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Narrative approaches to lyric poetry: On Kim Sowöl's *The Azaleas*[1]

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Abstract

This paper aims at illustrating how narrative theories can apply to the analysis of lyric poetry with an example from Korean literature: *The Azaleas* by Kim Sowöl. This poem in seven-and-five-syllable meter as well as with its thematic aspect that is concerned with lamentation or broken heart is considered the most representative of the folkloric tradition in the history of Korean lyric poetry. Based on Hühn's work on "Transgeneric narratology", I proposed here to analyze the so-called *mental story* of this poem from a narratological point of view that covers, among many others, the following three topics: i) text and norm; ii) story and discourse; iii) thematic and narrative. First, reading a poetic text inevitably leads us to the poetic tradition serving as an interpretative norm, whether it is explicit or implicit. So the image of scattering flowers in this poem, for instance, cannot be fully understood without reference to the Buddhist tradition in which it is interpreted in terms of charity or mercy. Second, the mental story relative to this symbolic act is doubly mediated – put in narrative terms, by a voice that speaks on the one hand and, on the other by eyes that see - so as to manifest itself in the form of a poetic discourse. Third, the narrative strategy at work in this poem, here considered in Greimas' terms, pinpoints the ironic aspect of its thematic: so the story of parting in appearance turns out to be a love returning in the end.

Keywords: lyric poetry, narratology, mental story, norm, story, discourse

1. Telling a "mental story"

Poets don't tell stories. They only express mental states: their feeling, perception, recollection and imagination. As a consequence, narrative theory, mainly focusing on narrative fictions such as novels, short stories, narrative poems is not applicable to lyric poetry. Although this might be true in general, it's not always the case. In his paper on "Transgeneric Narratology: Application to Lyric poetry", Hühn, drawing upon "the universality and ubiquity of the practice of narration" in human society, argues that, "since lyric poems generally feature the same fundamental constituents as narrative fiction (…), narratological categories may profitably be applied to the analysis of lyric poetry."(2004:140).

The poem under scrutiny in the following pages, one of the best well known poems in Korea, entitled *The Azaleas*, is primarily concerned with what Hühn called a "mental story." (2004:152). A speaking subject in this poem, a narrator, so to speak, creates a possible world in which her mental story unfolds. Note that it's not a matter of what already happened in the past, nor what would probably happen in the future, but a matter of what actually is happening in a certain kind of mental state of the poet, more precisely in her imagination. The purpose of my paper is to illustrate to what extent narrative theory is applicable for analyzing and discussing the following mental story:

[1] This work was supported by Hankuk University of Foreign Studies Research Fund of 2007.

If you go away,
Sick of the sight of me,
I'll let you go without a word.

But I'll also gather by the armful
The azaleas flaming in *Yaksan, Yongbyon*
And scatter them in your path

Tread gently
And lightly
As you pass.

If you go away,
Sick of the sight of me
I will weep no tears, though I die without you.

(In *Fugitive Dreams* 1998) [2]

Along with, for instance, *Gasiri* and *Sekyung beylkok*, dating back to the Goryeo period, the above poem forms part of the longstanding tradition of Korean literature. With regard to narrative theory, I'd like to discuss both descriptive and interpretative approaches to the narrative text, ranging from narrative semiotics to narratology. The reason for this is simple and clear: to paraphrase Paul Ricoeur's famous formula, the more one describes, the better one interprets. In what follows, I'm largely concerned, in relation to the above poem, with three topics: i) text and norm; ii) story and discourse; iii) thematic and narrative. The question here is not about any theoretical discussions or debates on these pairs of concepts in the field of narratology, but how to come up with a comprehensive account of the poem in

[2] An audio file of Korean pop singer Maya singing the poem can be obtained at http://www.semiotics.ca/issues/azaleas.mp3

question, starting with Hühn's critical remark that "narratological categories may profitably be applied to the analysis of lyric poetry."

2. Outside the text, but still inside the norm

In my opinion, summing up a poem is useless. Let me just "retell" it. The lover is likely to leave. However, the imminence of parting is not factual, but merely presumed by the speaking subject, who seems to have been anxious about the sincerity of her lover, and therefore lost confidence in him. To our surprise, the way she is dealing with this feeling of anxiety and lack of confidence is quite the opposite of what is generally understood to be done in such a painful situation as this. She is determined in her plan: to let him go without a word, without weeping. This determination opens and closes the poem. But that's not the whole story.

She has an event in mind for her lover's parting. Notice that she is curiously quite willing, not only to let him go, but also to hold a kind of symbolic ceremony by scattering flowers in his path. To make sense of this unusual performance as a way of bidding adieu to a lover who is leaving, I think we need to go outside the text, and bring into play an extra-textual element, i.e. what cognitive psychologists called a scheme. It is by virtue of this interpretative device that readers can come to grips with the question of meaning when they read such ambiguous literary texts. In his paper quoted above, Hühn gives a cognitive account of this relationship that exists between readers and the text:

> The underlying premise of such an approach consists in the notion that it is only through the paradigmatic reference to extra-textual contexts and to world knowledge, i.e. to cognitive schemata already familiar and meaningful, that readers can make sense of texts. (2004:143).

Briefly, scheme can be regarded as a kind of knowledge existing in the form of norm in a given community, by reference to which people make sense of their different symbolic activities. In narrative theory, it particularly serves as an interpretative norm to make sense of literary praxis. As far as the literary tradition is concerned, it would not be excessive to say that this norm is being ceaselessly woven from one text to the next, i.e. from what is called in postmodern literary criticism, intertextuality. That's why we sometimes need to go outside the textual boundary in our reading process, while still staying inside the interpretative norm thus intertextually woven.

The scheme we are expected to refer to in the context of this poem is based on a Buddhist tradition dating back to the Silla period in Korean history, according to which a monk called *Wolmingsa* both composed and sang a song *Dosol*, scattering flowers and, in this way touched Buddha so deeply that he was finally able to fix the supernatural phenomenon of two suns in the sky. In this literary, as well as religious tradition, scattering flowers in one's path is interpreted and understood in terms of charity.

The poet of *The azaleas* is thus willing to bless the lover who is about to leave her, in addition to accepting as a fact this otherwise miserable situation. We still need to go on to call upon world knowledge to be able to answer questions: why the azaleas are here in question, which region actually *Yaksan, Yongbyon* denotes or what it connotes, if any. The azaleas, very common in Korea, play the role of giving a folkloric flavor, on the imagery level, to the poem, thus featuring its Koreaness, so to speak, together with the rhymes that repeat at the endings with the special acoustic consequences. These unfortunately disappear from the English version.

Further, *Yaksan, Yongbyon*, situated in the northern part of Korean peninsular, is well known for its azaleas. In the light of this diverse encyclopedic knowledge we come to understand what the unfamiliar image of scattering flowers in this poem precisely stands for, in the context of Korean literary tradition.

However, the question still remains of how to interpret the ironic reaction of the poet to her lover's departure. It is not sufficient to say that she is willing to sacrifice herself for her lover's sake. What is at stake here is not only to make sense of the unfamiliar act, but to interpret the meaning of this unfamiliarity so as to make sense of her poetic reaction to her imminent painful experience. In order to do this, I propose to get back inside the text, and to look at the narrative strategy at work in her imagination.

3. Story and discourse

In his book entitled *Fictions of discourse: Reading narrative theory*, O'Neil calls our attention to "the ostentatious conflict between story and discourse," in saying that "narrative discourse is always potentially subversive both of the story it ostensibly reconstructs and of its own telling of that story". (1994:7). Narrative is thus defined not only in terms of "essentially divided endeavor"(p.3), but also more essentially in terms of "ostentatious conflict", between *fabula* and *sjuzhet*. A story, namely "the narrative content" potentially can be told over and over again - for instance, translation is a different way of telling the same story - and in the process of this retelling, it inevitably presents itself in such different ways as to be subversive of itself in its final stage. The subversion of story by the discourse can be considered, for instance, in relation to what Hühn called "sequentiality" on the one hand, and on the other, "mediacy". (2004: 139). In short, if the former is concerned with "the temporal organization and concatenation of individual elements into some kind of coherence," the latter is concerned with "the presentation (and interpretation) of this sequence from a particular perspective." (*ibid.*). Let's take a closer look at these two narrative strategies with regard to the poem in question.

a) Sequentiality

If Rimmon-Kenan excludes lyric poetry at the outset from her study of narrative fiction, that's because unlike the former, the latter "represents a succession of event."(1983:2). "Event" is defined here in terms of "change from one state of affairs to another." (p.15). What is at stake in her definition is not an ontological status of the event, whether factual or fictive, but the concept of transformation that is of the essentially epistemic order. If that is the case, it's not unconvincing to argue that the imaginary scene of bidding adieu to a lover who is leaving is a kind of mental event presupposing a sort of transformation like the one from the state of having a lover to another, losing a lover.

In either a chronological or a rather logical order, we can reconstruct the above story the poet constructed in her poetic text, as follows:

A: (being) sick of the sight of me
B: (You) going away
C: (I) letting (you) go
D: (I) gathering and scattering the azaleas
E: (You) treading the azaleas in passing away

The English version of *The azaleas* represents the story in the following order: *BAC D E BAC*, while the original text rather follows the logical order of the story:

ABC D E ABC. Given that nothing actually happened - that's why it's better to talk about the logical rather than the chronological order - in this mental story, attributing the *repetitive* function in Genette's terms – i.e. a function of "telling *n* times what occurred once", to quote Rimmon-Kenan's brief and clear explanation (1983:57) - to the repetition of *BAC* or *ABC* in the first and last stanzas seems to hardly make sense here. Opening and closing the poem, it serves rather the esthetic purpose essentially connected to a generic characteristic of lyric poetry in Korean literature. However, it plays the narrative role there to enhance the intensity of the poet's willingness to let her lover go.

The typological intention, as we know, is essential to and inherent in the epistemology of structural narratology. The concept of event makes no exception. According to Rimman-Kennan drawing on Ronland Barthes' structural contribution to the narrative analysis, "events can be classified into two main kinds: those that advance the action by opening an alternative('kernels) and those that expand, amplify, maintain or delay the former('catalysts')." (1983:16). The kernel of the story, no doubt, is the departure - i.e. *A* and *B* - of the lover, seeing that only an alternative is opened: to hold him back from leaving or to let him go. The poet opts for the second solution - i.e. *C* - in her mental story. This can be said to be of the poetic order as it is accompanied by a supplementary - i.e. *D* and *E* - event. Scattering flowers as a supplement takes the role of catalyst in this poem inasmuch as it has as consequence to amplify the poet's choice. But this amplification precisely poses a problem, especially with regard to her intention of doing this. The problem can be formulated as follows: is the poet's determination for this solution reliable? Is there any conflict between her saying, and doing, i.e. her *diegesis* and *mimesis*?

b) Mediacy

The transformation of a story into a narrative text is doubly mediated by "a voice that speaks" on the one hand and, on the other by "eyes that see". (O'Neill 1994:85). In narrative terms, the former is concerned with the question relative to the narrator, and the latter, with the question of focalization. Whether to be involved in the story world or not, it is important for both of them, to first, make a distinction between internal and external. An internal narrator, for instance, is a speaker who is carrying out the double mission to act as a character as well as to tell a story, whereas an external narrator only takes the role of a teller outside the tale. Notice that a character, as well as a narrator, can tell a story. Internal character-narrator is a character who is telling *her* or *his* story regardless of *her* or *his* role in it, whether or not she or he is the protagonist, whereas external character-narrator is a character telling a story of *other* people. In view of this typology, the speaker of *the Azaleas* can be classified into the internal character-narrator insofar as she is telling *her* story of being a brokenhearted. As mentioned earlier on, this story is nothing more than her imaginary creation. That is to say, there is only one perspective in this world she created by her own imagination. Put in narrative terms, she holds the role as a character-focalizer in her mental story. Even in the expression "sick of the sight of me", "you" is not the ultimate focalizer because it is ultimately "I" that imagines that "you" are sick of the sight of me. The entire scene in this poem is thus seen by the imaginary eyes of "mine". As O'Neill rightly pointed out, this "character-focalizer's perspective", just as the internal character-narrator, is however so "limited" and "subjective" as to be "questionable". (1994:87).

So, the question of reliability can be raised with regard to the poet's subjective world. However, as soon as formulated, this question is to be faced with an obstacle that is of the epistemological order. Hühn puts it as followers: "lyric poetry spoken by first-person speakers presents a subjective view anyway, to which criteria of veracity or falsity do not apply." (2004:148). But this obstacle, as Hühn added right after the critical remark, cannot prevent us from acknowledging the necessity for "a more differentiated analysis of the conditions and manifestations of subjectivity" and thus "raising the question of (un-)reliability with lyric poems." (*ibid.*).

This question prompts us to reread *the Azaleas* from the *irony* point of view that calls into question the notorious relationship between what the speaker says, and what the text means, denotation and connotation, or in narrative terms the narrator and the implied author. The question of whether or not what the speaker says is reliable cannot be answered before answering the question of what is the "text intent", to use Chatman's terms. (1990:86). In order to get access to the *intention* of the poet, what first and foremost, we are expected to do here is to bring to light the *intent* of the text she produced by telling her mental story. This finally leads us to the thematic analysis in relation to the narrative one.

4. Thematic and narrative

What is this mental story about? It begins with the conditional clause: "If you go away". What is at stake here is, in a nutshell, the *mental distance* that starts to be felt or perceived between *you* and *I*. Along with this reading hypothesis, I'm proposing to take account of two semantic features for the following thematic analysis that is largely based on Text Semantics by François Rastier(1997): /attachment/ that can be paraphrased in terms of *close to, near*, etc; /detachment/ that can be paraphrased in terms of *far away, distant, remote* etc. First, note that the relationship between the two is not of the contradictory order. That is to say, the negation of the former is not equivalent to the affirmation of the latter. From the logical point of view, there should be, in total, four semantic features: /attachment/, /non-attachment/, /detachment/, /non-detachment/.

With the help of this conceptual apparatus, we can come up with a comprehensive semantic description of the lexical units, whether a word or a phrase in this poem. 'Go away' and 'sick of the sight of' can be classified under the heading of /detachment/. The reason why *you* go away is that *you* are already far away from *me*, at least, in *your* heart. So /detachment/ is the salient feature in these expressions. 'Let you go' can be conceived of as an act of /non-attachment/. Notice that it's not because *I* dislike *you* that *I* decided to let *you* go. Nor am *I* fatally attached to *you*. 'Without a word', 'weep no tears' and 'though I die without you' here intensify the feature of /non-attachment/. 'Gather', 'scatter', 'the azaleas' are there to feature the /non-detachment/ while 'by the armful' and 'Yaksan, Yongbyon' intensify to a degree this feature. Gathering and scattering flowers can hardly be interpreted here in terms of /detachment/. This performance, however, falls short of the meaning of /attachment/ since the poet is not keeping her lover from parting. 'Tread' and 'pass' in the third stanza can be classified, together with the intensifiers 'gently' and 'lightly', into the category of /non-detachment/ with the consequence to neutralize the activation of the feature /detachment/ on her lover's part. Here is the table on the above description.

Table 1. //Mental distance// in *The Azaleas*

Lexical units	/detachment/	/non-attachment/	/non-detachment/	/intensity/
'go away'(2)	+			
'sick of the sight of'(2)	+			+
'let you go'(2)		+		
'without a word'		+		+
'gather'			+	
'by the armful'			+	+
'the azaleas'(2)			+	
'Yaksan, Yongbyon'			+	+
'scatter'			+	
'tread'			+	
'gently'			+	+
'lightly'			+	+
'pass'			+	
'weep no tears'		+		+
'though I die without you'		+		+

It is interesting to note that the semantic feature /attachment/ doesn't appear on the above table. This is actually because the poem begins with the hypothesis that the love is going to be broken up. The /detachment/ is given as a fact at the very outset. At first glance, the attitude of the poet vis-à-vis the departure of her lover can be summed up in terms of /non-attachment/. But it quickly turns to /non-detachment/ through the symbolic performance of scattering flowers. Notice that the position of the poet with regard to the parting is ambiguous, inasmuch as it is characterized here in terms of /non-attachment/ on the one hand and, on the other in terms of /non-detachment/. The semantic feature /non-detachment/ plays a very important role in the development of the narrative to the extent that it is logically supposed to activate the neutralized feature /attachment/ so as to get started again on the narrative trajectory: (/attachment/) -> /non-attachment/ -> /detachment/ -> /non-detachment/ -> (/attachment/). The parentheses here mean that the feature in question is not activated nor neutralized, but merely virtualized in a hypothetical sense.

We can reproduce this process using Greimas's semiotic square that is available for both systematic and dynamic representation of the narrative process, as well as its logical relationship. The position of *You* sticks, throughout the story, to the /detachment/ while the position of *I* comes and goes between /non-attachment/ and /non-detachment/. And this instability has as consequence to cause and deepen the repressed form of conflict between what the speaker says and what the text means.

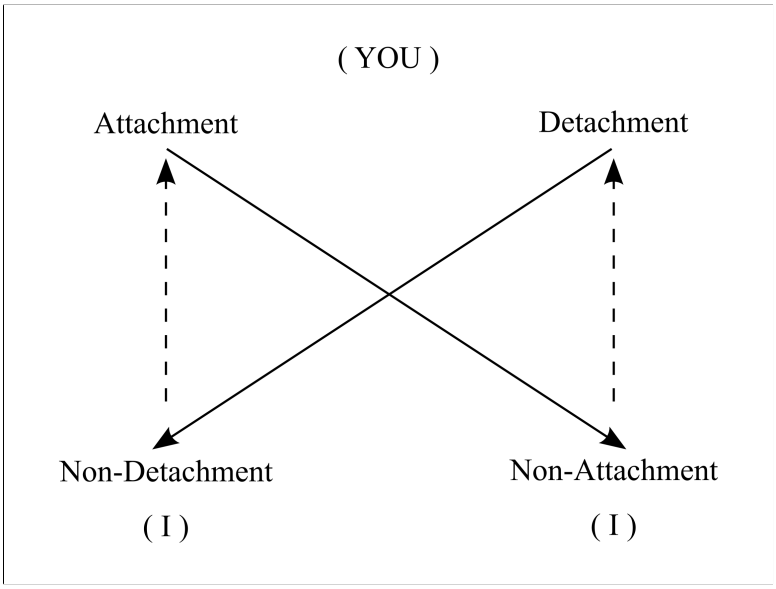

Figure 1. The semiotic square of the mental distance

From the point of view of the logic of story developed by Greimas, the /detachment/ presupposes the /non-attachment/. It is interesting to note that the initial position of the poet, i.e. the /non-attachment/ doesn't evolve into the /detachment/, but shifts this logical phase to finally reach the /non-detachment/. This means that she is hardly conceived of as a subject in a full sense in this narrative trajectory, holding rather a role of helper or sender so her lover can complete his narrative trajectory.

What is this mental story all about? At first glance it is about the parting. The interesting point in this poem, however, is the poet's ambivalent position systematically illustrated above with regard to her lover's departure. In the guise of a conclusion, we can say that the poet, by saying one thing while doing another, attempts to turn the story of parting into a story of love returning.

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A-signifying Semiotics

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Abstract

This paper offers an interpretation of the theory of a-signifying semiotics developed by French intellectual-activist Félix Guattari in the 1970s. The argument is that these types of part-signs are perfectly adapted to the quasi-automated networks of contemporary infocapitalism, and their characteristics are studied with regard to the magnetic stripe on a plastic bank or credit card. Although these part-signs are akin to signals since they do not have a semantic dimension, they do have a political materiality in the technologies, that is, the information strands of the machinic phylum, in which they are found. This technomaterialist semiotics of infocapital places Guattari at the forefront of innovative semiotic theory.

Keywords: A-signifying semiotics, part-signs, Félix Guattari, networks, magnetic stripes, infocapital

I. Introduction

Signals are the poor semiotician's stock-in-trade. They are not considered signs proper since, as Umberto Eco (1976:20) explains, they 'can be computed quantitatively irrespective of their possible meaning'. Signals thus on this view occupy 'the lower threshold of semiotics' (1976:33). Signaletic stimuli do not appear to require higher-level semiotic functions engaging cultural contents or the kind of effects that typically emerge in and from the movement between signifiers.

My task is to rethink and regain the lowly status of signals through the explication and deployment of the category of a-signifying semiotics developed by Félix Guattari. To this end two initial reorientations are required. First, the prejudicial hierarchisation of signals as low ranking phenomenon, under the semantic horizon of cultural conventions of interpretation, will be suspended. Second, the quantitative or machinic qualities of signals will form a positive part of their reassessment, rather than serve to confirm their lowly status against a higher order domain in relation to which they, by definition, can never measure up. Signals, in short, have a good deal to teach about a-signifying semiotics; indeed, the category of the latter considerably deepens and revivifies the former sort of 'lowly' sign type by unleashing, as a heuristic virtue, the characteristics of this status.

Guattari attempted to develop the first semiotics adapted to the global information economies of the network society, even though his untimely passing in 1992 did not permit him to experience the extraordinary accelerations of the 1990s towards and beyond the millennium of the burgeoning infotechnocultural era of digital capitalism; still, he was already attentive to the stirrings of the fusion of capitalism and informatics in his studies dating from the 1980s of the global economy of Integrated Worldwide Capitalism. It was on the information technology strand of the 'machinic phylum' that IWC exercised its formidable integrative capacities inaugurating 'the age of planetary computerization'; this has been developed at length by Manuel DeLanda (1991:20; Guattari 1989:42-3) in terms of the military machine's extractions, its taking hostage of operations and applications, from the information processing strand. Guattari struggled against IWC's appropriations

from the same technological strand for the sake of the production of certain kinds of subjects compatible with most of its values, stratifications, and disorienting visions of progress. For example, he thought that miniaturization was a way for capital to equip individuals with devices that would manage their perceptions by plugging them into strands of the machinic phylum concerned with consumer electronics (iTunes, iPods, iSubjects), making them crazy for self-medicated highs of the kind that come from the aptly rechristened CrackBerry (Guattari 1995a:103).

Guattari sought to frame these issues in semiotic terms and to theorize a species of part-signs that expose salient features of informatized capital in whose networks they directly intervene by exploiting the potentiality materially present there. Guattari wrote of 'signaletic matter' in a manner similar to Deleuze (1989:29) in his cinema books, especially *The Time-Image*: the seething, dynamic stew of largely unformed but not completely amorphous matter out of which part-objects (including part-signs), as well as more fully and creatively expressive and formed semiotic substances, emerge. Obviously, the kinds of signs Deleuze had in mind were images. Basically, signaletic matter is defined as a-signifying. Both Guattari and Deleuze reverse the priority of form over matter inherited from De Saussure and Hjelmslev, and in this way attempt to describe a process of teasing out what are already there in part and in varying degrees. With a-signifying semiotics, however, this work of teasing out never gets to linguistic formation; it is reticent, hesitant, working only with the parts and their intensities, without imposing on them further form: signification never culminates.

II. A-signifying Molecular Revolutions

In a cluster of books published originally in 1977, the two editions of *La révolution moléculaire* (1977a and b) and *L'inconscient machinique* (1979), Guattari elaborated a typology of semiotic systems framed in a Peirce-Hjelmslev hybrid conceptual vocabulary. Reading across these three books I want to flesh-out a-signifying semiotics in relation to an infotech strand on the machinic phylum inspired by one of Guattari's favourite examples of the kind of semiosis put into play by a-signifying signs: credit and/or bank cards. Guattari's innovation was to develop a-signifying signs in a typology of sign types but with respect to the problem of the relationship between material and semiotic dimensions in the age of planetary computerization and globalization. Is there a semiotics adequate to the global information culture? Yes, just as there is an analysis of power of the same in the myriad of attempts to describe its features – for example, its non-linearity (Lash 2002:18ff). A-signifying signs, to the extent that they are at work there, bear some of its features, including superlinearity, which they operationalize. The very texture of the informatic strand of the machinic phylum upon which capital relies is populated – better, perfused - by a-signifying part-signs.

One of the main obstacles to thinking a-signification is that the promise of the prefix may not be kept by the suffix, which clings stubbornly to signification despite an opening to elude it. So, a-signifying understood as non-signifying semiotics seems at best an oxymoron and at worst simply a species of signals. A-signifying signaletic matter may be non-signifying in the sense that signals directly transmit information without necessarily providing semantic content, on a slightly more progressive view than that of Eco (Ruse 1998:576). This corresponds minimally to Guattari's sense of a-signifying signs, usually referring to non-linguistic information transfers. But more to the point is that no specific construal of that

which emanates from the system is required in support of the action thereby triggered. The concept's marginality does not imply the absence of the action initiated by the triggering signal. Importantly, the absence of a semantic dimension is less pertinent than the non-representational and non-mental dimension. Guattari is less concerned about limiting the semantic than underlining the strictness and precision of a-signification. In fact, a-signification operates by means of part-signs, that is, particle-or point signs, as Guattari called them, and not through the fully formed signs of any tradition. But the restrictiveness of a-signification, the partial/particle/point-ness of such signs, and their non-representational character, entails for Guattari a micropolitical analysis of this kind of semiotics. So, in this respect a-signifying semiotics differs from signaling since the non-necessity of semantic content is not negatively construed as denying something to someone (i.e., to signal using animals as opposed to the ability of immune cells to multiply protectively against an invading microbe) and does not entail some variant of behaviorism.

Let's begin with an apparently simple idea. A-signifying semiotics are defined relationally by Guattari against signifying semiologies. Guattari maintains the distinction between semiotics – Peircean-Hjelmslevian hybrid - and semiology - Saussurean, or dyadic and linguistic. There are of course many other ways to reinforce the distinction, for example with regard to the inclusion or exclusion of the referent, but the salient point is that a semiotics that is not dependent upon linguistics loosens, for Guattari, the hold that structuralism enjoys, in collusion with psychoanalysis, over the construction of the unconscious, that is, all the features of a formal description of its components – 'universals', 'laws', 'registers', transcendent figures like 'lack', etc. Guattari's great innovation was to conceive of the unconscious as a machine that was neither structured like a language nor conceptualized as an interior struggle within individuals indexed on static mythic figures or even mathemes: 'it was a grave error on the part of the structuralist school to try to put everything connected with the psyche under the control of the linguistic signifier!' (Guattari 1995b:5) Correcting this grave error, and thus escaping from 'linguistic axiomatics', involves bringing to the fore the machinic processes of a-signifying semiotics irreducible to semiolinguistic determinations. Guattari (1979:13) exhorts his readers to *sortir de la langue*. Machines constitute according to Guattari a kind of 'changing matter' that dynamically assemble as well as undo components drawn from diverse domains and extract from these their singularity traits (hybrid identities), not all of which will be constituted but remain virtual (pure potential).

Signifying semiologies concern well-formed substances situated on the stratified planes of expression and content with the proviso that all such substances are linguistified; symbolic semiologies are a species of signifying semiologies and concern substances of expression that are neither completely translatable into linguistic terms nor may they be overcoded by any one substance of expression among them. This rule of non-translatability keeps at bay linguistic imperialism: 'the semiological linearity of the structural signifier which imposes itself despotically over all other modes of semiotisation' (Guattari 1995b:49).

Signifying semiologies are, as in Saussure, structured by the axes of syntagm and paradigm; the former is a series of terms in praesentia (co-present) supported by linearity whereas paradigmatic relations are constellative, indeterminate, and in absentia (lacking co-presence); a-signifying semiotics, it has been suggested, elude these axes and 'add a third, diagrammatic axis' (Bosteels 1995:353). But what is the point of adding another axis? Simply put, it announces an attempt to break

away from the horizontal syntagm and the vertical paradigm, that is, from speech and language; taken together these are the tools of a 'trans-linguistic semiology' (Barthes 1967:11 and 86). This is a conservative maneuver, at best. Because even Barthes, one of Guattari's semiological nemeses, thought that 'creative transgressions' – 'structural scandals' (Barthes 1967:89) can occur at the frontier of syntagm and paradigm, even if these are still glottic – puns, spoonerisms, rhymes, and the like. The Peirce-inspired diagrammatism elaborated by Guattari will be discussed later. The question for Guattari is not one of transgression but of the limits and controls on any semiotic deviation or deterritorialization.

So, is it enough to 'disturb' (Semetsky 2004:243) by addition inherited binarisms like syntagm and paradigm? After all, disturbances do not persist with the same strength of the new over time and perhaps nestle comfortably into routines. It would be easy to trap a third axis in the production of a certain kind of subjectivity if it was always linked to a specific expression substance like a despotic signifier. This despotism may be deposed if it is linguistic, but its relation to power, even the power of the psychoanalyst, is not vanquished.

Guattari (1977a:230-1) is never done with signifying semiologies. 'Signification is always the encounter between the formalization [of both expression and content] by a given social field of value systems, translation systems, rules of conduct, and a machine of expression which by itself has no meaning, that is, which is a-signifying and automates the behaviors, interpretations and the responses hoped for by the system'. Signification occurs in the conjunction of semiotic and semiological systems, marked by the stratifications of power actualized in informatic, economic and social and political terms. For instance, Guattari (1977b:243) reads the sign's arbitrariness as a 'basic' social and political demand: 'accept the systems of dominant encodings in which everything is done for you or you will end up with a repressive system'. A-signifying signs 'automate' dominant significations by 'organizing a system of redundancy' on the levels of expression and content: automation entails normalization, invariance and consensus. Guattari adds the further qualification of stabilization – what is arrested is wandering in textual space amid the mandalas of signification. There isn't any room for interpretation in the strings of numbers and characters on a typical magstripe: framed by start and stop sentinels, field separators between system/bank/account/and redundancy check, all of which are recognized automatically, and have limited numbers of characters. In themselves a-signifying signs have no meaning but they operationalize local powers – for Guattari – here we see how he jumps from machinic-trigger to political level and back again - they are akin to the 'role of the State in relation to different factions of the bourgeoisie that consists in setting in order and hierarchizing the claims of various local factions' (Guattari 1977b:243). Sectoral interests and their lobby groups and regional political organizations with territorialized power bases are among such local factions whose claims are parsed and prioritized by a central power in terms of political agenda-setting, favour-trading, and policy formation. These kind of political decisions are encoded in the magstripe, as we will see shortly.

Signifying semiologies and their linear 'syntagms of power' combine with superlinear a-signifying automations. Guattari tended to compile lists of diverse encodings to explain the semiotic mixity of assemblages. But the conception is clear as far as the relations between signifying and a-signifying is concerned: the latter uses, puts them into play in some manner, as it were, the former only as a 'tool'

and without themselves functioning either semiologically or symbolically; in this way a-signifying semiotics are not subjected to semiological well-formedness, but to which they still have recourse in communicating in the way that 'dominant significations 'hope for' – which is to say if one wants to be taken seriously by semioticians, at the very least. But, Guattari (1977b:281) boldly stated, a-signifying semiotics 'can do without this kind of crutch'. He also claims that signifying semiologies are capable of 'deriving their efficacity from the fact that they rely upon a certain a-signifying machine' (Guattari 1977a:236). That is, they may find the deterritorializing tendencies of a-signifying semiotics helpful in blurring the territories of the body or certain institutional spaces. But in the very crossing between systems and generation of significations new territories are breached and powers engaged perhaps leading to the imposition of a more rigid definition, or with claims of incoherence.

III. Plastic Cards, Magstripes and Technomateriality

A-signification is essentially machinic. Guattari did not reduce his machines to technical devices; yet, his repeated description of the how a-signifying semiotics trigger processes within informatic networks highlights the interactions initiated with a plastic card bearing a magnetic stripe in activating access to a bank or credit account, engaging an elaborate authorization process, makes it clear that we are dealing with a complex info-technological network. Here Guattari's 'part [sometimes particle]-signs' – the names he bestowed upon the signs of a-signifying semiotics – 'give out start and stop orders' (Guattari 1995b:49). It is easy to think of part-signs as actual iron oxide particles on the tracks of the magnetic stripes of credit cards that are decoded – their polarities are immediately converted into binary digits - when 'swiped' through a reader with the appropriate software. As everyone knows, there is normally more to the operation than the gestural act. Of course, the use of 'particles' by Guattari tells us that the signs of a-signifying semiotics are just as much virtual – 'elementary' entities that are generated by machinic interactions like acceleration and mathematical prediction and whose existence is verifiable theoretically (Watson 2002:35).

Anyone who has received a error message in the process of inputting a PIN/password, which is usually the second step in the process, in the course of a debit transaction or log-in operation understands the overt syntagmatic sensitivity of such part-signs (and in most cases the syntactical features – how many digits, upper and lower case sensitivity - of a password or PIN). Indeed, anyone who has had their card eaten by a machine knows the vicissitudes of a-signification – perhaps this is just a jammed trigger but it may be a security countermeasure triggered by the card's use in such a place for such a purpose against an established or even extrapolated pattern; moreover, when a card is as one says 'all swiped out' by intense usage, after a shopping spree, the kind of interaction between the oxide particles on its magnetic stripe and the reader head that converts the encoding into binary digits goes awry because the magstripe is scratched or erased or demagnetized, thus introducing imbalance into the signal/noise ratio.

A-signifying part-signs do not slide; conversely, if they experience any sort of drift, they cease working. Guattari (1977a:235) provides a helpful description of the precise character of such signs: 'It is as if [they] ideally sought to shed their own inertia and renounce completely the polysemy which can proliferate in symbolic and signifying systems: the sign is refined, there is no longer 36 possible interpre-

tations but a denotation and an extremely strict and precise syntax'. The '36' is of course a reference to Peirce's strategy of generating categories of signs by means of combining triadic divisions; today this is how we order overpriced coffee! The precision of the syntax is a more difficult issue to grasp. Whereas Deleuze considered a-signifying signaletic matter to be a-syntaxic, Guattari retains syntactic combinatorics of minimal units but without a necessary reference to deep/underlying or high/transcendent semantics; he can maintain this because the primary context is not language. Further, point-signs work regardless of whether they signify something for someone or not. As Guattari specifies, they do not 'secrete significations' – whether these are 'thoughts', 'psychical' entities, or 'mental representations. Take a minimal definition of the sign - something that stands to somebody for something else - and incapacitate representation, Guattari's position becomes a bit clearer: 'Signs 'work' things prior to representation. Signs and things combine with one another independently of the subjective 'hold' that the agents of individuated enunciation claim to have over them' (Guattari 1977b:282). However, having incapacitated a disempowering representation and brought signs and things, that is, the material and the semiotic closer together, Guattari adds that this is the 'force of machinic assemblage' (as opposed to a disempowered semiology).

Whether they are randomly generated or carefully selected on the basis of paradigmatic clusters of birthdates, children's ages, former addresses, initials, nicknames, etc, PINS/passwords can, like the magstripe-reader encoding-decoding relation, do without mental representations; these latter may of course exist but they are 'never essential' and no longer center signification. With a-signifying semiotics there is no need, Guattari (1979:224) insisted, on passing through the summit of a typical pyramid of meaning, that is, through an already constituted referent, soul, substance, individuated subject's mental universe, etc. It is just as if, Guattari (2006:387) conjectured, physics 'renounce[d] any attempt to signify anything other than its own machinic articulations' in generating particles it multiplies by means of signs (whose productivity is their only relevant property). Certainly, Guattari (1977a:235) believed, one can create scientific representations of subatomic particles, but 'these cannot be taken into account by scientific semiotisation'. The study of such representations is of interest to many technocultural theorists, philosophers and sociologists of science, but Guattari underlines the limits of their pertinence and translatability.

The fallout for semiology is that new relations are established between form and matter by part-signs in as much as they skirt substance in some manner; there is a tendency in the information age for a-signifying semiotics to maximize its machinic force - to rapidly evolve, speed up, acquire greater mobility, miniaturize, and proliferate. In a-signifying semiotics part-signs work 'flush' (*travaillent à même*) with the real, more precisely, with material fluxes. Guattari does not, however, uncritically valorize flushness as directness. At the same level as and in parallel is perhaps better. Directness has important qualifications.

IV. Diagrams and Part-Signs

Regaining, then, part-signs, Guattari explains that these show how sign-referent relations may be reconceived. Modeling his conception on subatomic particles like quarks, Guattari does not seek positive evidence of the existence of part-signs in referential anchors like space-time coordination and logical consistency, but notes how certain perceptions actualize them in specific ways; as Brian Massu-

mi (1992:53) put it, 'scientific perception actualizes a virtual particle'. The problem of existence is imposed on them retroactively and: 'A new type of relation is established between the sign and referent, no longer a direct relation, but a relation engaging [*mettant en jeu*] a theoretico-experimental assemblage in its entirety' (Guattari 1977b:244). Two points are worth making as we, taking Guattari's advice, work out the implication of the physics lesson in other domains. The first is that part-signs engage machinic material processes beyond the problem of referentiality whose quandaries have always haunted semioticians. They are able to do so because such signs are creatures of the matière signalétique – signalizing matter - they constitute through machinic electromagnetic interactions, as in my magstripe example. Secondly, Guattari suggests that entire experimental assemblages are engaged, that is, IT networks of hardware and software, international standards of practice and production, requests for authentication from remote databases, supporting the signalizations of part-signs, again in a credit request situation. In this immense information infrastructure, delimited for the time being by the banks and their partners under many different kinds of legislation, is the materially present potentiality at and of the points of transaction triggered by part-signs whose traces constitute raw data that may be transformed for use in the security, promotional, gaming, etc. sectors through mining operations. The discovery of new knowledge by data mining operations tends toward an increasingly speedy, cheap, and analytically sophisticated category cross-linking independent data records toward the construction of a 'virtual database' by governments emboldened by post-9/11 anti-terrorist legislation (Gandy 2006). A virtual database results from a creative extrapolation from what is known to what is unknown and most commonly is a profile. The actions of a-signifying part-signs can be employed automatically against models toward the generation of such a profile. 'Guattari has imagined', wrote Deleuze circa 1990, 'a town where anyone can leave their flat, their street, their neighbourhood, using their (dividual) electronic card that opens this or that barrier; but the card may also be rejected on a particular day, or between certain time of the day; it doesn't depend on the barrier but on the computer that is making sure everyone is on a permissible place, and effecting a universal modulation' (1995:181-82). Both Deleuze and Guattari alert us to the diagrammatic modulations that navigate the a-signifying part-signs and work across, between and beyond the barriers as data reservoirs, not merely passively gathering but exploring, filling in the vacuoles, according to constraints of models and analyses. A dividual is an informatic diagram pointing at the virtual but dropping a line to an offline individual who is merely one of its actualizations because nobody totally corresponds to their data double or silhouette; this doesn't help when the police knock on your door in the middle of the night, because a good enough relation suffices.

Triggering is the key action of part-signs. This is Guattari's sense of the passage of molecular signs: machinic superempowerment and diagrammatisation. Guattari extricates himself from the Peircean trap of subsuming diagrams under Icons (within the Logic diagrams are graphic representations – sketches, graphs, drawings, skeletons - in mathematics) and then gains the positive implications of losing aboutness as a criterion, bringing him into constructive coherence with a critique of representation. He splits the image and diagram; the former belongs to symbolic semiologies, and the latter to a-signifying semiotics (the domain of machinism). In shifting into a molecular-machinic modality of explication, Guattari highlights

a tightly controlled repetition, whose deployment is open-ended, but whose operations are not, as a key aspect of the part-signs.

Part-signs 'support a mode of molecular semiotisation of a nearly unlimited scope' with the proviso that they 'quantify the possible' and elude all signifying representations, to which they remain effectively 'blind' (1979:224). Thus, Guattari continues: 'algorithmic, algebraic and topological logics, recordings, and data processing systems that utilize mathematics, sciences, technical protocols, harmonic and polyphonic musics, neither denote nor represent in images the morphemes of a referent wholly constituted, but rather produce these through their own machinic characteristics'. The concept of constraint should not be confused with a machine's degree of openness. Constraints modulate a diagram's movements, selections, passages and temper its deterritorializations, otherwise part-signs are no longer 'able to cling to all the abstract spaces of machinic potentialities' (Guattari 1979:223). Diagrammatic part-signs are dynamic and productive (capable of multiple articulations) but rigorously constrained – meaning is not essential in this activity but specific codes, algorithms, materials and standards are. To be sure, Guattari notes the 'production of unedited conjunctions' (Guattari 1977b:259) in a-signifying assemblages but this diverges from the uncontrollability of polysemy. Neither uncontrollable slippage and free play nor Peircean-syle multiplication of triads suffices to describe part-signs. Yet what is an unedited conjunction against these rather severe constraints presented by Guattari? 'There isn't anything to 'comprehend' in the equations of theoretical physics', Guattari stated, which is to say that mathematical expression is tightly and technically circumscribed and not beholden to some qualitative content, metaphorical or otherwise. Guattari is not claiming that physicists don't have ideas or have nothing in mind when they are working out problems experimentally and mathematically.

Diagrammatism, in Guattari's hands, blazes a trail beyond the human and individuated subject (of the statement) into the collective machinic dimension, escapees from the prison house of meaning: 'We leave the terrain of signification,' Guattari wrote, 'for that of the plane of machinic consistency', that is, the continuum of interactions on which any machine is reducible to an individual only arbitrarily. There is no 'refolding' or 'returning' or 'reterritorialisation' onto representation or any kind of 'pre-signification' or even overcoding, by either consciousness or iconicity; instead, the part-signs work next to and creatively with the material fluxes. Beyond the double articulation of linguistics, Guattari heralds 'a pluralism of articulations' (Guattari 1977b:259). With a-signifying semiotics one enters the plane of the post-human, 'more and more artificial'. Guattari (1977b:264) didn't shed any 'humanist tears' over this, rejecting anti-modern and anti-machine recapitulations of humanism.

While it is relatively straightforward to appreciate Guattari's splitting of diagrams from icons and substitution of reproductive for productive force, his reconfiguration of Hjelmslevian terms is more complex. For Guattari, what he called an 'abstract machine' like a diagram was akin to the concept of form borrowed from Hjelmslev; unlike Hjelmslev for whom forms are recognized in substance, even though he was ambivalent about which substance was at issue, Guattari used form independently of substance (formed matter) but linked it to semiological and symbolic signification stratified by the two planes of expression and content. And matter, unformed but not amorphous (or uninterrupted), was the site, for Guattari, of material intensities and the haunt of a-signifying part-signs in flux. For Hjelm-

slev, form was like a net whose shadow (substance) was cast on the surface of an unformed matter. For Guattari, abstract machines were conjoined with material fluxes and partial-signs, but without producing well-formed expression and content substances like 'transcendentalised subjects', or meanings 'embedded' in syntagmatic and paradigmatic chains and clusters, or even affinities between subjects and substances of the statement (Guattari 1977b:267). Rather, the subjectifications at work here are collective – human and post-human. The articulations at issue do not obey, for example, the structuralist fetish for 'Chinese boxes' – hierarchically organized ever widening isomorphic systems all obeying the same rules. Guattari rejects this carefully cultivated sphere for the sake of semiotic intensities that he made to run the gauntlet of signifying propriety on the way towards more open and experimental machinic conjunctions of the formal abstract machines with various fluxes. Worms and viruses as abstract diagrammatic machines conjoin with the digital strand of the machinic phylum and release tendencies of imperfect self-replication, that is, machinic mutation (Parikka 2007:260ff). It is possible to hack a-signifying machinic part-signs and in so doing reveal the relations of power that condition them and perhaps even expose that the network itself is a system of representation that offers too much consistency and thus produces inertia.

V. Where Meaning Was Technopolitics Will Be

Meaning may not be essential, but politics is (the requirement of meaning in politics is of course a complex challenge that cannot be adequately met here). All molecular phenomena display, for Guattari, a politics in lieu of a signified. The sign-particles are no different in this respect, though on the face of it the move to quantity and machinic interactions (automated triggers) belies it. Let's return to our magstripe. On the stripe, which is located in a certain position on the plastic card, there are several tracks. These are not neutral tracks upon which the particles are lined up. Rather, of the three tracks available, the first was developed for use by the airline industry and financial institutions use the second. Each track's format was developed by and for specific interests. The cards meet a variety of internationals standards, and function by means of specific algorithms. Recall the phrase quoted above: a-signifying machines may be used to 'automate' the messages of the signifying semiologies that, in a capitalist system, begin stirring at a young age, especially around the institution of credit. This is one reason why I have paid close attention to bank and credit cards

On the fringes of infocapitalism there are no bank machines that will take your card; networks are finite. The networked radiation of the a-signifying part-signs that automatically trigger anonymous at a distance verification processes find their machinic potentiality temporarily exhausted as the banking systems like Cirrus, Interac, Plus and the rest terminate until further notice. A-signifying semiotics are perfectly adapted to the networked banking systems we use on a regular basis. Their diagrammaticity mobilizes for the next extensions not yet actualized of the cash networks and placements of automated tellers and new magstripe tracks colonized by the next corporate players, and by the coordinated triggers that may just ensure that you and your money can be parted just about everywhere.

Information precedes signification, the potentialities of which are in machinic systems, the site for the study of a-signifying semiotics. Repetitive machinic signaletic stimuli are the stuff of the infocapitalist technoverse. But these are not the signals of an older semiotics. Rather, Guattari's originality as a semiotic theoreti-

cian lies precisely in his innovative investigation of the characteristics of a-signifying part-signs and how they belong to the very texture of the informatic strand of the machinic phylum. He didn't forgo signifying semiologies and meaning-effects but rather operated a displacement so that the unwarranted hierarchisation of sign types inherited from structuralism could be retheorised; indeed, Guattari gave free rein to the overcodings and complexes in his analytic work. He certainly wasn't an apologist for automation because he insisted on understanding the political dimension of the deployment of part-signs; and after all, non-storage magstripe technologies are not 'smart' enough – do not store the data - to make independent decisions about your credit, but the potential for this completely automated and non-human practice remains, not as a standing-reserve but as a tendency a glimpse of which one catches through the vague mists of virtuality and occasionally sees in the trial and error runs new product actualizations to which such potential seems inassimilable, except in the eyes of an Orwell; less extreme would be the exploratory visions of those like John Willinsky (1999) who imagine metanarratives in the form of virtual public corporations with the capacity to perform automated data mining of knowledge gleaned from all the social sciences. Guattari regained signals towards the end of establishing the semiotics of the leading strand of machinic phylum – informatics – more and more held hostage by corporations in what is known as the surveillance postindustrial complex.

The means of conceiving an alternative outcome, an escape from machinic enslavement by IWC, may still be nurtured. The problem is: does this mean that a-signifying semiotics simply and only obey a network form and thus resistance dislodged from it must take its form and is, in fact, determined for the network is hegemonic (another master signifier) – for even the state is thought to be an organizational and political network (Castells 2000:338ff) – and the multitude is a distributed one (Hardt and Negri 2004:88), too? Obviously the key to overcoming this straightjacket of technological deterministic formal correspondence would be to look at the alternative ontological universes opened by a-signifying semiotics and the kind of subjectivities attached to them. Technically identical a-signifying declensions may unfold differently in the production of profoundly different universes and subjectivities – security professionals as opposed to hackers of various allegiances. Signaletic matter is not neutral, it is not waiting there passively to be formed, either. Beyond the myth of representation that injects and maintains passivity into semiosis, part-signs retain their plasticity and retain some of their intensivity, that is, they move onward rather than backward (merely receiving sense from their anchors), and for political ends retain a partial signifying sense in their multiple articulations. In this manner they may be nurtured in the non-linear ecologies of networked life by diagrams that 'twist' their tendencies and 'blur' their encounters with formalized strata.

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Colour, Culture and Deixis as Elements of Meaning in the Discourse of Advertising Mobile Telecommunications Networks in Nigeria

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Abstract

This article examines the appropriation of sign systems in the discourse of marketing the services of mobile telecommunications networks in Nigeria. The paper attempts to interpret the sign systems deployed in these marketing strategies in relation to the contextual background within which they operate, revealing multiplicities of meaning that are tied to the service providers' ideological perceptions, which to a large extent appeal to the audience's sentiments and in some cases abuse their sensibilities.

1. Introduction

The Global System of Mobile Telecommunications (GSM) revolution in Nigeria's communications industry is arguably that coveted leveller which has enabled common citizens to share the experience of the elite, which had for a long time a privileged access to telephones. What the situation was prior to this watershed is captured thus:

> Before now, many Nigerians had no hope or dream to own a phone as the service provider […] NITEL [Nigerian Telecommunications Limited Plc] made things very difficult. One had to pass through lots of hurdles before getting a line. In fact, from the handwriting on the wall, it became very lucid to Nigerians that the telephone was not meant for the poor.[1]

Consequently, if ordinary Nigerian citizens were asked to reflect upon the singular reform of the Olusegun Obasanjo administration which touched their lives the most, they would not hesitate to cite the liberalization of Nigeria's telecommunications market as 'a true dividend of democracy'.

By February 2001, four firms – Econet Wireless (Nigeria), MTN, Communications Investment Limited (CIL) and NITEL had emerged as GSM licensed operators in the country. CIL was, however, refused a license by the Nigerian Communications Commission (NCC) on the grounds that it failed to meet the deadline for the payment of the license fee. In 2002, another service provider Globacom (an indigenous company) received its operational license and joined the race. Apart from these major networks, there are private telephone operators such as Starcomms, Oduatel, Mobitel, Multilinks, among others, that have been granted licenses.

Since 6 August 2001 when the first call was made on an Econet Wireless mobile phone in Nigeria, Nigeria's telecommunications industry has grown by leaps and bounds as affirmed in this comment:

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[1] Quoted from a feature article 'Four Years of (GSM): The Journey So Far'. *The Guardian*. Vol. 22, No 9,772, Wednesday August 24, 2005.

> The transformation of Nigeria's telecommunications landscape since the licensing of three GSM networks in 2001 and a fourth one in 2002 has been nothing short of astounding. The country continues to be one of the fastest growing markets in Africa with triple-digit growth rates almost every single year since 2001. It passed Egypt and Morocco in 2004 to become the continent's second largest mobile market after South Africa. And yet it has only reached about one quarter of its estimated ultimate market potential.[2]

Interestingly, this sector of Nigeria's national life has generated stimulating discussions at seminars and workshops, in editorials and features in newspapers and magazines, in parliamentary sessions, as well as in informal exchanges among the general public. There are many advantages attributable to the remarkable turnaround in Nigeria's telecom industry. The advent of GSM has contributed to the increase in the gross domestic product (GDP) of the country, as the revolution has enhanced the efficiency of business transactions, saving people's time and energy that they would otherwise have expended on the road. Another major benefit of mobile telephony to the economy is the provision of employment opportunities to many Nigerians.

While acknowledging the relevance of these issues, this study explores the discourse of marketing GSM networks, since the frontiers of the advertising industry in Nigeria have been advanced so much that every imaginable outlet has been utilized for promoting the companies offering GSM services in Nigeria. Particularly striking is the GSM service providers' rhetorical style adopted to penetrate the Nigerian market. It is intriguing that the advertisers deploy seemingly ordinary objects, events, concepts, entities, situations and scenery in the audience's immediate environment to convey a deeper level of meaning in their advertisements. Writing generally on the style of such advertisements, McKeown (1998: 1) says: "The people behind the making of 'ads' are the transmitters and therefore are aware of the codes in operation within the culture they are working or living in. So advertising uses 'a system of distinct signs.'"

Drawing upon this viewpoint, this paper examines the (re)construction of meaning through signs in the advertisements of mobile telecommunications networks in Nigeria. We will first need to provide some background information about the sample data in Section 2. In Section 3, we will discuss the role of connotation in semiotic analysis, while underscoring the place of the reader in the social production of meaning. Section 4 of the paper examines the factor of colour in branding GSM companies, while Section 5 discusses the semiotic force of verbal signs and cultural units in the advertisements. This is the order in which the rest of the article is organized, leading us to Section 6 which gives the concluding remarks.

2. Sources of Data

We have purposively sampled data from newspapers, magazines, radio and television jingles, and billboards. Structures such as houses, fences, kiosks and erect broad umbrellas, carrying the trademark of GSM service providers are also interesting sources of data for this study. Mass transit/luxury buses whose bodies are clad in GSM advertisements, souvenirs and bannerettes also provide rich sources of data. The sample data, though restricted, would be adequate for analysis in that there are parallels in the advertisements even where there are slight shifts in configurations across modes – written and spoken, on the one hand, and verbal and non-

[2] Cited from http://www.lxcomm.com/lx-telecommunications-research-toc.asp?toc=2998.

verbal, on the other. It is noteworthy that such overlaps are functions of the ideological motivations for the advertisements which are a constant in the discourse.

3. Theoretical Considerations

How reality is organized and constructed, as well as how ideology and meanings are produced in the advertising discourse, is so intricate that the reader, in an attempt to process advertising meanings, cannot but appeal to the subtlety and power of connotation. With close reference to meaning interpretation in print advertisements, Leiss *et al.* (1990: 201-202) argue:

> The semiological approach [...] suggests that the meaning of an ad does not float on the surface just waiting to be internalized by the viewer, but is built up out of the ways that different signs are organized and related to each other, both within the ad and through external references to wider belief systems. More specifically, for advertising to create meaning, the reader or viewer has to do some 'work'. Because the meaning is not lying there on the page, one has to make an effort to grasp it.

In the light of this argument, this paper applies the connotative semiotics framework to underpin and explain the semiotic import of verbal and visual signs in the advertisements of GSM networks in Nigeria.

'Connotation' is used to "refer to the socio-cultural and 'personal' associations (ideological, emotional, etc.) of the sign. These are typically related to the interpreter's class, age, gender, ethnicity and so on" (Chandler, 1994a: 1). Although it is presumed that there is a code-sharing between the producer and the reader of a text that could maximize efficient and effective communication, connotation opens up the possibilities of meaning such that the reader could come up with diverse interpretations which depart from what the sender of the message originally intends. Borrowing from Schmidt's (1984) philosophical argument, Mick and Politi (1989: 7) submit that 'the interpretation of advertising is a subject-dependent, internal monologue through which consumers generate, change and maintain their individual reality'. It must be noted, however, that connotations are not purely 'personal' meanings, for they are determined by the code to which the interpreter has access. In this sense, Chandler (1994b: 5) cites Voloshinov (1973: 23) who referred to the 'multi-accentuality' of the sign, that is, the potential for diverse interpretations of the sign according to particular social and historical contexts.

This chance to uncover the playfulness of language brings to the fore the notion of 'oppositional reading' which gives room for multiplicities of meaning that audiences can choose to attach to a text while "searching for what is 'hidden' beneath the 'obvious'" (Chandler, 1994b: 2). This derives from the fact that the audience may have a very different cultural or social experience from the producer's and thus may connect signifiers to completely different signifieds. This approach to text reading is opposed to the notion of 'preferred reading' where the producer of a text designs it with certain meanings in mind and hopes that the audience will decode them in a way which ties in to hegemonic beliefs. Writing in favour of 'oppositional reading' as a stimulating approach to interpreting advertisements, Myers (1983: 214-216) cited in Mick and Politi (1989: 5) contends:

> There is a danger in the analysis of advertising assuming that it is in the interests of advertisers to create one "preferred" reading of an advertisement's message. Intentionality suggests conscious manipulation and organization of texts and images, and implies that the visual, technical and linguistic strategies work together to secure one preferred reading of an advertisement to the exclusion of others […]

> The openness of connotative codes may mean that we have to replace the notion of "preferred reading" with another which admits a range of possible alternatives open to the audience.

Although the meanings generated at this level may be 'small', using McCracken's (1987: 121) term, Mick and Politi (1989: 9) posit that such 'small' meanings are in no sense immaterial, for they 'provide a looking glass on the role of personal history, self-esteem, fantasies, aspirations, doubts, fears, and other individual factors which contribute to ad-imagery interpretation'. This viewpoint underlies the nature of the analysis and discussion carried out in this study. Close attention is paid to the codification of meaning in the discourse in relation to cultural rules and social forces in the context of the situations in which the signs in the GSM advertisements are produced and received.

Thus, our analytical approach in this study falls within the purview of social semiotics where attention has been given to the role of the reader in the meaning-making process. Social semiotics is based on the assumption that signs and messages must always be situated within the context of social relations and processes, as the same text may generate different meanings for different readers. Thibault (1991: 1) summarizes this view saying:

> In social semiotics, the basic logic is that of contextualization. No semiotic form, material entity or event, text, or action has meaning in and of itself. The meanings these have are made in and through the social meaning-making practices which construct semiotic relations among forms, material processes and entities, and social actions.

4. Colour and its Functions in Nigeria's Telecom World

The visual content and design of advertisements generally find expression in the choice of colours advertisers make while trying to appeal to the audience. Beyond such aesthetic motivations, colours could assume another level of significance relative to the world being depicted. We must, however, admit that analyzing the semiotics of colour across cultural boundaries is no easy exploration. This is born out of the fact that different cultures classify and even perceive colours differently, even though colours are constant everywhere in the world. Thus, the meaning potential of colour is tied to the cultural world of the transmitters and the receivers. For instance, while the colour black often stands for death in western society, its opposite white symbolizes death in eastern cultures. In Japan, for example, white flowers are a reminder of mourning and death. Lindberg (2002 – 2005: 2) quotes Eco as saying:

> When one utters a colour term one is not directly pointing to a state of the world […], but, on the contrary, one is connecting or correlating that term with a cultural unit or concept. The utterance of the term is determined, obviously, by a given sensation, but the transformation of the sensory stimuli into a percept is in some way determined by the semiotic relationship between the linguistic expression and the meaning or content culturally related to it.

For our present purposes, the complexity in the signification of colours is evident in the deployment of certain colours by advertisers of GSM networks to carve an identity for their respective companies. In this regard, Caivano and Lopez (2007: 4) argue that:

> One of the factors that renders the identity of an institution visible is colour. As a factor of identification of a company and, in turn, as a factor of differentiation from its competitors, colour is widely acknowledged in institutional design […]

> it is one of the vectors of corporate identity. By mentioning cases such as IBM (the 'Big Blue'), we must agree that, inside the global semiotic system, colour is one of the key elements in the conformation of corporate identity. Its visual impact, pregnancy, memorability, as well as its possibilities of reproduction in different applications and media, are key factors in design.

It is in the light of this argument that we will discuss the use of colour for identity purposes and its attendant local connotations in the present discourse.

Yellow has come to be identified with MTN advertisements to such an extent that it has become a dominant signifier in the MTN world. At the connotative level of meaning, the use of the colour could be tied to any of the following representations, as put forward by the Glidden paint company: 'Yellow is truly joyous and virtuous in its purest form. Yellow exudes warmth, inspiration and vitality, and is the happiest of all colours. Yellow signifies communication, enlightenment, sunlight and spirituality.'[3] While all of these interpretations seem to fit into the telecom world, there are, however, yet other shades of meaning which coincide with the above interpretations or further extend them within the context of use.

Figure 1. MTN Y'ello Signifier.

In order to create the impact of novelty so that attention is drawn to the colour trademark in a most arresting manner, the advertisers of MTN services have resorted to the use of the neologism in the nonce-word *y'ello* as shown in Figure 1. This signifier serves some rhetorical functions in MTN adverts. In answering phone calls, the ritualistic opening formula is *hello* but in MTN adverts, *y'ello* has been substituted for *hello*. Apart from the humorous stroke it has added to answering phone calls, the propagation of the 'MTN tongue' creates the impression that the universal language of communicating is being supplanted by MTN, thereby giving the impression MTN is the network which cuts across ethnic, regional and racial boundaries and is, therefore, dominating the scene and setting the pace in terms

[3] 'The Language of Advertising' by Peter Sells and Sierra Gonzalez. Available at http://www.stanford.edu/class/linguist34/Unit_11/index.htm. Retrieved 5th May 2007.

of coverage and efficiency. In fact, *y'ello* is so central to the MTN world that it is referred to as 'the language of possibilities' in one of the commercials.

In another sense, the greeting formula *y'ello* is a symbolic sign that creates an atmosphere of celebrations and merriment during festive seasons. For instance, during Christmas, the compliment people give one another is 'Merry Christmas/Happy Christmas' but in an MTN commercial, the parody reads: "*Y'ello* Christmas" as a season's greeting to all Nigerians and MTN subscribers in particular. This departure from the convention is rhetorically significant. It is a message of love in which MTN shares the joy of the season with its (intending) subscribers. It also suggests that the Christmas season is one during which making contacts with relations, friends and well-wishers is made stress-free when connected to MTN. As such, one could conveniently exchange love messages, greetings and give compliments without having to travel long distances. This signifier becomes particularly instructive when one notes that Nigerians who work and live in the cities usually return to their towns and villages to celebrate the joy of the season with their loved ones. One most disturbing concomitant to such extensive journeys during Christmas is the increase in the number of road accidents. Wishing the people "*Y'ello* Christmas" is an invitation to rely on MTN services in the bid to reach families and relatives and avoid the risk involved in embarking on ritualistic Christmas journeys. It seems, therefore, that one could understand why *y'ello* is actually referred to as 'the language of possibilities' for it is possible for people to share the joy of a festive period with their loved ones without necessarily being with them physically.

Figure 2. 'MTN Man' propagating the Y'ello message.

Still deploying the *y'ello* signifier, the company uses a product character popularly known as 'the MTN man'. He is commissioned in the commercials to transmit the *y'ello* message from cities to towns and villages, as he paints billboards and demarcates highways with the colour yellow to signify the connection of such locations to the MTN network. One intriguing aspect of the advert is the "*y'ello* magic" signifier as reflected in two major codes.

In the first one, the MTN man is painting a billboard with the colour yellow and as passengers in a vehicle passing by alight to greet him, the original colours of their vehicle and the clothes they wear automatically change to the colour yellow. There is also the case where the MTN man and his co-painters are trying to cross a river in the course of their mission and the yellow paint inside the container they

are carrying accidentally spills into the river and the whole river turns yellowish at once.

This scene could remind one of the Biblical account recorded in Exodus 7: 19 where Moses performed the miracle of turning the waters of Egypt into blood when he was commissioned by God to lead the Israelites out of captivity in Egypt. Rather than producing a negative effect as in the Biblical account, the spilling of the yellow paint into the river in the present discourse has positive connotations. The scene is suggestive of the spontaneity and the vastness of MTN network. All together, the two major codes of the MTN "*y'ello* magic" seem to bring to the fore the infectious attribute of the MTN network which objects, people and natural phenomena cannot resist but must respond to with a 'chameleonic' instinct.

Figure 3. Globacom's Lemon-green colour.

Globacom's lemon-green assumes semiotic significance in very interesting dimensions, too. By hitting Nigeria's telecom market in 2003, when some other networks had already been in operation, Globacom needed to carve a niche for itself and the identification of the lemon-green colour with the company is symbolic: 'Green is the colour of life, and represents freshness, security and tranquility. Green creates an atmosphere that is calm and restful, and characterizes the intense power of nature'.[4] In one of Globacom's memorable commercials, a satellite with a resplendent lemon green colour appears from the horizon and traverses a geographical space. Beholders of the lemon green satellite – the young and the old, male and female, professionals and artisans – are sent into wild excitement as they chorus the verbal semiotic surrogate "It's coming! It's coming! It's coming!" This verbal message helps to anchor the pictorial image by contextualizing it.

The sighting of the satellite and the attendant excitement call to memory the sighting of a new moon in a real life situation and what it signifies to people. In the Islamic world, for instance, the sighting of a new moon is a natural phenomenon pivotal to the Islamic calendar and religious activities. Across cultures, the appearance of a new moon in the sky signals a change of season to which diverse cultural

[4] Ibid.

and religious beliefs are attached. In a typical African village setting, the sighting of the new moon announces a joyful season, especially to children, and when it is full-blown, it rules the night, dispels darkness, and allays the fear and uncertainty characteristic of nightfall. It is the season when they can defy the night and sit in the full glare of the moon to enjoy moonlight tales from an elderly story-teller. The excitement of the children-audience here is akin to that of those sighting the lemon-green satellite which signifies the birth of Globacom.

In particular, the manner in which the beholders of the satellite get stupefied needs to be critically examined. People form diverse professional backgrounds such as engineers working at sites, medical practitioners attending to patients, and footballers playing a competitive match, all suspend their primary assignments at critical stages -- for instance when a footballer is about to score an all-important goal -- just to catch a glimpse of the satellite. In another case, it could be a wedding reception where the couple and their well-wishers are basking in the euphoria of the moment. Even at the point of taking a snapshot on such a memorable occasion, the bride, to the chagrin of on-lookers, would take a leap from the gathering in the direction of the satellite and others in admiration follow suit, momentarily abandoning the purpose for which they are gathered. Generally, their kinesic posture of maintaining a fixed gaze on the roving lemon-green satellite is significant. It implies the arresting power of the Globacom network which appears to have shifted people's attention away from already existing networks.

As a mark of Globacom's identity, the lemon-green colour becomes a symbol for the efficiency and dependability of the company, as expressed in the popular slogan 'Glo with pride'. 'Glo' in this slogan could be an abbreviated form of the name of the company, thereby suggesting that subscribers should take pride in using the Globacom network. Aside from this, the word seems to be an orthographic deviation from the verb 'glow'. Just as the lemon-green colour glows wherever it appears, the impression is created that the services offered by Globacom in the places covered by its network make the subscribers stand out from the users of other networks. This is also suggested in the popular advertising slogan 'Wherever you go, we glo', suggesting that the network outshines others in getting people connected.

Generally, the centrality of colour to the ads by these GSM service providers is underscored by Eliott (2005: 1):

> One great thing about colour, agues Martin Lindstrom in his newly published marketing book *Brand Sense* 2005 is that it contributes to the 'smashability' of a brand. Successful brands can be 'smashed' like a glass of bottle of Coca-cola and consumers would still recognize the brand from its pieces. Logically, then, marketers should place a 'signature' colour at the center of all branding efforts.

In a similar vein, Caivano and Lopez (2007: 4) have this to say:

> Colour has a high influence on institutional communication because it is perceived more quickly than other institutional symbols such as iconographies or verbal texts. It has been proved that colour requires less time of 'reading' than a logo. When shape and colour are adequately associated, colour (the more primary element) facilitates the memorability of the shape. Chromatic logos are more easily remembered than achromatic ones. In this way colour works as a factor for remembering the brand. For instance, Kodak yellow, Nestle red, Intel Blue, Coca Cola red, etc.

And this appears to be exactly what the network service providers have done with their preference for certain colours that have come to be identified with such companies and are central to their branding efforts.

5. Deictic Verbal Signs and Cultural Units in Nigeria's Telecom World

In view of the fact that the issue of network coverage is carefully considered before people subscribe to the services of a telecom company, every service provider boasts of wide network coverage. This is evident in their commercials where spatial deictic markers are deployed to influence consumer behaviour:

> MTN wherever you go
> Wherever you live, wherever you work, wherever you play, we live everywhere you live (Glo)

The advertisers' predilection for the use of the deictic markers 'where', 'wherever', and 'everywhere' is predicated on the fact that they want to give the impression that they are capable of connecting urban centres to the rural areas, as subscribers living and working in urban centres would wish to keep in touch with people back at home in the hinterland. To further emphasize the mobile service providers' bid to connect the urban to the rural, spatial deictic markers are reinforced with non-verbal indexical surrogates. Such indices revolve around diverse cultural units such as occupations for which rural communities are noted. The occupations touch on cattle rearing, fishing/fish smoking, *garri* (cassava flour) processing, hand weaving, tying and dying of textile materials, farming with crude implements such as hoes and cutlasses, pounding with mortar and pestle, harvesting of palm fruit, among others. Apart from cultural units in the form of occupational engagements, there are pictorial images in the form of landscapes, showing thatch roofs, deserts, forests, creeks, and so on.

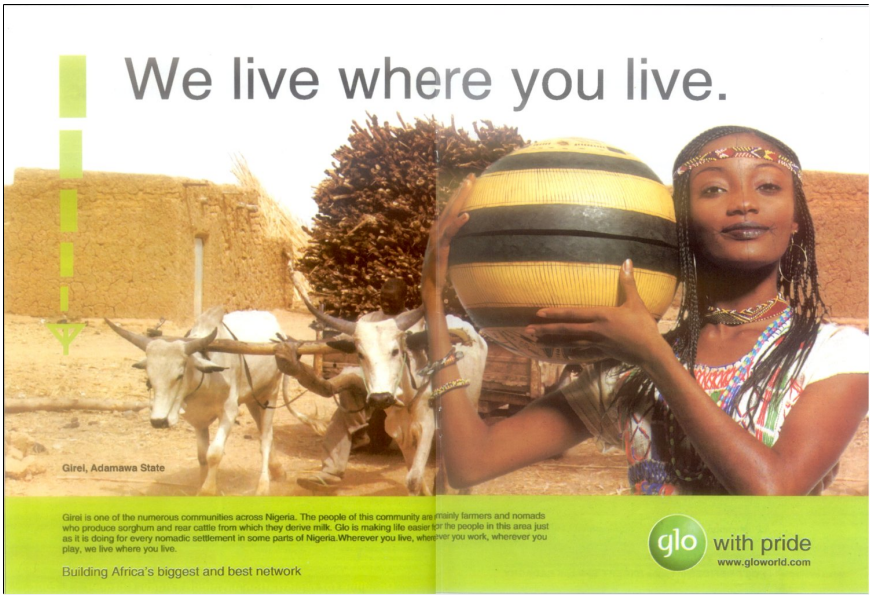

Figure 4. A typical Hausa-Fulani village setting in northern Nigeria.

In Figure 4 above, we see the pictorial image of a hut that is normally found in a village in northern Nigeria. Besides, there are yoked oxen transporting harvested grain stalks. There is also the pictorial image of a typical Hausa-Fulani girl decked in traditional attire. In Figure 5, two Igbo men wearing their traditional caps are relaxing in the village, as we see in the background the thatch roof of the hut and the thick forest. All of these signifiers help to arouse the emotions of the audience by

appealing to their sense of pride in cultural images and traditional settings whose memories they would cherish and long to keep in touch with partly by using the network that connects them to such places. It is instructive to note that the artisans involved in the occupations we earlier cited are normally found in local communities. In the present discourse, they serve as iconic signs of the supposed ordinary people in rural areas who are connected to mobile networks and can therefore still keep in contact with their children and relatives living in towns and cities. Another implied message in this respect is the attention drawn to the affordability of mobile services by rural dwellers unlike time past when the telephone used to be a status symbol for the elite.

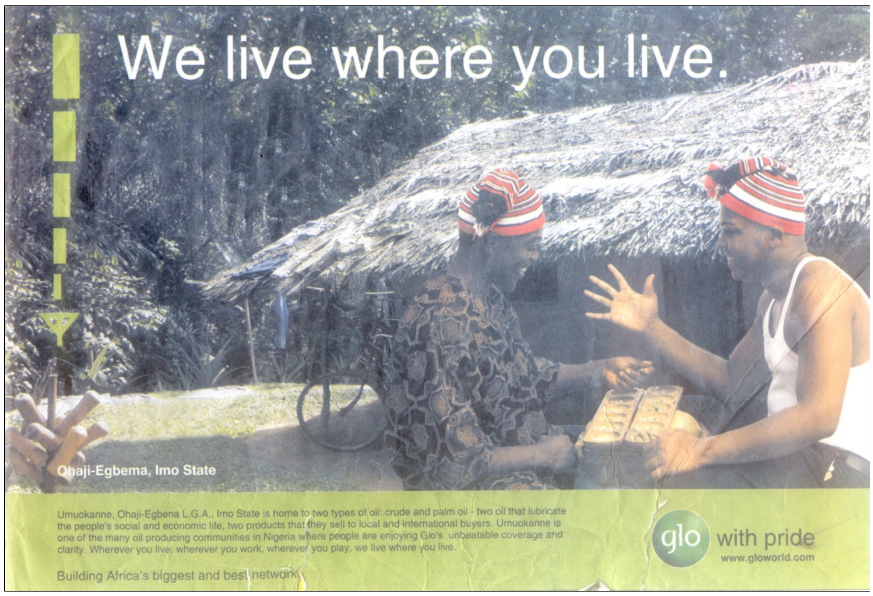

Figure 5. A typical Igbo village setting in eastern Nigeria.

Nevertheless, we have to point out that the preponderance of the spatial deictic forms ‘everywhere’, ‘where’, and ‘wherever’ in the discourse betrays the exaggerative bias of advertising discourse. In fact, there are numerous towns and villages not connected to any mobile telecom network and yet the service providers claim to be everywhere. This claim leaves a gap in the communication process, as the advertisers say that which would normally interest the audience in such a slippery arena of meaning. Such words, which are characteristically injected into the advertising discourse, are referred to as weasel words. According to Taflinger (1996: 4) weasel words are: ‘… those words that are tossed into a sentence that change the actual meaning of the sentence while leaving an impression that is not different. It is the easiest way of not having to take responsibility for anything you say, or seem to say.’

Other cultural traits apart from the ones we examined earlier serve as useful sign vehicles in the discourse. Worthy of mention is the celebration of birth in a typical African society which has been made a dominant signifier in the telecom world. Normally, when a new baby is born to a family, the joy is shared with other members of the family both far and near. However far or near such family members may live, delivering such good tidings through mobile networks enhances promptness and efficiency.

In an MTN commercial set in the northern part of Nigeria, a grandfather who is about to attend the naming ceremony of a granddaughter cannot make it to the

venue because horse riders in front of an Emir's palace are blocking the road, rendering the route impassable. Left with no other option when the baby's father calls that all is set but for his non-arrival, he has to communicate the name of the baby, Aishat, by phone and that settles the anxiety of either postponing the ceremony or depriving the grandfather of his customary responsibility. Commenting on the relevance of the message of the advertisement, Obinna Ezeobi says in a newspaper column that the advertisers seek to communicate: '…the fact that the network makes life easy, by connecting its subscribers with their loved ones, even when unforeseen circumstances hold them back and disrupt their plans…'[5]

Also worthy of attention is the popular MTN commercial 'Mama Na Boy' in which a man blessed with a new born baby calls his mother in the village that his wife has been delivered of a baby boy. Expectedly, the mother receives the message with overwhelming joy amidst rigorous dancing. While the mainstream audience may not question the choice of announcing the birth of a baby boy in the commercial rather than that of a baby girl, the progressive audience may query the rationale for this choice and wonder why the commercial has not read 'Mama Na Girl'. This is the worry that two Nigerian lawyers, Adejoke Babinghton-Ashaye of the Centre for Public Policy and Research, and Felicitas Aibokun of Legal Resource Consortium have about the MTN 'Mama Na Boy' advert:

> Viewed against the context of a strongly patriarchal society, in which male child reference is a fact, often leading to discrimination against the girl child and therefore against women, the campaign is inappropriate… Son preference is traditionally rooted in Nigeria and is based on social constructs of the role and value of males and females. Boys are valued at birth while… mothers are blamed for producing girls.[6]

From the foregoing, one could deduce that while the advertisers tend to project birth as a cultural unit worthy of celebration, they probably fail to take cognizance of the emotive associations it may invoke in some receivers of the message. It suggests, therefore, that how a message is interpreted depends on who the receiver of that message is. It is in this light that Eco (1976: 152) explains:

> In exchanging messages and texts, judgements and mentions, people contribute to the changing of codes. This social labour can be either openly or surreptitiously performed; thus a theory of code-changing must take into account the public reformulation of sign-functions and the surreptitious code-switching performed by various rhetorical and ideological discourses.

Generally, the discourse of marketing mobile telecom services features cultural phenomena that range from traditional attires, musical instruments, traditional dance to masquerade performance during village festivals. Others include traditional transportation system involving the use of boats in coastal areas, bicycles used mostly in villages in eastern Nigeria, and horses and donkeys used in the northern part. One interesting thing about the commercials in which the cultural units are used as sign vehicles is that advertisers explore the cultural units across the major ethnic groups as shown in Figure 6 where traditional attires from different cultural backgrounds are showcased with the map of Nigeria placed at the centre. The strategy of exploring cultural units makes the commercials suit the het-

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[5] See "'Crazy' World Cup Advertisements" by Obinna Ezeobi in *The Punch* Wednesday June 28, 2006, p. 37.

[6] *Tell* Magazine January 31, 2005, p.39.

erogeneous Nigerian society, thereby giving the impression that their networks are capable of mitigating ethnic conflicts that have been the bane of Nigeria's unity. At another level of interpretation, the diffusion of cultural values in the discourse is a rhetorical attempt at provoking the cultural sensibilities of the audience in a bid to promote those aspects of the people's culture that have been suppressed by western cultural influence.

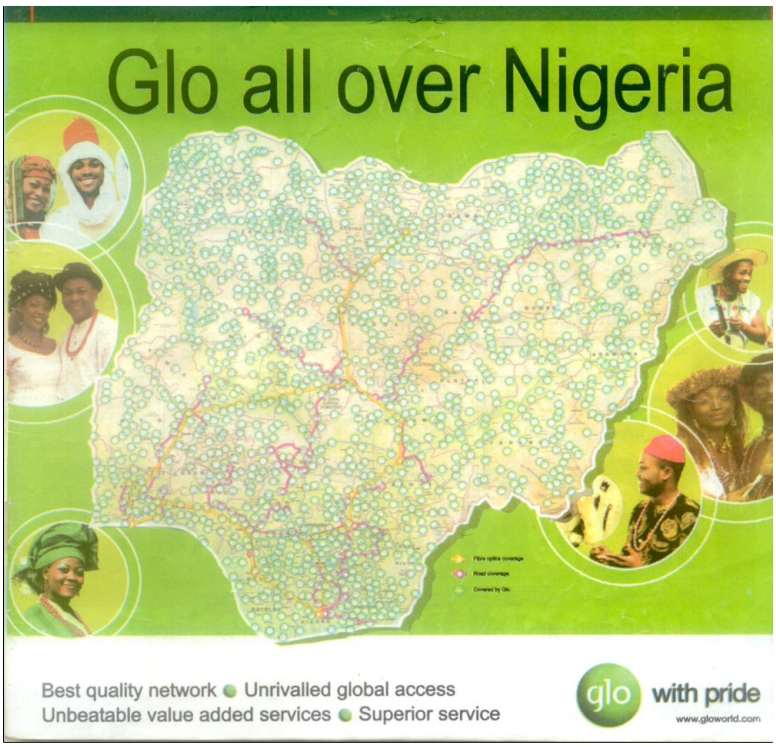

Figure 6. Traditional attires across the major ethnic groups in Nigeria.

Finally, the place of the temporal deictic marker 'now' in the discourse of advertising mobile networks deserves critical study. Consider the following excerpts:

> Econet NOW in ASHAKA
> Abakaliki… now on the network of the people (Glo)
> Katsina now live on the network of the people. Come glo with me

Here, the emphasis is laid on the present time which marks a clean break from the past when the inhabitants of the geographical locations in question had no access to telephone services at all or when they used to experience disappointments and delays occasioned by poor telecom service delivery. In fact, the implied juxtaposition of the time past (then) and time present (now) in this case brings to bear the then-now dichotomy in popular discourses. Such a dichotomy could positively emphasize movement from obscurity, bondage or ignorance in the past, to limelight, freedom or knowledge in the present. The popular parlance 'Once I was blind but now I see' in Christian doctrine best captures the message that the unpleasant past should be swept into oblivion to celebrate great developments and achievements in the present.

At another level of interpretation, the temporal deixis 'now' underlines the rolling out of certain services by the telecom companies to satisfy the curiosity of

their subscribers. The expression 'Now you can pay per second' in Glo adverts takes us to the kernel of a vexed issue in Nigeria's telecoms industry. At the inception of mobile telephony in Nigeria in 2001, major operators such as MTN and Econet Wireless were offering the per minute billing method such that a caller would have to pay for a whole minute regardless of the few seconds spent calling. Of course, subscribers did not take kindly to this perceived dubious business tendency as they felt the tariff should be based on the number of seconds spent.

Consequently, when Globacom broke the jinx in 2003 by introducing the per second billing, it was a great relief to its subscribers. We can, therefore, read the import of 'now' in the extract 'Now you can pay per second'. To further reinforce the verbal signifier 'now', there is interplay between verbal and visual signs. How it is instrumentalized here is interesting. In an advert, Charley Boy (Charles Oputa), a popular Nigerian musician, buys a banana from a hawker, peels just one, eats it halfway, returns the remaining half to the seller and collects change. The eaten portion of the banana is a symbolic sign for the number of seconds a subscriber could spend on the phone, while the returned uneaten portion symbolizes the remaining unused seconds which the service provider does not need to charge the subscriber for, hence the banana seller's resolve to give Charley Boy some change. Similarly, the money paid for the banana is a symbol for the subscriber's credit value which has to be deducted commensurate with the number of seconds used.

Figure 7. Daddy Showkey sending the copycat dwarf packing from the stage.

It is interesting that Globacom's trail-blazing effort of introducing 'pay per second' forced other competing service providers to start operating the system. Since it is a business world in which competition reigns supreme, Globacom sought to persuade subscribers that the originator of an idea or strategy is its repository and must be so acknowledged. In another Globacom advert, a dwarf musician comes to the stage and performs exactly the way a popular Nigerian musician, Daddy Showkey, performs. In terms of his dancing steps, hairstyle and costume, the audience would mistake him for Daddy Showkey but for his prominent physical deficiency in height. In no time, however, Daddy Showkey appears on stage, sends the copycat dwarf musician packing, and entertains the audience as the real figure known to the people generally. Then the advertisement is capped with the verbal surrogate 'glo the original pay by the second' or 'Don't settle for the second best'. Since the copycat dwarf musician, despite sharing some of Daddy Showkey's attributes, suffers a deficiency in height, he cannot be said to duplicate the original figure.

By extension, Daddy Showkey is an iconic sign for the supposed Globacom's unparalleled pay by the second billing method, while the copycat dwarf musician is an iconic sign for the perceived low quality (counterfeit) pay per second billing method offered by other networks.

6. Concluding Remarks

The semiotic interpretations of the modes and contents of the commercials that we have carried out in this study are interesting in two major respects. In the first place, the images, colours and verbal pointers seen by the researcher-reader and the meanings derived from them strongly demonstrate the polysemic nature of signs. Signs, we must emphasize, are open to interpretations which are dependent on the cultural and experiential knowledge of the interpreter within a specific context of use. The representations we have made in the analysis would, therefore, not in any way foreclose further signification.

Second, the advertisers' careful selection of those signs that will make the image of their networks fit into the perceived desires and expectations of the target audience is interesting. At the syntagmatic level, there are endless possibilities that characterize and define the telecom world, but advertisers make conscious choices at the paradigmatic level to favour the perceptual framework of their world. Creating an atmosphere of joy, celebrations, and a stress-free world of communication, advertisers give the impression that getting connected to their networks takes away worries, disappointments and frustrations occasioned by poor service delivery. However, subscribers could tell how many times they have been disappointed by poor services when calling and the frustrating response they would have is: 'The number you are calling/dialing is not available/reachable at the moment, please try again later'.

In a similar vein, the commercials are tailored towards reflecting the people's positive perceptions of life, reflecting only the bright side of life. As humans, we cannot gloss over the fact that there are some gloomy aspects of life for which the use of mobile telephony would be expedient. Making calls in emergency cases such as armed robbery, road accident, fire outbreak, sudden illness, among others, is apparently suppressed in the commercials, just to focus the preferred messages that the people are inclined to spreading and hearing. As a matter of fact, Nigerians make it a prayer point that shouts of joy shall not cease from their habitation and that their ears shall be impervious to bad news.

On the whole, our exploration of the sign systems in the discourse of marketing mobile telecom networks in Nigeria sheds light on the fact that patterns of meaning could be extended, reinvented or contested, as advertisements yield elaborate inferential interpretations when readers 'work' on them.

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Natural, Artifactual, and Evolutionary Perspective

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Introduction: 3-D perception and the construction of perspective

Looking out at the world around us, we readily perceive our 3-D surroundings. The sizes of objects in our environment, such as tiles on a piazza, distant buildings on a ground plane, tools on a tabletop, or foreground and background people in a large crowd, are perceived highly accurately, at least within a certain spatial range. So too is the layout of these objects, that is, their distances from us and from each other and their relative dimensions. The process of the visual perception of a real-world 3-D scene occurs so easily and naturally that we hardly notice how we pick up information about it by vision. Here we will describe the features on which vision relies to gain impressions of size and shape, and the approximations it accepts in assessing the 3-D spatial layout of the environment.

Our visible environment is largely constructed of surfaces reflecting light to our eyes. The main surface is the ground or a floor, stretching towards the horizon. Grounds, ceilings, tabletops, and floors support other surfaces, specific objects lying on them or hanging from them. A terrestrial observer occupies a specific place in this kind of environment, and of course, everyone must view from somewhere. From whatever point a sighted observer looks at a 3-D scene, a pattern of light reflected by the surrounding surfaces will reach his or her eye (see Figure 1A). The projective geometry that determines this pattern of light is known as "natural perspective" (Kemp, 1990) but it is obviously explained through a conceptual elaboration based on optics and Euclidian geometry. The light pattern normally contains information about distances – optical features coming from the surfaces in the 3-D world that indicate their depth from the observer's vantage point. Often, the information is readily used by human vision with considerable accuracy. Therefore, with natural perspective determining the information available to the visual system, a basic question for the study of perception is: what optical features does the visual system use to perceive the layout of the real-world 3-D scene?

Natural perspective is a projective geometry, determining the pattern of light coming to the visual system. In other words, in the idealized world of geometry, a mathematical function projects the spatial layout of the 3-D scene into "incoming" optical features for the visual system. In order to now perceive the scene, the visual system must do the opposite. That is, the visual system relates the optics to a spatial layout of surfaces -- the perceived 3-D scene. This task of vision could be called "outgoing" or "inverse projection" (Niall, 1992; Niall and Macnamara, 1989, 1990; Norman, Todd, Perotti, and Tittle, 1996; Wagner, 1985), taking the pattern of light as coming from a 3-D scene (see Figure 1B). This inverse projection is a mathematical function, a good approximation to natural perspective's projective geome-

try. To understand spatial perception, we must contrast vision's useful "outgoing" inverse projection function to the "incoming" natural perspective that triggers it.

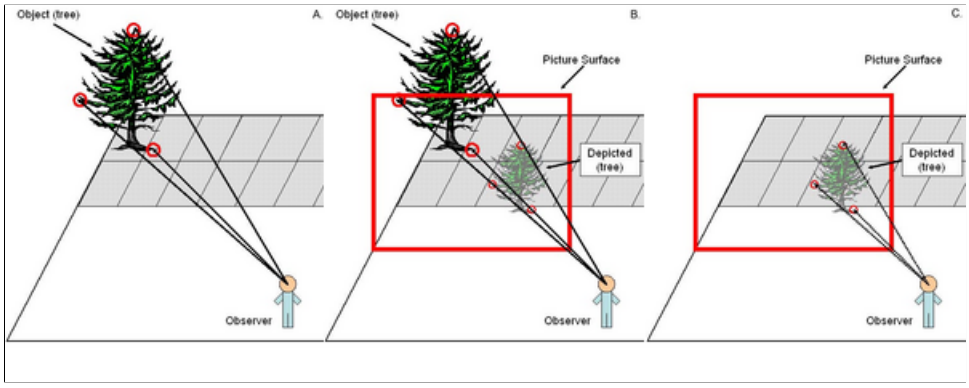

Figure 1. (A) The observer looking at the real-word tree receives a certain pattern of light, indicated by the three arrows. From this pattern the observer perceives the tree. (B) Perspective geometry allows a perspective picture to recreate that same pattern of light. (C) Looking at the perspective picture, the observer once again can have the same perception of the tree. Now, however, the pattern of light, indicated by the three arrows, is created by a picture of the tree, rather than the real-world tree.

If the only constraint on the world of surfaces and optics was that light travels in straight lines, then, a priori, vision might have adopted any one of many inverse projection functions. In this case, the features available to the visual system fit a perceived 3-D layout in an infinite number of ways (see Figure 1B). But there are many constraints in practice, and in the terrestrial environment only one of these infinite functions perfectly conforms to the laws of geometry and optics, namely, natural perspective. All other projection functions can be deemed to incorrect. But they are not all "equally" incorrect. Some are better approximations than others. That is, only some of these incorrect functions are close to the correct one under most practical circumstances. Hence we can ask: under what conditions vision's inverse-projection does work well? And what can make it wide of the mark?

Let us dub the actual vision's inverse-projection "evolutionary perspective", in contrast to "natural perspective". Our visual system did not evolve the latter, that is, the theoretically correct and ideal solution, the only solution that could apply in all possible circumstances (Juricevic & Kennedy, 2006). As is so often the case in evolution, a simpler but sufficient solution was selected, one that is adaptive in normal conditions of observation, with a highly practical range of applications for most purposes in the environment in which primates evolved. We choose the term "evolutionary" because it is a solution that is distinct from the perfect geometrical perspective based on the laws of optics. Its adaptive value results from the tinkering of the evolutionary process through natural selection.

Evolutionary perspective

To show the exact nature of the evolutionary perspective function, that is, how it differs from natural perspective, requires that an interesting challenge be posed to observers. They need to be asked for judgments over a wide range of distances. Evolutionary perspective closely approximates natural perspective in most natural, restricted settings -- if this were not the case, we would, as a species, have become extinct long ago. So, testing observers in confined settings will do little to highlight the differences between evolutionary and natural perspective. The differences appear only in highly extended circumstances (situations that perhaps humans did not

have to judge accurately until late in the evolutionary scheme of things). One such situation is perspective panoramic picture perception, with an extended ground plain or piazza, in other words, the kind of picture popularized by a technique invented during the Renaissance, which could be dubbed "artifactual" perspective since it provides the means of creating particular cultural artifacts.

Figure 2. Raphael's (1483-1520) *The School of Athens* (1510-11), Stanza della Segnatura (Vatican).

For instance, an observer looking at the late-Renaissance painting "The School of Athens" by Raphael (Figure 2) gets an impression similar to that from observing a real 3-D scene. The scene stretches into the distance with architectural precision. In other words, it is remarkably realistic. This realism is provided by perspective. Here, we outline how artifactual perspective generates pictures, and contrast this with vision's inverse projection function. We will use to term "perspective" to refer to the projective geometry used to make perspective pictures, whereas "natural perspective" refers to the geometry determining the pattern of light reaching an observer's eye from the real world.

Recall that natural perspective is a mathematical system that indicates how a real-world scene would project to a vantage point (see Figure 1A). To depict a scene in perspective, a vantage point is chosen and a picture surface is placed between it and the scene (see Figure 3A). Each point in the scene (e.g., the top leaf of a tree, the tip of a blade of grass, the border of a lake, etc.) is depicted by a point on the picture surface as determined by perspective projection. Specifically, each point of interest in the scene is joined to the vantage point by a straight line. A depicting point is placed on the picture surface where the line intersects it (see Figure 3A).

Perspective pictures look realistic because they artificially recreate the pattern of light of the real-world scene. The real-word scene projects a certain pattern of light (see Figure 1A), which gives the observer a certain percept of the scene. Perspective geometry allows a picture to recreate that pattern of light (see Figure 3A). Hence, looking at the perspective picture, the observer once again can have the

same percept of the scene, though now the pattern of light is created by a picture, rather than the 3-D real-world scene (see Figure 3B). Realism is achieved by recreating patterns of light typically found in real-world scenes.

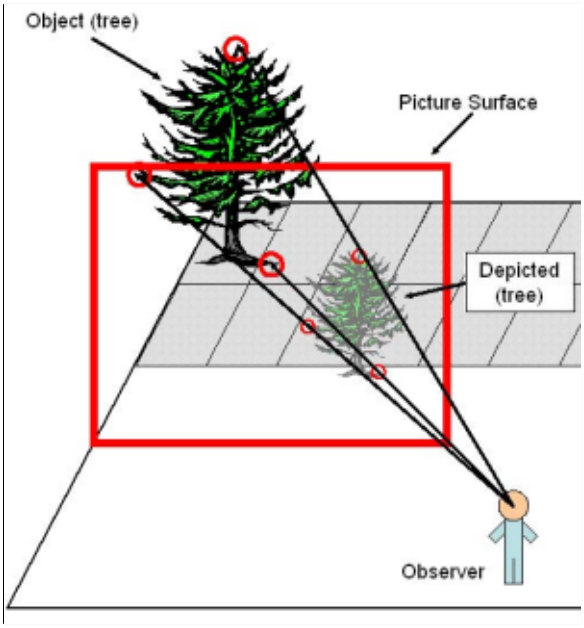

Figure 3. A perspective projection of an object (tree) onto a picture surface. Points in the scene (indicated by the large red circles) are depicted by a point on the picture surface (indicated by the smaller red circles) as determined by perspective projection.

Since a scene point is projected onto a picture surface, perspective is a projective geometry, used to depict 3-D scenes on 2-D surfaces. Its invention during the Renaissance is credited to Filippo Brunelleschi (1377-1446), sculptor, architect, and artisan-engineer. Reportedly, Brunelleschi invented this method to represent 3-D scenes while drawing an octagonal building, the Baptistry in Florence, with two of the sides receding at 45º to the picture surface (Tyler and Kubovy, 2004; Veltman, 1998). These sides would be drawn with converging lines. Brunelleschi is thought to have devised a geometrical proof showing how much convergence to use for an artist looking at the scene while standing a certain distance from the picture surface (see Technical Note #1). The first perspective painting that Brunelleschi showed to others was a picture of the church of Saint Giovanni of Florence. This is widely regarded as the first accurate perspective picture. Brunelleschi left no record of his perspective experiments, but probably passed his proof verbally to other artists. Fortunately, in 1435, Leon Battista Alberti (1404-1472) wrote a treatise, "Della pittura" ("On painting"), which was dedicated to Brunelleschi and contained a section on perspective.

Since its discovery in the Renaissance, artifactual perspective has been the standard method for making realistic pictures.

The Inverse Projection Problem for Perspective Pictures

The theory of geometrical perspective, producing a picture of a 3-D scene on a 2-D picture surface, is simple. Indeed, the mathematics involved is covered in most high-schools. Recall that the evolution of human vision has not followed these laws

precisely, but rather has adopted an adaptive solution which only approximates perspective geometry. What is this function that human vision follows?

When viewing a picture, vision must, just as when looking at a real-world scene, perform an "inverse projection" (Niall, 1992; Niall and Macnamara, 1989, 1990; Norman, Todd, Perotti, and Tittle, 1996; Wagner, 1985). Now, however, vision uses the light from the picture (rather than the real-world 3-D scene) to determine the depicted 3-D scene. Looking at a perspective picture, from the vantage point used to create the picture, means being in the same position in front of the picture that the artist was when drawing it. The observer should entertain directions traveling from the vantage point, to points on the picture surface, and beyond (see Figure 4). On the far side of the picture surface, at the end of each direction line is where the relevant real world 3-D point would be. Alas, there is an infinite distance on the far side of the picture surface. Depicting points establish the directions of the scene's points, but not their distance (see Figure 4). Where should the direction lines stop? Additional constraints are needed to settle on a particular inverse projection to a particular distance.

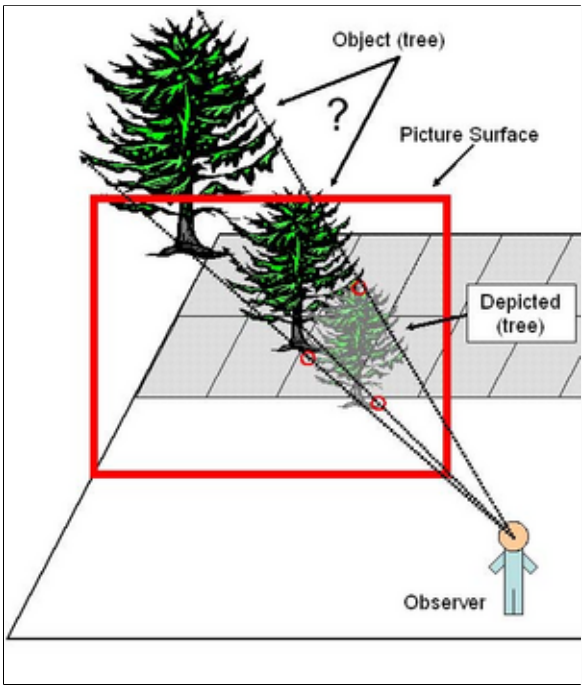

Figure 4. The "inverse projection" problem applied to perspective picutres. Given the perspective picture, how does the visual system decide which tree is the true real world scene?

The inverse projection problem is an induction problem. That is, given a puzzle with an infinite number of solutions, how is one solution picked? To solve the logical problem of induction in a particular setting, constraints have to be added to the puzzle. To solve the induction problem for natural perspective, constraints have to be put on the environment so it projects informative patterns. But further, to establish how perception uses the patterns, empirical studies – experiments on perception – are needed. The kinds of patterns that typify the real world must be shown surrounding a given depicting point in a picture, and observers' reactions to the pattern tested. The most significant pattern is the one characterizing a surface, and in particular the especially useful case of a ground plane, the matrix on which

objects stand, the extended and continuous surface that connects bases of objects in a panorama.

Empirical study reveals that there are distortions in perception of perspective pictures. Piero della Francesca reported that Renaissance observers complained of a lack of fidelity in perspective pictures (della Francesca, 1480/1981). He noted that many observers, "… were in doubt whether perspective is a true science, judging it falsely from ignorance." (p. 261). He went on to mention that the problem was that, in some pictures of tiles, for instance, "…those foreshortened appear larger than those not foreshortened." (p. 261). Further, perspective pictures have a single correct vantage point but pictures are often observed from many different vantage points. Many pictures that are drawn in perfect perspective appear distorted under two conditions, first when viewed from the incorrect vantage point and, second, when the picture is a wide-screen panorama.

Figure 5 depicts square tiles on a ground plane in perfect perspective. Many of the tiles in the middle regions often appear to be square tiles. This is the common phenomenon encountered when looking at perspective pictures, and has been called perspective robustness. But, as della Francesca (1480/1981) noted, many tiles often do not look square. For example, many tiles near the bottom corners of the picture typically look too long to be square. This phenomenon is referred to as perspective distortion. In this case the tiles look "forelengthened" (the opposite of foreshortened). The forelengthening distortion is often readily noticeable in the periphery of pictures (e.g., panoramic pictures taken with wide angle lenses), and is referred to as marginal distortion. There are also, however, central distortions (Juricevic and Kennedy, 2005a, 2005b, 2005c, 2006). For example, many of the tiles in Figure 5 that are off in the distance, close to the horizon, appear too compressed (too foreshortened) to be square tiles to many observers.

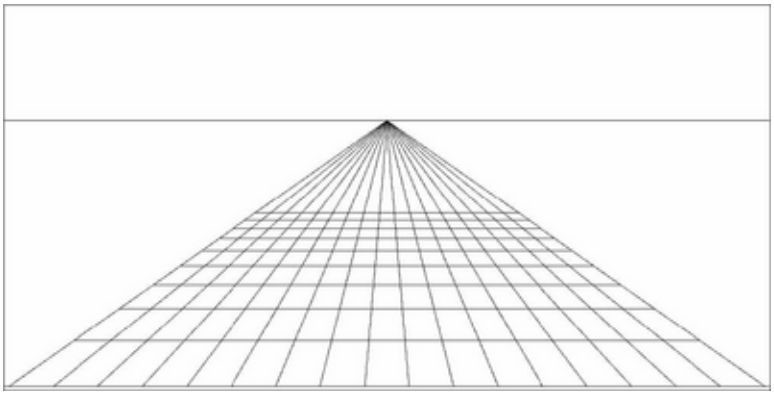

Figure 5. A perspective picture of a series of square tiles on a ground plane.

As can be seen, the "inverse projection" is only successful sometimes. Perception does not follow the laws of natural perspective exactly. It has its own solution to the inverse projection problem, a solution provided by evolution. What is this solution that human vision uses?

In theory, the solution is derived from a combination of "visual angle ratio" and "angle from normal" (see Figure 6). The "visual angle ratio" is the ratio of the visual angle of the depth of an object divided by the visual angle of the width of an object. The "angle from normal" is the angle between the line joining the observer to the central vanishing point for the object, and the line to a point on the object (see Figure 6). This solution to the inverse projection problem, utilizing the visual angle

ratio and angle from normal, is known as the ART (Angles and Ratios Together) theory (Juricevic and Kennedy, 2005a, 2005b, 2005c, 2006).

Why should these two factors be helpful in solving the inverse projection problem? Consider the standard, clear case of perceiving the scene in Figure 5, that is, square tiles lying on the ground. Let us look at the information provided by the visual angle ratios and angles from the normal of these tiles. Consider visual angle ratio first.

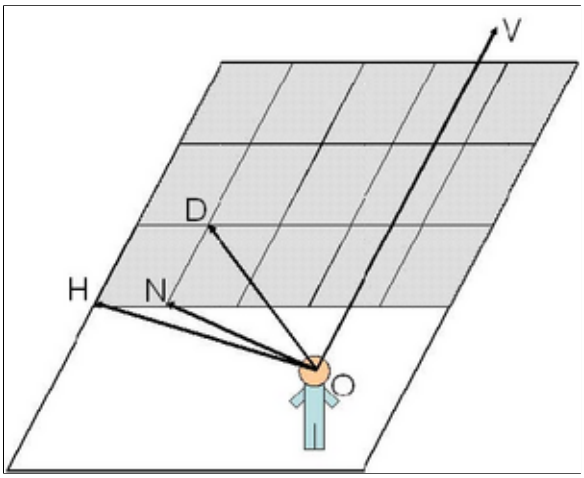

Figure 6. Consider the Observer (O) standing in front of a ground plane covered with tiles. The visual angle ratio of a tile is defined as: ∠DON / ∠HON. The angle from the normal of a tile is defined as the ∠VON.

Every object has a visual angle ratio since every object has a width and a depth. It can be shown that the range of possible visual angle ratios is from 0 to infinity (see Technical Note #3). A square on the ground directly below the observer has a visual angle ratio of 1 (meaning the visual angle of the depth equals the visual angle of the width). Looking at this square, an observer would perceive it as being square, that is, its apparent width to depth ratio, or "Perceived Relative Depth" = 1. Now imagine a rectangle that is wider than it is deep, that is, it has a relative depth less than 1. When this rectangle is on the ground directly below the observer, its visual angle ratio is less than 1. This rectangle would be perceived by an observer as being compressed, that is, as having a Perceived Relative Depth < 1. Obviously, objects directly below you are perceived as compressed (i.e., wider than deep) when they have small visual angle ratios (less than 1). They are perceived as square (i.e., as wide as deep) when they have visual angle ratios equal to 1, and they are perceived as elongated (deeper than wide) when they have larger visual angle ratios (greater than 1).

Now, consider a square that is directly in front of the observer and very far away (see Figure 5). As can be seen in Figure 5, as the distance from the observer increases, the visual angle ratio decreases. Also, the furthest tiles look compressed, that is, the smaller visual angle ratios lead to compressed Perceived Relative Depths. At the limit, when the tiles approach the horizon (infinitely far away), the visual angle ratios approach their limit of 0. In sum, tiles that are farther away have especially small visual angle ratios, and begin to look more and more compressed.

Conversely, a square that is to one side of an observer and very far away will have a very large visual angle ratio. As can be seen in Figure 5, the square tiles off

to the side from the observer can have very large visual angle ratios. This increase in visual angle ratio accompanies an increase in Perceived Relative Depth, that is, the tiles look elongated. Indeed, the tile's visual angle ratio approaches infinity as it moves to the side and its distance from the observer increases. In total, then, the visual angle ratio for an object in front of the observer can range from 0 to infinity, with 1 being specific to a square for objects on the ground directly below the observer.

The range of possible angles from normal is relatively small. For any object in front of an observer, the angle from normal can range from 0° to 90°. An object that is in front of the observer and very far away will have a very small angle from normal, approaching 0° as its distance from the observer increases. For an object on the ground close to the observer, the angle from normal is 90°, so the range is from 0° to 90°.

Let us study some revealing examples. Consider an observer looking at Figure 5. Each tile has a visual angle ratio and angle from the normal. Suppose that the tile in the central column, row 3 appears square to the observer. Now, what happens to the perceived dimensions of that tile when the observer moves? If the observer moves slightly, so that the visual angle ratios and angle from normal of that tile stay within the boundaries for square tiles, square tiles will be perceived. That is, perceptual constancy will occur. Indeed, one can easily see that many of the observer's distances will lead to perceptual constancy for a particular tile, since moving the observer to and fro in front of the picture only slightly will not change the visual angle ratios and angles from the normal much.

What about marginal distortions? Marginal distortions occur when a tile's visual angle ratio and angle from normal fall outside the boundaries for appearing square. A single picture can have tiles both within the boundaries for appearing square (perceptual constancy) and outside the boundaries (marginal distortions). Furthermore, distortions occur in the center as well as the periphery of pictures, for some tiles near the center of Figure 5 usually look compressed (due to too small a visual angle ratio).

It is obvious that in perspective geometry the visual angle ratio and the angle from normal both play a role in the projection from the real world.

Angle from normal consists of a single visual angle. Importantly, it changes as an object moves on the ground plane. It is direction information. Direction and information about a horizontal plane specify the 3-D location of the object. Once the direction and location on a plane such as the ground plane is known then, theoretically, the visual angle ratio indicates the perceived relative depth. A certain visual angle ratio could signal a perceived relative depth of 1 for a small angle from the normal, and a perceived relative depth much less than 1 for a larger angle from the normal.

That the two factors, visual angle ratio and angle from normal, are important carriers of information can be inferred from first principles. The ART theory, then, is a logical extension from first principles. However, the individual contributions of each of the two factors to the solution of the inverse projection problem by vision cannot be inferred from first principles alone. In order to determine the contributions of each factor, empirical study is required. Juricevic and Kennedy (2005a, 2005b, 2005c, 2006) conclude from empirical investigation of a panoramic picture that the solution that vision uses to find perceived relative depth is a linear combi-

nation of the two factors, with visual angle ratio weighted an order of magnitude greater than angle from normal, that is:

$$\text{Perceived Relative Depth} = \alpha(\text{Visual Angle Ratio}) + \beta(\text{Angle from Normal}) + c,$$

where α, β, and c are all real numbers, with α approximately 10 times β, and angles measured in radians.

In conclusion, the ART theory formula for Perceived Relative Depth is the inverse projection approximation to the correct solution according to natural perspective. It is vision's evolutionary perspective. The theory that vision relies heavily on visual angle ratio and angle from normal, while simple, is very powerful. First, it allows us to express the evolved visual system's perspective function, the function that describes spatial perception. Secondly, it accounts for both perspective robustness and perspective distortions. Helpfully, it predicts perceived depth according to variables that can easily be measured objectively. Angle from normal can be measured as the angle between the direction from a given vantage point to a point on the object, and the direction given by parallel receding sides of the object. Visual angle ratio is measured for the sides of the objects at the same, given vantage point. Further, the two factors arise more widely than in viewing pictures. Indeed, they are always present when we look at the real-world. As such, they are core terms for a general theory of perception, one that reveals vision's perspective as it has evolved in humans.

Conclusion: Previous Approaches to the Inverse Projection Problem

To be complete, we should add to our conclusion a note on alternatives to the ART theory and its two common-sense variables.

There have been several other major theoretical approaches that proposed a solution to the inverse projection problem, without using both the visual angle ratios and the angle from normal characterizing the ART theory. However, failure to use one of these two factors creates serious theoretical errors, it can easily be shown, as follows:

(1) Projective approach: vision uses perspective geometry (see Figure 7). That is, to solve the inverse projection problem vision uses the same geometry that was used to produce the picture. The Projective approach predicts that perspective pictures will look realistic only from a single, correct vantage point (i.e., the vantage point of the artist). This theory obviously cannot account for that fact that perspective pictures look realistic when viewed from many locations (perspective robustness).

(2) Compensation approach: vision uses perspective geometry and the "Artist's Distance", that is, the distance of the correct vantage point (see Figure 8). That is, to solve the inverse projection problem vision uses perspective geometry, and then corrects the perception to account for the difference between the "Observer's Distance" (where the observer is when they look at the picture) and the Artist's Distance. This, in theory, would cause the picture to look realistic from any position, and would be a possible explanation of perspective robustness. However, the Compensation approach cannot account for marginal or central distortions.

(3) Compromise approach: vision uses perspective geometry and the flatness of the picture plane (see Figure 9). That is, when vision solves the inverse projection problem, it also incorporates the flatness of the picture plane. This causes the per-

ception of the entire scene to be flattened by a certain degree. The compromise approach can account for the compression observed in central distortions. It cannot, however, account for the elongation seen with marginal distortions, or for perspective robustness.

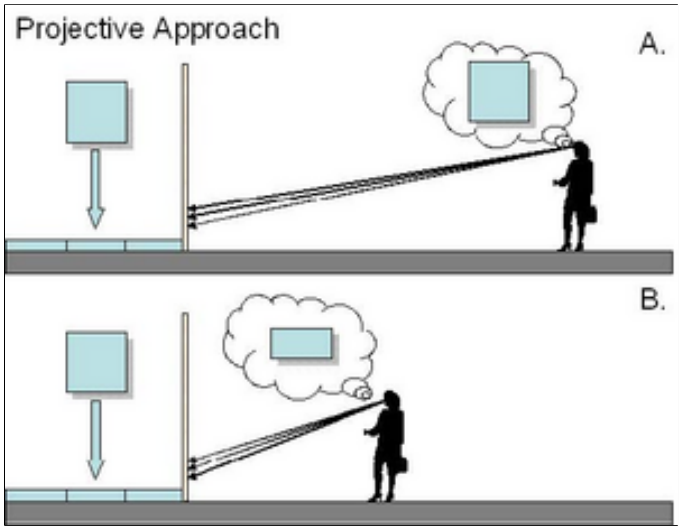

Figure 7. Projective approach. (A) Observer's Distance = Artist's Distance, Perceived Relative Depth is "square". (B) Observer's Distance < Artist's Distance, Perceived Relative Depth is "compressed".

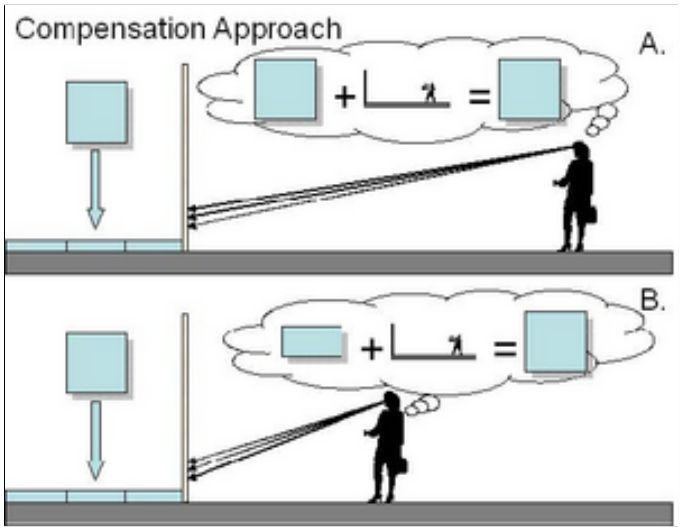

Figure 8. Compensation approach. (A) Observer's Distance = Artist's Distance, Perceived Relative Depth is "square". (B) Observer's Distance < Artist's Distance, Perceived Relative Depth is "square".

(4) Invariant approach: vision uses perspective invariants (see Figure 10). An invariant is a relation that is constant over some transformation. In the case of a perspective picture, there exist relations that are invariant over changes in the observer's position (i.e., they are invariant over transformation of Observer's Distance). Theoretically, such relations could be the basis for perspective robustness. The Invariant approach, however, cannot account for the distortions present in some perspective pictures (both marginal and central).

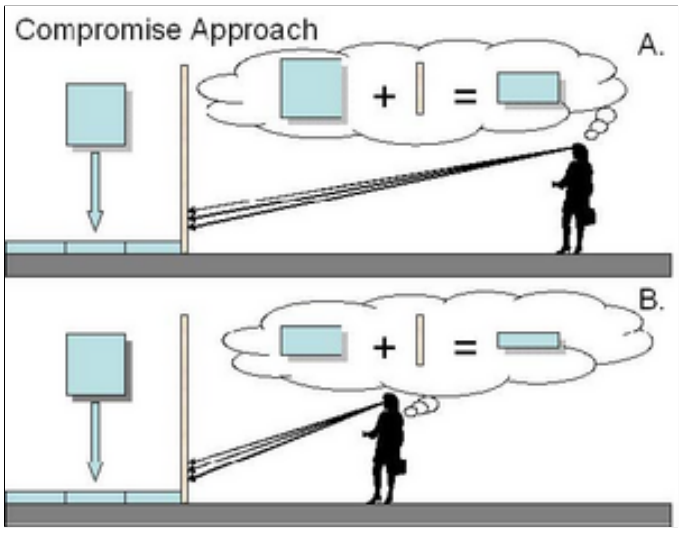

Figure 9. Compromise approach. (A) Observer's Distance = Artist's Distance, Perceived Relative Depth is "compressed". (B) Observer's Distance < Artist's Distance, Perceived Relative Depth is "very compressed".

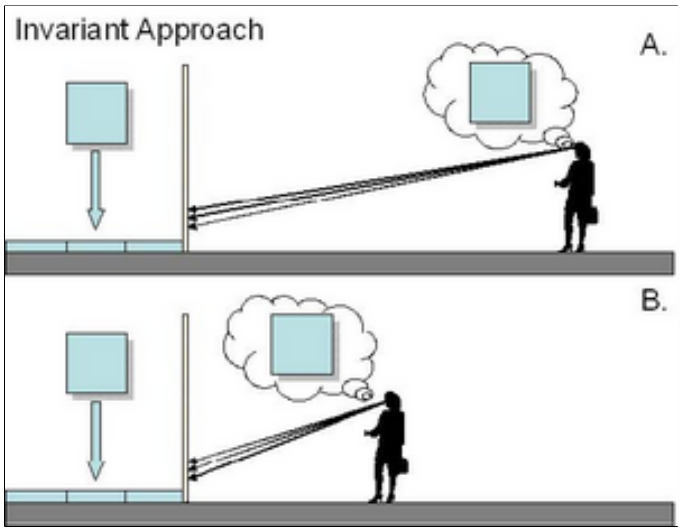

Figure 10. Invariant approach. (A) Observer's Distance = Artist's Distance, Perceived Relative Depth is "square". (B) Observer's Distance < Artist's Distance, Perceived Relative Depth is "square".

Appendix: Technical Notes

#1 – Brunelleschi's demonstration and proof

Brunelleschi devised a method for creating perspective pictures and calculating the proper amount of convergence for edges at 45º to the picture surface, as would be found in a picture of an octagonal building, such as the Baptistry in Florence (Tyler and Kubovy, 2004; Veltman, 1998). It is said that to show the picture was indeed recreating the same pattern of light as the real-world scene provided by Florence's Baptistry, Brunelleschi conducted the following demonstration (see Figure 11).

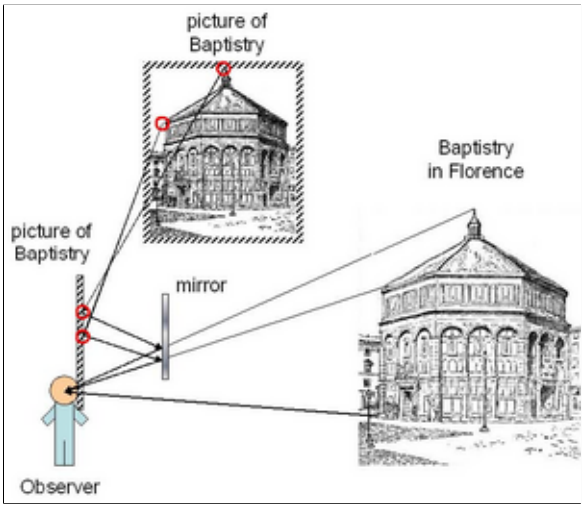

Figure 11. Schematic illustration of Brunelleschi's demonstration. Notice that the light reflected from the picture (dashed lines) perfectly aligns with the light coming from the Baptistry in Florence (solid lines).

Brunelleschi took his picture of the Baptistry and drilled a small hole in it. He then stood directly in front of the Baptistry, turned his picture so that the painted side faced away from him, and looked through the small hole. In this way, Brunelleschi could see the real Baptistry building, but not the painted side of his painting.

To complete the demonstration, Brunelleschi held up a mirror in front of his painted side of the picture. That is, this mirror faced Brunelleschi, and was between the Baptistry and the picture. The mirror blocked the view of the real Baptistry, but now reflected Brunelleschi's painting of the Baptistry. In this way, the mirror reflected the pattern of light produced by the painting. By moving the mirror in and out, Brunelleschi could test if his painting of the Baptistry recreated the same pattern of light as the real Baptistry. The two patterns of light were identical to observers, demonstrating that the perspective method that Brunelleschi developed truly did reproduce the pattern of light in a picture that was present in the real world scene.

The mathematical proof he is thought to have devised shows that a Baptistry side at 45º to the picture surface should be drawn converging to a point on the pictured horizon at a certain distance to one side of the center of the picture. Consider the observer's vantage point (see Figure 12). Drop a perpendicular to the picture surface, to a point on the picture called the "foot of the normal". Let the distance from the vantage point to the foot of the normal be x. The distance from the foot of the normal to the point on the pictured horizon to which the sides at 45º converge is y. Brunelleschi is thought to have proved that x = y. The reason is the side of the Baptistry at 45º is parallel to any line from the vantage point at 45º to the picture surface. A line at 45º to the picture surface from the vantage point must hit the painted horizon line at a point with distance x from the foot of the normal, by isosceles triangles (the angle at the foot of the normal is 90º, and the line is 45º to the picture surface).

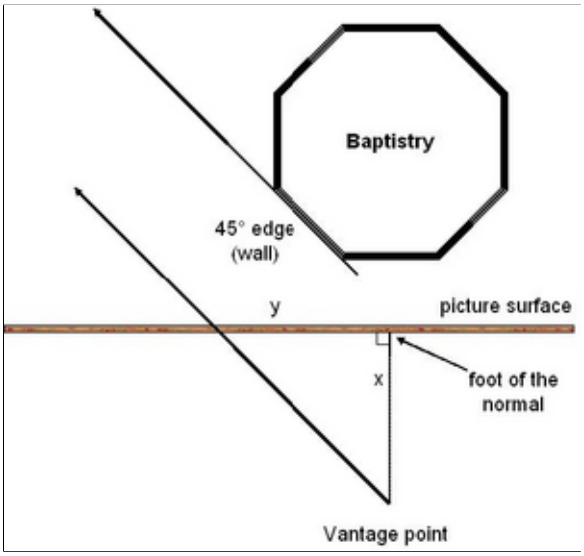

Figure 12. Overhead view of the octagonal Baptistry in Florence. Note that parallel edges of all surfaces that are at 45º to the picture surface will be drawn with lines converging to a point that is a distance y from the foot of the normal.

#2 – Extent of foreshortening and forelengthening

Consider a scene that is to be depicted on a picture surface. Relative to the picture surface, the scene has width (the dimension parallel to the picture surface) and depth (the dimension perpendicular to the picture surface). In a perspective picture, the projection of the depth dimensions causes "foreshortening". That is, edges that recede in depth are depicted by lines that are drawn shorter on the picture surface than lines depicting edges in width. This, however, is not the general case; there can also be "forelengthening", where edges in depth are drawn with lines that are longer than edges in width.

When does foreshortening versus forelengthening occur? Consider a square tile on a ground plane (see Figure 13). Foreshortening occurs when the angle between the normal to the picture plane and the deepest edge of the tile (α) is less than 45º. Forelengthening occurs when the angle between the normal to the picture plane and the deepest edge of the tile (α) is greater than 45º. At 45º, depth is neither foreshortened nor forelengthened, but depicted to a line equal in length to the line depicting width.

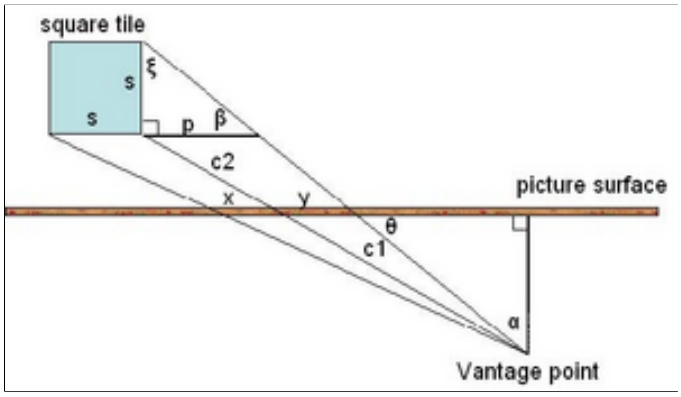

Figure 13. Overhead view of a square tile lying on a ground plane. When $\alpha = 45^o$, the projections of the sides (s) of the square tile (x and y) will be equal in size on the picture surface.

Proof: when $\alpha = 45^o$, depth is neither foreshortened or forelengthened. In other words, x = y (see Figure 13).

By similar triangles:

(1) $x/s = c1/(c1+c2)$.

By similar triangles:

(2) $y/p = c1/(c1+c2)$.

Therefore, by (1) and (2):

(3) $y/p = x/s$.

If x = y, then by (3):

(4) $p = s$.

By isosceles triangles:

(5) $\xi = \beta = 45^o$.

By parallel lines and (5):

(6) $\beta = \theta = 45^o$.

By triangle theorem:

(7) $\theta + \alpha + 90^o = 180^o$.

Therefore:

(8) $\theta + \alpha = 90^o$.

And by (6) and (8):

(9) $\alpha = 45^o$.

The proofs that foreshortening occurs when $\alpha < 45^o$, and forelengthening occurs when $\alpha > 45^o$ are similar.

#3 – Rate of change in visual angle ratio

Consider an object laying on the ground in front of you, for example, one of the tiles in Figure 5. This tile has a certain visual angle ratio. As the distance between you and the tile increases, this visual angle ratio decreases. In particular, the visual angle ratio approaches 0 as the distance approaches infinity. This is because of the different rates of change for the visual angle of the width (see Figure 14A) and the visual angle of the depth (length) of the tile (see Figure 14B). The visual angle of the width decreases at a slower rate (rate is linear with distance) than the visual angle of the depth (rate is squared with distance).

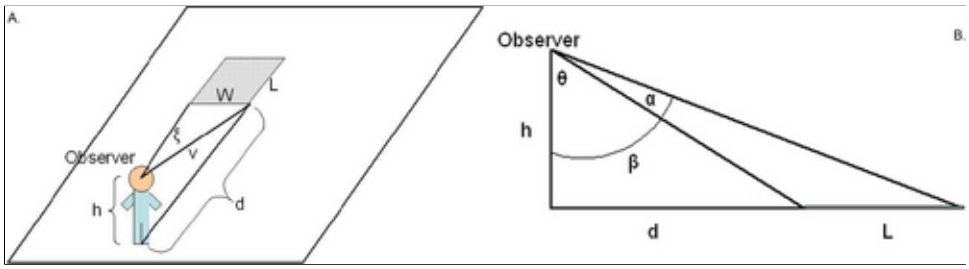

Figure 14. Consider a rectangular tile lying on the ground, with an observer with height h at a distance of d from the tile. (A) Overhead view of the rectangular tile. The visual angle of the width (W) is ξ. (B) Side view of the rectangular tile. The visual angle of the length (L) is α.

Proof: Visual angle of an object's width is inversely proportional to the distance of the object (see Figure 14A).

(1) tan ξ = W/v.

By Pythagorean theorem (see Figure 14B) and (1)

(2) tan ξ = W/ √(d2+h2)

For large distances (d), ξ is small. For small angles, tan ξ # ξ, so

(3) ξ # W/ √(d2+h2).

Therefore, ξ is proportional to 1/ √d2, in other words

(4) ξ ~ 1/ √d2.

So,

(5) ξ ~ 1/d.

Proof: Visual angle of an object's length (depth) is inversely proportional to the squared-distance of the object (see Figure 14B).

(1) α = β – θ.

(2) tan β = (d+L)/h.

(3) tan θ = d/h.

By the tangent subtraction rule and (1),

(4) tan α = tan(β- θ) = (tan β – tan θ)/(1 + tan β tan θ).

By (2), (3), and (4),

(5) tan α = [(d+L)/h - d/h]/[1 + (d+L)/h x d/h].

Simplifying (5), we get,

(6) tan α = L/(h + d2 – dW).

For large distances (d), α is small. For small angles, tan α # α, so

(3) α # L/(h + d2 – dW).

Therefore,

(4) α ~ 1/d2.

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