (1984) combine architecture and landscape, found objects and placed text, in one of the most spatially intensive practices in visual poetry.

Each of these is a vector onto the field of visual poetry. Each points differently, though they overlap in scope. BASIS and LIMIT are orthogonal to VIEW as the line of history is to the cone of awareness, as literature to its science. What is required to dimensionalize the triangle of these "fixes", to unfold visual poetry as a full space of experiment and consideration, is the literary history itself which they presuppose. Visual poetry as a field of work and thought engulfs its history and its theory. Any pointing or framing is only a heuristic ordering of what can be scanned in many ways and from every angle. In a later version of this project I will fill out that field as a history; for now the reader can consult the work of others who have done this before me. The material evidence for 20th Century visual poetry is available to anyone. What I have wanted to contribute is a framing of that field to make it more meaningfully than traditional approaches can. Mallarmé as a precedent shows that the use of space as a visual poetic resource has firm literary grounding and can be evolved to serve effects as sophisticated as those of the highest works in the lyric tradition. The chapter on Metalheart can stand for a reminder of how much is available to a poetic enterprise interested in exploring spatial device for their fullest potential, resources mostly untapped so far by poets themselves. And the phenomenological reading theory from Chapter 3 should suggest a way of clarifying the experiential and semiotic complexity of the visual poetic experience.

The presumed gulf between verbal and visual modes of signification, while the generative basis of visual poetry as such, is at the same time a limitation to its ample reception. The difficulty of situating the breadth of visual means employed in visual poetry within the linguistically-biased semiotic frameworks most literary study relies on, has tended to sift the canon in favor of more "verbal" works, works presenting less material beyond the scope of its analysis. What I have sought to do here is to offer a reframing of both the literary history and the theory of visual poetry, to call in and accommodate this greater range of spatiality, materiality, media and experience.

A theory of reading is necessarily basic to any poetics. The strategy of creating meaning and experiences of meaning has its focus not only on the structural detail of writing but also on the experiential detail of reading, and a theory of visual poetry that lacks a model integrating perception and semiosis is unable to address even the underlying question of what it is. Iser's literary reception theory, itself indebted to models of visual reading, e.g. for the very notion of "construal", provides a useful model for imagining a reception theory for intermedial art and visual poetry in all its variety.
Most importantly, such a model serves the requirements of a poetics in providing the basis of discriminations into poetic works, their visual structure and the intermedial experience of reading them. By paying attention to how we pay attention to a text, moving from spot

to spot, from visual/spatial perception to visual/verbal percetion, from percept to semiotic inference, from lexical to pictorial modes, we are able to isolate the devices and details of meaning that escape theories based on an external semiotic or structural analysis. The theory sketched here offers access to an empirical background for observing construal and grounding it in discrete acts of looking and seeing. It also offers a strong pedagogical basis for visual literacy education, training reading as a self-awareness practice that encompasses all experiential factors in responding to a text. Such a pedagogy, expanded to include the other sense modalities, will be crucial in reestablishing the relevance of literary training in an age of intermedial textuality and saturation media. Not merely to keep up with popular culture, but to continue untying the knots in the question of meaning beyond an age of principally verbal paradigms for meaning, such a theory of reading is required. Ultimately it is no less relevant to traditional verbal texts than to intermedial, verbal/visual ones.   As I see it, the visual-verbal literacy this advances is less a question of interdisciplinarity, of mixing analysis of verbal and visual artforms, than it is of reaching a higher level of analysis, from which distinctions of media are subordinate to the discernment of a textuality, a language-like function in the materials whatever they are. This prepares a sort of Comparative Literature, the terms of which correspond to experiential variables in the perception and processing of meaningful materials. Cognitive linguistics and literary theory already do this to some extent, and the models they are evolving will clearly be a chief influence on literary scholarship for the near future. The reading theory presented here promises to enhance such a trend in the study of literature, complementing the empirical with the phenomenological. It also offers to compensate for the alienating potential of jargony cognitive literary criticism, grounding discussion in the palpable point of perceptual/mental contact with a work.

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