Semiosis & sign exchange: design for a subjective situationism, including conceptual grounds of business information modeling
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Every chapter is preceded by a short explanation of its contribution to my overall design. These preludes help you navigate the treatise. For my acknowledgements see the Postscript.

So, Prelude 1 is where I explain how Chapter 1 fits in. For introducing the Introduction, I first offer a quotation from Reality Construction in Society by B. HOLZNER (1968, p 14):

Frames of reference influence our perception, but even more they influence our interpretation of what we see, and the formulation of plans of action. Given a frame of reference, which directs our attention to a particular range of possible experiences, and equips us with methods of relating what we find to other knowledge, we do indeed feel that we discover reality, since we cannot vary our perceptions at will. Yet, we can vary the frame of reference and discover still different aspects of the actuality before us. It is, then, useful to describe the cognitive process as if it were an active process of reality construction on the part of the experiencing subject. When, finally, we formulate in some symbolic system or language what we have experienced, the resulting symbolic representation contains the residues of so many active transformations of the original experience, that we are entirely justified in calling it a “reality construct.”

A conceptual information model is a “reality construct,” too. Its relevance strongly varies according to the “frame of reference” applied by the modeler. This treatise presents – a design for – a different frame of reference for conceptual information modeling. I believe – see Chapter 2 for the Peircean concept of belief I adopt – that indeed it helps significantly to “discover still different aspects of the actuality before us.” And of course those aspects are not just different. The point of this treatise is that they are more relevant for conceptual models as “plans of action” for realizing successful information systems & services.

The Introduction prepares you for what to expect from the rest of the trea-
tise. HOLZNER’s concept of frame of reference is termed an ontology in my vocabulary. In the Introduction (Chapter 1) you will therefore find my announcement of an ontological design. It is what underlies modeling practice and thereby specific models. My theoretical design treats as especially relevant the themes of multiplicity and subjectivity. The resulting ontology I have labeled subjective situationism. If you want, you may also read it as subjectivist situationism.

I feel motivated – see Chapter 6 for the Schopenhauerean concept of motive I adopt – to apply a personal writing style. It rests on the special attention subjectivity requires. In Chapter 1 I also suggest some other adjustments to your expectations. My aim is that you should even increase your appreciation of this treatise as a piece of serious science writing. Openness to multidisciplinary influences is a first prerequisite.

Subjective situationism itself is documented from Chapter 2 on.
chapter 1

INTRODUCTION

1.1 answering a vital question

Artifacts in general, and information systems in particular, often fail to meet expectations of stakeholders. How can they be made (more) consistently successful? It is this question that I address. The direction in which I point at answers, and aim to provide some contributions at a fundamental level, is that of conceptual modeling.

Right away, conceptual modeling must surely seem an odd expression. Insiders to disciplines and professions of modern-day information systems mostly use it inadvertently. Outsiders are left guessing what conceptual modeling entails. Are concepts modeled? Or do models consist of concepts? And what does it all have to do with information systems, anyway?

The need for improving information systems along these lines is actually captured well by the label of conceptual modeling. For what counts as conceptual has once been established in opposition. I treat the vital question of information system quality from the assumption that the original concept that gave rise to conceptual modeling as its opposition is still dominant. Conceptual modeling therefore betrays a bias that still favors, say, nonconceptual modeling.

Nonconceptual modeling, then, is oriented at applying technology for the actual construction of information systems. Such construction modeling should ensure that a tool is made right. But is it the right tool? Though it seems obvious that doing the right thing deserves priority over doing something the right way, the technological orientation still largely determines the overall perspective brought to bear on information systems. This bias is usually counterproductive, sometimes even dangerous.

More terminology is ill-directed at present. The predominance of the orien-
tation at tool construction has resulted in ‘nonconceptual modeling’ being called design. Subsequently, conceptual modeling is known as analysis. As a label, it reflects the outlook that goes under the philosophical name of naive realism. Crudely put, it means that reality is built up logically from atomic objects which have absolute existence. Then all that is required for modeling reality, is merely (also read: objectively) to recognize the relevant objects and apply their proper names to them. Indeed, if human understanding of reality is just that, conceptual modeling is quite rightly called analysis. Naive realism, however, is especially untenable when different stakeholders are involved as is without exception the case for complex information systems. Understanding is not passive recording, but active construction. I contend that the ‘real’ design, with all the subjective creativity it implies and taking into account subjective interests of stakeholders, lies more in the activity of conceptual modeling than in that of construction modeling.

To escape from the bias of (digital) technology, conceptual modeling should be treated independently as much as possible. It deserves its characteristic foundation, too, which is conceptual in nature. The conceptual models I refer to can also be called business information models. The foundation I present consists of conceptual grounds, thus explaining the second part of the subtitle of this treatise.

A more independent position for business information modeling relative to construction modeling contributes to overall quality. This might seem a paradox when viewed from the traditional – and usually implicitly applied – technological perspective. But the benefits of establishing with relevant precision what is needed with priority over how to fulfill those requirements should be clear when a comprehensive view is taken.

Concentrating on conceptual grounds has several consequences for this

1. This does not imply that technology must be excluded from conceptual models. On the contrary, but it should appear integrated in such a model as an idealized design in R.L. ACKOFF’S (1978) sense. For the conceptual model is not about a specific existing technology but about a reality including a tool and possibly even a technology yet to be developed into existence.

The distinction between conceptual model and construction model also serves to protect a large part of the investments for modeling. When different specific technologies are deployed for a tool’s next version, this transition usually requires a different construction model. Of course with the provision that use requirements for the tool remain unchanged, the conceptual model usually does not need adjusting. The conceptual model’s relevance continues as long as the idealization of technology remains valid. This is especially beneficial when specific technologies rapidly change within quite stable conceptual boundaries for successive technology generations.
treatise. First of all, it is not about specific applications of business information modeling. In fact, practical modeling is hardly treated at all. The focus has been kept on conceptual grounds, for it is precisely my point that those have been decisively lacking for business information modeling. Applications of the principles developed in this treatise can be found in my book *Metapattern: context and time in information models* (2001).

A second consequence of concentrating on conceptual grounds is that this treatise goes well beyond such fundamental concepts for business information modeling, only. This shouldn’t come as a surprise. What else can be expected when the orientation at a particular – that is, digital, late twentieth century – technological perspective is removed on purpose? It is only logical that a (more) general perspective on information, knowledge and communication emerges. Though my primary interest remains with improving the quality of information systems, I entertain the idea that information science can also make productive contributions to other disciplines.

### 1.2 an outline of the treatise

Information systems are tools. Roughly speaking, there are two perspectives – to be combined of course, for optimal practical results – from which to improve the quality of a tool. The (most) traditional perspective relies on improvements in technology for construction and operations, thus leaving requirements – and how they have been arrived at – (largely) unquestioned.

The other way leading to an improved tool is to first concentrate on requirements. Central to requirements for an information system is a so-called conceptual information model. The pertinent (research) question becomes: How can such models be improved?

Underlying the activity of conceptual information modeling are assumptions. Taken together, such assumptions, or conceptual grounds, constitute an ontology. The very first step is to recognize that different ontologies are possible. The next step is to undertake an ontological design, i.e., to create an ontology with the express purpose of improving support of modeling.

The treatise *Semiosis & Sign Exchange* develops an ontology that supports the conceptual variety needed for designing ‘realistic’ models. Next, improved construction models and, subsequently, improved tools for increasingly complex human involvement with business processes may be constructed.

The main ingredients are [1] *Charles S. Peirce’s* triadic dynamics of semiosis (object-sign-interpretant) together with a triple development of his singular notion of ground, [2] *Arthur Schopenhauer’s* concepts of the will, of the intellect as an instrument of a unique objectification of the will (read: an
individual), of the individual's capacity for empathy and of modes of causation (according to which a sign counts as a cause aimed at a motivationally induced effect), and [3] the author's own modeling approach called metapattern, according to which every situation is a function of related objects and an object may exhibit different behaviors as pertaining to corresponding situations.

Combining [1] and [3] yields an enneadic, rather than a triadic, schema for semiosis. The explanatory power of a synthesis of realism and idealism consisting of nine variables is of course much larger than a system of three (plus one).

Adding [2] subsequently leads to a radical anatomy of meaning summarized by the slogan: Every sign is a request for compliance. For the sign's engineer enters into an exchange with a (potential) observer only to promote his interests (will). Given the predominance of the will, that is all (s)he can do and therefore actually does. The provision of empathy 'controls' to what extent individual behavior is social.

The ontology of subjective situationism – with the Schopenhauerian concept of the will as the ultimate, preintellectual ground – may be viewed as a superset of ontologies currently applied for conceptual information modeling. For it configures more variables. When some variables are ‘bracketed,’ subjective situationism simply 'behaves' like another ontology. It also means that subjective situationism provides a vantage point for analysis and evaluation. The treatise does not review specific modeling methods, but concentrates on a selection of primary sources – especially on speech acts and communicative action – that are among those which have influenced some modern schools of conceptual information modeling. Such underlying theories are shown to lack 'requisite variety' for modeling increasingly complex information systems.

Semiosis & Sign Exchange aims to contribute to the fundamental discussion on conceptual information modeling. Some of its concepts may appear unorthodox, when not outright unfamiliar. For example, subjectivism goes against the established objectivism of several modern scientific disciplines. As a corollary, the concept of shared meaning is, say, deconstructed. Even 'worse' from a strictly positivist point of view, the a priori nature of the will contradicts purely rationalist belief. However, such elements are all assembled into a theory with both increased rational explanatory power and improved support of practical information modeling. Maintaining focus, and for reasons of some restraint on the length of this treatise, the practical application of subjective situationism for conceptual information modeling has been largely kept outside the scope of the treatise. The reader is advised to consult the companion volume Metapattern: context and time in information models (2001).
1.3 succinct guidelines for reading

Figure 1.3.1 offers a visual guide to the material in this treatise. Central to my argument are the chapters that the figure collects inside an additional, encompassing rectangle. For most benefit, I suggest they are read in the order that is indicated. I don’t believe it is possible to arrive at a compete understanding when omitting one or more of these central chapters. Their order is important as material from an earlier chapter is assumed to be interpreted by the reader before embarking on the next chapters. Those Chapters 2, 3, 4, 6, 7, and 8 constitute a carefully constructed development, with the semiotic ennead (Chapter 4) and the sign-as-request-for-compliance (Chapter 8) as the two major conceptual designs.

As Figure 1.3.1 also indicates, Chapters 5, 9, 10, 11, and 12 are not essential for the design(s) of the conceptual grounds of business information modeling. Rather, they are examples of both more general criticism and their critical application. Therefore, even though these five chapters may all be considered supplementary from a constructive point of view, they serve the equally important but different purpose of pursuing a critical discussion.

The chapters on ECO, AUSTIN and MEAD may each be read independently,
provided that in each case all the preceding chapters that support the central argument are read first. The chapter on SEARLE requires reading the chapter on AUSTIN first, and the one on HABERMAS those on both SEARLE and MEAD.

A reader who feels pressed for time, and primarily interested in the practice of business information modeling anyway, may choose to read, after this Introduction, only the treatise’s final chapter. He could include the appendix on KnitbITs® that refers to the theory’s practical embodiment in computer software. In addition to this Introduction, also assisting the reader to gain an overview every chapter is preceded by a separate prelude; it explains how the chapter that follows contributes to the overall program of this treatise.

Each of the Chapters 2 to 12 may be considered to support a particular ‘hypothesis.’ These headlines are listed below for some additional overview, and as informal invitations to study how I propose how artifacts in general, and information systems in particular, can be made consistently (more) successful.

Chapter 2: Three times two equal six; PEIRCE’s formalization of semiosis may be extended to a hexad by differentiating a ground for every single element of his original triad.

Chapter 3: Ontological space is epistemologically subjective, which amounts to a degree of freedom in modeling. The concept of situation adds a(nother) full degree.

Chapter 4: Three times three equal nine; the semiotic ennead may be developed from the earlier hexad (see 2) through the recognition that differences can be held together by an identity that is otherwise empty; the – modeling technique of the – metapattern can be used to explicitly engineer the signature, context and intext aspects of signs (models).

Chapter 5: ECO’s theory of semiotics is no theory of semiotics, not in the Peircean sense, anyway.

Chapter 6: The conceptual scheme of SCHOPENHAUER is eminently suited for a postmodern ontology and is empirically sound, especially because he recognizes the limits of the (rational) intellect for determining behavior; ultimately, individual behavior is determined by a unique objectification of the will, or configuration of interests.

Chapter 7: A sign, every sign, is driven by interests of its producer (engineer).

Chapter 8: A sign, every sign, is a request for compliance for it is exchanged to seek an observer’s compliance with the engineer’s interest(s).

Chapter 9: AUSTIN recognizes contradictions in his concept of illocution but nevertheless persists in a theory of speech acts.

Chapter 10: SEARLE elaborates upon AUSTIN’s speech act theory, solidifying misconceptions about illocution.
Chapter 11: MEAD’s theory of social psychology suffers from one-sided sociological assumptions.

Chapter 12: HABERMAS does not only confuse because he builds on the contradictory work of AUSTIN, SEARLE and MEAD. His theory of communicative action is not so much a theory as it is an ideal; it is applied in prescription and judgment, rather than aiding explanation.

1.4 the variety of differences with unity

The application range of digital technologies is rapidly widening. Involvement of stakeholders is increasingly numerous and varied. An inquiry into quality and opportunity of information systems therefore requires fundamental scientific and professional attention. A particularly strong case for the need for improvements is stated by G.C. BOWKER and S.L. STAR in *Sorting Things Out: Classification and Its Consequences* (1999). As their observation perfectly fits my own interests, I offer it right here at the start of the problem sketch (p 308):

> [...] the toughest problems in information systems design are increasingly those concerned with modeling cooperation across heterogeneous worlds [...] and multiplicity.

The current perplexity is all the more surprising because such problems have already been raised in antiquity. That should illuminate their enduring importance.

It only takes abstraction from applying current digital information technologies for distributed use to recognize earlier approaches. For example, as C. SHIELDS reports in *Order in Multiplicity* (1999) – and, as he convincingly argues, contrary to the still dominant opinion in modern science – ARISTOTLE (384-322) makes homonymy2 productive for both his critical and constructive phi-

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2. SHIELDS does not mention polysemy. I treat homonymy and polysemy as synonyms here. A primarily lexicographical tradition exists in which they are treated as different. See *The Oxford Companion to the English Language* (T. MCARTHUR, editor) for the following account (1992, p 795): “Dictionaries usually put polysemous words with all their senses in one article and homonymous words in two or more articles, dividing each into senses and subsenses as appropriate. In doing this, lexicographers generally take the view that homonymy relates to different words whose forms have converged while polysemy relates to one word whose meanings have diverged or radiated.” Figure 4.5.6 captures my radical reversal of name and named.

As his terminology of homonymy indicates, ARISTOTLE proceeds from names to what-is-named. SHIELDS acknowledges that (1999, p 269) “Aristotle can fairly claim to have uncovered some logical space for analysis, a tertium quid between univocity, or definition in terms of necessary and sufficient conditions, and mere family resemblance. A

Though I definitely do not set out with the express goal of contributing a study on ARISTOTLE and HEGEL, nor have I actually written one, I believe that my proposal includes a comprehensive conceptual approach to designing “order in multiplicity.” It results from drawing a synthesis of identity and difference. How especially HAAS introduces his theme I can readily recognize.

An early modern writer on semantics is MICHEL BRÉAL (1832-1915). Polysemy is (1897, pp 139-140) “a phenomenon of multiplication[:] Language, besides obeying its own laws, is subjected to the rebound of outward events, which evade all classification. [...] In proportion as a new signification is given to a word, it appears to multiply and produce fresh examples, similar in form, but differing in value. [...] The more meanings a term has accumulated, the more it may be supposed to represent the various sides of intellectual and social activity.” BRÉAL thus clearly anticipates MANNOURY’s (1948) concept of language circle (Dutch: taalkring) and WITTGENSTEIN’s (1953) concept of language game. For he remarks (1897, p 141): “It will be asked, how is it that these meanings do not thwart each other; but we must remember that each time the words are placed in surroundings which predetermine their import.” Elsewhere, BRÉAL comments on the same theme of polysemy (1887, p 157): “Why does this multiplicity of meaning not produce either obscurity or confusion? Because the word comes prepared by what has preceded it and what surrounds it, has been put into context by time and place, and has been defined by the actors on the scene. [...] We have only to chance on a conversation in progress to see that words are a poor guide by themselves, and that they need that complex of circumstances which, like a key in music, fixes the meaning of signs.”

3. In *Logos, Mythos, Chaos: Metaphysics as the Quest for Diversity* (1987), D.L. HALL depicts traditional metaphysics as speculation on a rational, or logical order, i.e., (p 10) “as the science of uniformities.” He contrasts it with what he calls aesthetic orderedness, that is (p 11), “an alternative notion of orderedness celebrated by many poets and some few philosophers, a notion emergent from the appreciation of diversities.” Then, (p 10) “one may celebrate the manner in which just those items constitute themselves and their relations one to another in such a way as to permit of no substitutes.” Therefore (p 11), “[i]t is simply not the case that the uniquenesses establish no orders.” HALL continues (p 13): “For metaphysics to develop from the alternative ground of aesthetic order, the meaning of reference must be enlarged so as to permit its initial exercises to be performed with respect to diversities, not uniformities.” However, traditional metaphysics exerts a strong bias, for HALL remarks that (p 14), “forced to presuppose something in our
from the perspective developed in this treatise (2000, pp 10-26):
The continual reduction of multiplicities [...] signifies that a new structure is needed [...] Can philosophy restructure itself in order to think polymorphously? [...] And if thought-forms are expressed as logic, then what can it mean to think with logics? [...] What matters is precisely that which classical logic does not grasp, the place into which it cannot reach, that which eludes structural considerations, mere formal multiplications. [...] Two thousand years of metaphysics then imply[s] a radical failure in success, the success of identity and difference [...] Multiplicity is the becoming multiple of questioning to the point where the logic of calculation [...] no longer functions, the point where predication via identity and difference no longer accounts for thought – and further, to the point where they continue to function, and therefore permit another logic to emerge. [...] Only if thought is a motion can it begin to think multiplicity as such [...] And if multiplicity has a multiplicity of meanings, [...] then another language is necessary. [...] How does metaphysics think many objects, their identities as many, as well as their differences?

My research objective has been to inquire into design in a theoretically fundamental way by concentrating on conceptual grounds of business information modeling. A modeling language is explained from a behavioral theory about its users and their interaction. BOWKER and STAR analyze, and report on, the need for – again, what I call – conceptual grounds of modeling. Their conclusion is that (1999, p 291)

"[w]e lack a good relational language here. There is a permanent tension between the formal and the empirical, the local and the situated, and attempts to represent information across localities. It is this tension itself which is underexplored and undertheorized. It is not just a set of interesting metaphysical observations. It can also become a pragmatic unit of analysis. How can something be simultaneously concrete and abstract? The same and yet different? People are not (yet, we hope) used to thinking in this fashion in science and technology. As information systems grow in scale and scope, however, the need for such complex analyses grows as well.

This treatise shows that only a particular language, albeit relational, or whatever, is still insufficient to transcend such traditional oppositions as mentioned by BOWKER and STAR. First and foremost, the concept of language requires

Body, situation and language are an implicit intricacy[...]. The body implies, and comes up with, our words and actions. [...] All day long, it is as a bodily sense that we know what we do and say, what situation we say it in, and how it makes sense. [...] The body provides the focal implying without which there would not be situations or language. [...] Indeed, all the functions of the implicit intricacy in language and situations are functions of the body.

My attempt closely resembles what VALENTIN N. VOLOSHINOV (circa 1884-1936) proposes in *Marxism and the Philosophy of Language* (1929). At this point, I only draw attention to what VOLOSHINOV determines as the basic opposition to be surmounted (1929, p 79):

How can the fundamental polysemanticity of the word be reconciled with its unity? To pose this question is to formulate, in a rough and elementary way, the cardinal problem of semantics. It is a problem that can only be solved dialectically.

4. I have indicated the year of publication as 1929. That was the year of the book’s first edition. Throughout this treatise, and for all publications, in the main text I refer to the year of original publication. As I did not compare different editions of what has been published under the same title by the same author(s), I believe mentioning the year of original publication is the second-best way of honoring the chronology of ideas.

Information about the edition that I have actually consulted appears in the bibliography at the end of this treatise. All page numbers given pertain to such editions, many being not the original and/or a translation.

What first struck me about *Marxism and the Philosophy of Language* in particular is the clarity of the exposition. I am in no position to judge the quality of the translation from the original Russian, but L. MATEJKA and I.R. TITUNIK have certainly produced an English text that is eminently accessible.

Applying assumptions similar to VOLOSHINOV’s, W. HARTUNG et al. write about their *Sprachliche Kommunikation und Gesellschaft* (1974, p7, my translation from the German):...

“The point is to contemplate anew on the relationships between society, communication and language, and to do so on the foundation of Marxism-Leninism and the knowledge gained from linguistics and other social sciences.” Indeed, published at the ideological heyday of the German Democratic Republic under the supervision of its Central Institute of Linguistics, such an introduction serves to feed suspicion and forms an obstacle for scientific interests grown from western perspectives. Though suspicion is fully justified as, in spite of the professed attention paid to Russian publications (see dust jacket), for example VOLOSHINOV’s book is not mentioned at all by HARTUNG et al., certainly not only party-ideological but also (other) relevant issues are raised, such as the concept of situation in communication.

For a Marxist approach that applies more outspoken subjectivist assumptions, see for example *Dialectical Theory of Meaning* (1961) by M. MARKOVIC. For a synthetical treatment recognizing VOLOSHINOV as a “founding father” of semiotics, see *Social Semiotics* (1988) by R. HODGE and G. KRUSS.
The primary assumptions VOLOSHINOV applies as ground(s) for his theory are sociological, whereas mine are psychological. But he subsequently achieves a balanced view by making psychological provisions, too. As I introduce essential sociological provisions myself, it should come as no surprise that we find ourselves on a tract of common ground(s) even though we start from different perspectives. Many of our conclusions about the nature of language are quite similar. But several are not. If anything, the anatomy of meaning presented here in Part ii is more radically dialogical than the dialogical theory of VOLOSHINOV and M. BAKHTIN (1895-1975).

It is a matter of debate whether VOLOSHINOV actually wrote *Marxism and the Philosophy of Language* himself or whether it was BAKHTIN who had it published under the name of another member of what was later to become known as the Bakhtin Circle. I consider VOLOSHINOV the ultimate author for, as C. BRANDIST (1997) comments on this very subject,

[It] seems much more likely that the materials were written as a result of lively group discussions around these issues, which group members wrote up according to their own perspectives afterwards.

But how does concentrating on concepts such as language, meaning, and authorship contribute to addressing the vital question of the quality and opportunity of information systems? A preliminary sketch can already shed some light on the research approach.

Though important, improvements in – digital – technology are only a partial answer, at best. Critical for success is that each and every stakeholder finds, and continues to find, her or his relevant ‘stakes,’ or interests, adequately supported. This points to the need for communication, especially during design. However, the traditional approach(es)3 to complex problems of design, or modeling, has (have) been to try and put communication at the service of achieving maximum consensus among stakeholders. This treatise argues that wisdom does not at all reside in so-called shared or identical meaning. On the contrary, attempts at shared meaning must necessarily fail. It explains the failure of whatever is subsequently built on such erroneous ground. An orientation at individual behavior (A.W. COMBS and D. SNYGG, 1949) is therefore applied.

5. A treatment of different – kinds of – approaches which productively concentrates on basic assumptions is presented by R. HIRSCHHEIM, H.K. KLEIN and K. LYTTYNEN in *Information Systems Development and Data Modeling: Conceptual and Philosophical Foundations* (1995). The authors have of course applied assumptions of their own. Those are not yet as radical as mine, I believe, but generally point in the same, social-psychological direction. Underlying their exposition, they include an excellent bibliography.
This treatise aims to create the productive ground(s) that is (are) required to deal responsibly with design problems of ever-increasing complexity and variety. These conceptual grounds are primarily intended for application at business information modeling. However, they may be profitably applied along a wider range. Abstraction from a (strictly) technological orientation is taken as inspiration to cover grounds of semiosis and sign exchange in general.

1.5 science as design

From the outset, it should be clear that I realize that the scientific status of design is at present widely considered problematic. Design is often denied serious treatment – neglected, actually – due to reasons such as mentioned by Bowker and Star (1999). Yet, as J. Rossman remarks at the very opening of The Psychology of the Inventor (1931, p 1):

The outstanding characteristic of our civilization is its complete dependence on invention. Of course, in many of its appearances, design as innovation can be studied scientifically. But can it be performed scientifically, too? Underlying this treatise is the assumption that it can, and should. It requires an attitude that is different from how design theorist J. Christopher Jones pictures, in Design Methods (1981), the traditional scientist whose (p 11)

aim is to describe precisely, and to explain, phenomena that exist. His attitude is one of trained scepticism and doubt: his main tools are the experiments that he sets up to disprove hypotheses by searching for truth in a statement of the opposite.

What Jones himself does not ‘explain’ by his Popperian view is how science arrives at new hypotheses or even axioms, i.e., at theoretical innovation. He argues that (p 10)

designing should not be confused with art, with science, or with mathematics. It is a hybrid activity which depends, for its successful execution, upon a proper blending of all three and is most unlikely to succeed if it is exclusively identified with any one.

But, then, isn’t innovative science what such designing is all about? Doesn’t it include the more conservative science-as-studying, just as it includes aspects of art and mathematics (also read: formal modeling)? Indeed, what will undoubtedly confuse traditional scientists in what follows is precisely the blend that Jones suggests for design. Aware of possible misinterpretations, I nevertheless persist in applying a design-oriented scientific paradigm. I believe it to be essential both for the result of successful theoretical innovation, and for a responsible account on the process of achieving it. I want to support the case, not only for a specific science of design, but also for every science characteristically implying a design aspect.
Actually, an important tradition exists for integrating discovery and innovation with justification into an overall theory of science. This is documented by C.A. VAN PEURSEN in *Ars Inveniendi* (1993). The subtitle of his book is (my translation from the Dutch) *Philosophy of Inventiveness, from Francis Bacon to Immanuel Kant*. VAN PEURSEN proposes that ars inveniendi, or the art & science of discovery (p 7, again my translation),

has historically occurred especially [...] when new worlds are unlocked, both literally (geographical discoveries) and figuratively (new and groundbreaking methods). More importantly, this theme [of ars inveniendi] appears highly relevant for philosophy and scientific theory building during our current period.

He attributes to GOTTFRID W. LEIBNIZ (1646-1716) the proposition that (p 99, my translation from the Dutch)

it is precisely the task of the ars inveniendi to confer rationality upon apparent irrational imaginations.

Invention, or design, can yield advances in rationality especially when an originally irrational experience is given a conceptual position, i.e., is included as a concept into a rational scheme. As VAN PEURSEN (1993, p 200, my translation from the Dutch) attributes to KANT (1724-1804):

This heuristic function of all Ideas [also read: conceptual grounds] implies that reason reaches beyond perception. It delimits ‘transcendence’ indirectly (beyond the limit) to permit inventiveness inside the domain of both perception and scientific knowledge! Ideas exemplify ground rules which are not formative in nature, i.e., they do not produce concepts that can be proven. Instead, Ideas regulate inventiveness, that is, their nature is heuristic. [...] (p 201) The great Ideas belong to the reason and thus outreach what is strictly empirically given.[3]

In mathematics, prime examples are the concepts of zero and the infinite. A Marxist theory such as VOLOSHINOV expounds rests on the concept of social class. Still referring to KANT, VAN PEURSEN stresses that (p 201)

[the cohesion of Ideas does not occur by coincidence, as in their application to an arbitrary goal, but originates from an inner structure of interests.

The inner, subjective dimension of interpretation serving outer-directed interests has subsequently been more radically stated and developed by SCHOPENHAUER. For the behavioral theory of communication proposed in this treatise, I have therefore adopted SCHOPENHAUER’s concept of the will.

As for my overall method, all along I am especially conscious that (VAN PEURSEN, 1993, p 214, my translation)

there is a continuous tension between emphasis on a closed method of proof (ars iudicandi) on the one hand, and emphasis on the more adventurous ars inveniendi on the other.
Design problems of increased complexity and variety require for their solutions an approach, or method, with an increased variety to match. This simply follows from W.R. ASHBY’s Law of Requisite Variety (1956).

A design approach must itself be designed, too, of course. Aiming to secure the largest variety imaginable, *Semiosis & Sign Exchange* establishes conceptual ground(s) at the ontological level. With respect to what can be expressed by it, the modeling language that is explained and applied is actually a metalanguage. The Peircean assumption of triadic irreducibility – which is essential for proper understanding of my development; the semiotic triad is presented in detail in the next chapter – dictates that the metalanguage entails an ontology, or a metaphysics as it may also be called.6

My particular proposal illuminates conduct in postmodern life. Postmodernity is taken here as a label for the quality and quantity of variety which have not yet been generally achieved for design approaches. To the reader, still here at the beginning, I express my confidence that (s)he will discover value in a both compact and flexible conceptual toolset.

At the ontological level, conceptual shifts are essentially – and tautologically, actually – paradigmatic. The announcement of a different ontology is indeed supposed to sound ambitious. And to someone who cannot believe how the nature of an ontology is always ‘just’ instrumental, it must surely even be an incredulous claim. Its claim to scientific recognition will also be rejected by anyone who does not believe theoretical innovation at the axiomatic level to be science’s business.

There are many obstacles for accomplishing a fundamental shift of referential frame. But, when successful, it is highly rewarding, too. I have conducted my research and design, and I report on its results in this treatise, because I recognize the need for an essential change of conceptual grounds. I hardly need to invoke T.S. KUHN’s famous *The Structure of Scientific Revolutions* (1962) to illustrate that a new paradigm is usually a response to an experienced crisis.

Referring to the distinction KUHN proposes, what I practice for this treatise is crisis science, rather than normal science. But then, even changes in metaphysics must be considered “normal,” as H.A. MYERS (1906-1955) explains in *Systematic Pluralism: A Study in Metaphysics* (1961). Especially relevant for my own proposal is that his argument for choosing the road toward pluralism is based entirely on the necessities of knowledge in our own time, the only argument that should carry weight in theory of knowledge.

6. I do not follow the point of considering ontology any different from metaphysics, vice versa. Or cosmology, for that matter.
Though I have remarked (see § 1.4) that multiplicity is a theme from classical thought, “necessities” such as MYERS recognizes have now increased to the extent that the knowledge climate is often labeled postmodern. He already states that (p 48)

“the most obvious quality of modern experience is that it yields many sciences, many thought-constructs, many systems, of one and the same object.

About metaphysics, MYERS argues that (p 56)

an important function [...] is to round off and complete, to harmonize and give a touch of finality to, human experience. Hence, the gaps which a system of metaphysics needs to fill in order that the individual may see life steadily and see it whole are determined by the shortcomings and the needs of the environment. A certain environment and certain needs in the world of action and emotion determine in some details the metaphysics which follows.

What follows here (still) resembles in many aspects what MYERS proposes. I believe, however, that as rigorous a metaphysics as possible for my “own time” should abolish his concept of knowledge as the impersonally communicable result (also read: shared meaning) developed from personal opinions.

I believe knowledge is only personal. As N. MANSFIELD concludes in Subjectivity (2000, p 175):

[T]he subject attains an absolute intensity of significance.

1.7 the paradigm case of information modeling

It is called situationism, this ontology. For an obvious characteristic of postmodernity is the large variety of situations that an individual person experiences at any stage of life. Situations often vary widely during life’s course, too. But some situations can be (more) pervasive.

An extended label for the ontology this treatise presents is that of subjective situationism. The added adjective of subjective reflects that the focus is on behavior of the individual/person. Consequently, the focus is also on the essentially individual organization of knowledge about the world.

In no way does this focus detract from the observation that individual behavior occurs to a large extent in social settings. It should also not be taken as a denial, at all, that an individual is shaped by the exchanges with other individuals (nurture) he has been engaged in. With the emphasis on subjectivity I stress, for example, that an even richer theory than VOLOSHINOV’s dialogism is possible by starting from an explanatory scheme that contains the individual as a structured participant in communication. Every individual, at any moment, is considered the unique ‘result’ of nature and nurture. Of course, a Marxist theory can hardly rest on such assumptions. Indeed, VOLOSHINOV does not succeed in providing a convincing argument for a privileged starting
point of a sociological nature when he criticizes (p 89):

Individualism is a special ideological form of the “we-experience” of the bourgeois class.

Invoking “the individual soul” betrays a bias – and it must have been at an unspeakable personal suffering; STALIN and his regime persecuted several members of the Bakhtin Circle – other than what he publicly attempted to proclaim. Again, it only serves to confirm why I easily recognize my anatomy of meaning as an extension to the main tenets of his dialogical theory of language. Both theories feature the focus on participants in communication.

Another characteristic of postmodernity is every individual’s exposure to, and responsibility for, what seems an ever increasing volume of artificially produced information. That is precisely why I find problems arising from a modernist-only ontology also clearly manifested through the involvement of individual persons with business information systems. For many specific and highly relevant interests are, as a matter of regular practice, often ignored or, even worse, actively opposed.

Do I have empirical proof for such judgments? No, for those are not hypotheses that I state and test in this treatise. Rather, I fully concentrate on the design for an ontology.

Nevertheless, I already firmly believe, and recommend it for that purpose, too, that subjective situationism offers a rich paradigm for conducting correspondingly different empirical research. As S. KÖRNER explains in Conceptual Thinking: A Logical Inquiry (1955, p 4)) about his own exposition, my design is at least undertaken with an eye to certain empirical facts: for what lends interest to its definitions is that they are not empty, and the possibilities which will claim our attention are possibilities often realised.

I also recall how BOWKER and STAR (see § 1.4, above) relate pragmatic units of analysis to metaphysical observations. Again, framing hypotheses for such “pragmatic units,” testing them, etcetera, all lie outside the scope, and depth, of my primary ontological development. In a similar way, many other statements should be taken especially as expressions of my inspiration to understand the postmodern world very much with the attitude of – what I believe is – classical philosophy.7

I specify my paradigm case for postmodern social activity even further as that of business information modeling. Currently, it certainly constitutes a new frontier in VAN PEURSEN’s (1993) general sense of chances and requirements for discovery and invention. Information modeling involves drawing

7. I therefore agree with A. KLUKHUHN (1989) who states that KANT and SCHOPENHAUER can (now) be considered as postmoderns.
up the predominantly conceptual design of (business) information systems. Especially when stakeholders are engaged in modeling, they have the best opportunity to secure their different interests. And they will have to use it for results. I clarify the conceptual grounds for respecting individual differences, and for thus even promoting responsible variety.

This view has admittedly taken considerable time to mature. A book that has been seminal for my theoretical development is *De bedoeling van informatie voor mens en organisatie* (1976) by G.C. NIELEN. My translation of its title is: The meaning of information to man and organization. I am hesitant, though, about the term of meaning. Another option is: The intention of man and organization with information. Anyway, I read it soon after it was published, and reread it many times in later years. I learn from it not so much the actual conceptual scheme NIELEN presents but value the power of a concise yet flexible set of concepts. And it is precisely the need for a dual interpretation of its title that I clear up in this treatise. What NIELEN still presents in a largely anecdotal fashion in the beginning paragraphs of his book – and he takes a similarly interesting course later in *Van informatie tot informatiebeleid* (1993) – is given here (much) extended, (more) formalized expression. At the same time, I limit formalization in its current academic sense of expression by symbolic logic as much as possible. Developing conceptual grounds should also be considered work-in-progress. The contemporary taste for formal expression I can contrast with one of the concise statements to be found in inspiring abundance in VOLOSHINOV’S *Marxism and the Philosophy of Language* (1929, p 78):

> Formalism and systematicity are the typical distinguishing marks of any kind of thinking focused on a ready-made and, so to speak, arrested object.

J. HINTIKKA (1996) expresses clearly how I also evaluate the role of formalization. I gladly borrow his pertinent statement (p x):

> This work is a philosophical essay, and not a research paper or treatise in logic or mathematics. Even though I will try to explain all the main formal details that I need in this book, I will accordingly do so only in so far as they seem to be necessary for the purpose of understanding my overall line of thought.

GENDLIN, too, argues for limits of logic (1962, p 141):

> We are employing the term “logical” to apply to uniquely symbolized concepts. A “logical relationship” is one that is entirely in terms of uniquely specified concepts. Whatever occurs in the creation, specification, or symbolization of concepts is obviously prior to their properties as finished products. Also prior is whatever must occur in the creation of the concept of a logical relationship itself.

My own experience is that formalization certainly can inspire new ideas. In “crisis science,” that is precisely the powerful service it must provide. Formalization should support, not hinder. HAAS remarks (2000, p 150):

> Logic is precisely not the exclusion of ambiguity: shallowness in science and superficiality in
philosophy mean omitting the difference of different terms, and then taking them as identi-
cal.
Indeed, unwarranted identity puts design at risk. I put forward a procedure for avo-
ing "ambiguity" when identity is seen as situationally disseminated. As in struc-
turalism, by drawing attention to additional possibilities the imaginative explora-
tion of – what has been designed as – a formal system can lead onto new ground. The paradox, especially of conceptual grounds as rationalized irrationa-
lties, is that such grounds must always be 'moved' as dictated by the inter-
est of the individual and of the (social) conduct he develops in their pur-
suit.

At this stage, a certain postmodern obscurity is still unavoidable. I am confi-
dent that my explanation, in Chapter 6, of SCHOPENHAUER's concept of the will provides adequate support. I also recommend a sympathetic under-
standing of D. BLOOR's (1976) strong program in the sociology of (scientific)
knowledge. It amounts to applying to a study of scientific knowledge (p 4)

8. I do not enter into a discussion of BLOOR's strong program. I completely agree with the antifundamentalist attitude toward scientific knowledge that he convincingly expresses. My conceptual designs essentially confirm his strong program and even contribute to a 'stronger' foundation for it.

While avoiding the terminology of strong program, it is also presented in Scientific Knowledge, A Sociological Analysis (1996) by B. BARNES, D. BLOOR and J. HENRY. An earlier critique of knowledge as (p 1) “best achieved by disinterested individuals, passively per-
ceiving some aspect of reality, and generating verbal descriptions to respond to it” is given by B. BARNES in Interests and the Growth of Knowledge (1977). Instead, (p 2) “knowledge is [...] actively developed and modified in response to practical contingencies.” Unknowingly almost echoing MYERS (1961), in Scientific knowledge and sociological theory BARNES observes (1974, pp 154-155): “[O]ne perspective can only be shown to be preferable to another in expedient terms, which means that the perspective adopted in this volume is itself a contingent one. [...] It is indeed plausible to represent this work as very much the product of its time. Until recently, it has been difficult to write of scientific knowledge without either seeking to justify it or assuming it to be justified. In the last two decades, however, the study of natural science has undergone significant and parallel changes in a number of academic disciplines. In philosophy, traditional forms of empiricism and the idea of a neutral observation language are coming under attack, together with the orthodox deduc-
tivist accounts of science. [...] In all discipli-

ines, there is a trend away from regarding science as the earthly embodiment of some Platonic universal; instead it is being treated more and more as a human activity like any other, or as a sub-culture routinely interact-
ing with other areas of society.” Of related interest is The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology (1987) edited by W.E. BIJKER, T.P. HUGHES and T. PINCH. J. ZIMAN has published a whole series of books on...
“the same values which are taken for granted in other disciplines.”
Explanations of knowledge should therefore involve “causality, impartiality, symmetry and reflexivity.”

1.8 on a postmodern introduction

In the modernist, and mostly positivist, tradition of science a particular term is normally believed to carry a universally unequivocal meaning. The obvious place to supply such definitions of key concepts is clearly the introduction part of a treatise. Then, the main text is occupied with subsequently applying them.

The Introduction here is consistently different. For example what specialized terms mean, I leave undecided for now. For meaning itself is considered a highly problematic concept. It all depends. On the particular situation, of course. What adds to meaningful variety is that it is even subjective what counts as relevant situations.

In the course of this treatise, I remove the assumption of identical occurrence and universal validity in the knowledge of different persons. Such shared meaning is impossible. That is ultimately why any firm definitions are absent, here.

But is it acceptable to go against well-established modernist ontology? Echoing BOWKER and STAR (1999), maybe not yet, I fully grant at this stage. But it is precisely the purpose of this treatise to establish compliance with the proposed subjective situationism as a more productive ontology. The measure for productivity is also explained at a fundamental level. In any case, it is logically impossible to express a richer theory in terms of a poorer one. The necessary concepts and their relationships simply fail. It is equally fruitless to try and describe what n-dimensional space entails by applying less than n dimen-

social determinants of scientific processes and knowledge, from Public Knowledge, the Social Dimension of Science (1968) to Real Science: What it is, and what it means (2000). See also Personal Knowledge (1958) by MICHAEL POLANYI (1891-1976).


M. SCHELER singles out metaphysics for a sociological treatment, even arguing that it is “notwendig personhaft gebunden” (my translation from the German reads: of a necessarily individual nature; see Die Wissensformen und die Gesellschaft, 1925, p 85).
sions, most likely even different dimensions at that. For a both entertaining and pertinent allegory I refer to Flatland (around 1885) by E.A. Abbott.

Throughout, indeed, attempts at defining terms for concepts are made. But I stress that they must be taken against the background of the ontology of situationism. So, in each case they must wait until I have sufficiently explained my proposal.

It leaves me with the dilemma of how to present that ontology for postmodernism, in the first place. No clear start seems available. Isn’t this the very predicament that is known as postmodernity? It might be, but I hardly consider it a valid scientific exposition. Yet, I do not try to solve this problem of transition, for it simply cannot be positively solved. Again, Voloshinov experiences the same difficulties. No, that is the wrong (also read: unproductive) concept. They are not difficulties but normal characteristics of the position of the theorist (1929, p 45):

We do not, of course, have in mind anything like a conclusive definition of these concepts. Such a definition (insofar as any scientific definition may be called conclusive) might come at the end of a study, but not at its beginning. When beginning an investigation, one needs to construct methodological guidelines, not definitions. [...] At the outset of an investigation, it is not so much the intellectual faculty for making formulas and definitions that leads the way, but rather it is the eyes and hands attempting to get the feel of the actual presence of the subject matter.

It is a vivid expression of the ars inveniendi that Van Peursen (1993) so forcefully brings to the attention as an integral aspect of viable science. As I cover similar ground as Voloshinov does, his subsequent warning is especially apt at the start of this treatise (p 46):

With each attempt to delimit the object of investigation, to reduce it to a compact subject-matter complex of definitive and inspectable dimensions, we forfeit the very essence of the thing we are studying—its semiotic and ideological nature.

But of course I attempt to guide the reader. I do so through my composition of this treatise, especially of Part i. As many concepts as possible are still familiar. Or they could be, anyway. In fact, all essential ingredients have already been prepared long ago, most notably by Arthur Schopenhauer (1788-1860) and Charles S. Peirce (1839-1914). I continue to quote extensively from Voloshinov (1895-1936), mostly in strong agreement with his positions.

I add formal depth to Peirce’s model of sign use dynamics. I put emphasis on differences between an object’s behaviors depending on its various situations. Basically, through combination, it amounts to a long-overdue rehabilitation of Schopenhauer’s metaphysics of will (also read: interests) and interpreters, which is now fitted with explicitly semiotic aspects, and is updated for the variety of postmodern life.
The most logical place to meet SCHOPENHAUER, the uncontested hero of my essay, would have been right at the start. However, I believe the resulting shock would likely alienate the reader. SCHOPENHAUER therefore comes last in Part i. A more gentle opening offers my commentary on PEIRCE, and the beginnings of developing his basic model of semiosis.

The design emphasis of this treatise should once more help to understand that I do not aim to give an exhaustive, traditionally academic, treatment of theories such as ‘designed’ by great thinkers as SCHOPENHAUER and PEIRCE. Rather, I look for, and find, inspiration to develop my own theoretical design. Beyond what I consider to be an inspiration for further innovation, I don't feel obliged to venture. My sources of inspiration are of course properly accounted for. It explains why large parts of the text will read, figuratively speaking, like my laboratory notebooks, containing as they do a direct report of the progress of the design process.

I realize that what I consider a necessarily responsible design attitude will remain unappreciated by scientists of a more traditional bent, i.e., persons favoring justification over discovery and invention. A completely one-sided attitude reflecting justification (also read: analysis) even leads to exclusion of discovery and invention (see VAN PEURSEN, 1993). However, I do not compromise the integrity of my ontological design, and of the way to present it. I accept the difficulties that a change of paradigm inevitably encounters. As in this case, especially, the emphasis is on interdisciplinary synthesis. Strictly parochial interests are ill-served and likely to suffer. I only repeat that I do not pretend in-depth specialization in any related discipline. What I try to reach is a general view to provide sufficient depth for (more) integrated design in the face of problems of ever increasing variety. It will certainly not meet the standards of many of today's highly specialized philosophers, linguists, etcetera. What I say to those objections is that, seen from an inverse perspective, their own works so far do not seem to adequately support – actual and future requirements of the theory and practice of – information modeling in situations of extended variety. An attempt from an essentially different orientation is required. Being qualitatively different, it is necessarily ambitious. Innovative conceptual grounds must be broad, generally speaking, while providing opportunities for specialization in the aspect of information modeling. I therefore emphasize the interdisciplinary nature of my efforts. A restricted, unidisciplinary evaluation and judgment (also read: interpretation) will miss the point. I hope my interdisciplinary design is acknowledged, not as the final result, but as a constructive step. It can always be only intermediary in the continued development of conceptual grounds.

For planning future steps, throughout this treatise (but see especially § 3.4 with attending notes) I include references to – what I recognize as – related
developments. I view it as a starting inventory. Again, as it is impossible to achieve I also do not try to keep up pretenses at exhaustiveness. The interdisciplinary approach should be clear enough through the references across a broad range.

Academic disciplines operate predominantly in isolated modes.\(^9\) Conceptual grounds for interdisciplinary work will do much to enable synthesis of theories developed from different perspectives. Where differences are valid for conduct, they should of course remain. Other differences only needlessly complicate theoretical and practical matters. Those should be eliminated across disciplines as much as possible.

\[\text{1.9 reorientation against extrapolation}\]

The treatment of my subject matter follows to a large extent from my critical attitude toward modernism. I understand modernism as a mechanism of one-dimensional extrapolation. More of the same is better, captures its characteristic approach. On the side of planned change, it is dominated by the desire for quantitative development. When something is valued as good, then more of it surely must be better, etcetera.

What modernists usually fail to take into account is that more added to more, etcetera, eventually ends up as too much. The original problem is not solved, but gets out of control. There is irrevocably some point beyond which quantitative changes also have noticeable qualitative effects. Admittedly, any such unforeseen effects could be for the better. But often enough, they are not. With the next (re)action regretfully styled in modernist fashion, too, usually wide oscillations result. (Again, I point out that no empirical proof for judgments like these is forthcoming. I state my – interpretation of my – own experience to indicate what inspired me doing ontological work.)

I also attribute this modernist nature to most of the theoretical work that I know of in information systems. For example, of what use is yet another isolated case study? Especially when earlier work has not been more than superficially valued, what uncritically builds upon it can never reach productive depth, too. Soon enough, this exhausts a particular approach, only to be replaced by the next fashion in research.

The paradox of postmodernity is that its variety makes conceptual tools for synthesis all that more important. For each and every different situation never escapes the overall unity of reality and the continuity of the person living it. It

\(^9\) A correlation with aspects of personality development of scientists is what B.T. Eidus-
certainly is valuable to open the possibility of analysis at the more detailed level of separate situations. To avoid the extrapolation of modernism, however, such analysis must always be augmented by synthesis. In other respects, situations are related, too.

There is now a waste of both effort and orientation. The modernist attitude dictates to completely give up one theoretical approach, and take up the next, almost without profiting from earlier results. It is the effort of apparently unpopular integration at the level of fundamental concepts that I undertake here. I don’t mind when the essential ‘novelty’ of my contribution is evaluated as only comprising a reorientation toward the classical ideal of conceptual unity. For a postmodern age the paradox dissolves through an integration of the concept of unity and that of difference. An ontology with requisite variety will support multidisciplinary cooperation. Different disciplines can continue to make unique contributions without continuously changing their fundamental approach, or what is mistaken for it.

As I have already mentioned, the ontology of subjective situationism is actually a configuration of ingredients of mostly respectable age. I also critically investigate ingredients from studies on meaning and communication that are often applied in modern research on information systems, and discard most of them. For example, none of their producers has apparently been aware of Voloshinov’s dialogical theory. With that particular theory, for all of them except Habermas that is hardly surprising. For its translation from the Russian first appeared in English in 1973, that is, after the publications by Austin, Searle and Mead that are reviewed here. But even later there still does not seem to be a place for dialogism, or for whatever relationally oriented approach, in mainstream theory. My point here is that I myself really only stumbled upon it, not so much by pure accident, but still without any positive lead and at a stage of the manuscript where I thought it was finished (see note 29 in Chapter 3). But now that I do know about it, I want to stimulate a deserved interest in dialogism and in other richer-than-mainstream theories such as significs (Mannoury, 1925, 1947, 1948, 1949), and by extension in the conceptual grounds that I present in this treatise.

That Voloshinov mainly appears as commentator here in support of my own, already developed proposal for, conceptual grounds is the result of my late discovery of Marxism and the Philosophy of Language. Thus, such additions actually illustrate once again that the emphasis in this treatise lies on my constructive development of a design, i.e., on innovation, rather than on comments, critical or otherwise.

I apologize that my composition may have suffered from reworking the text even at the final stage but I definitely wanted to include his voice. It is of much more than historical value. For references to Voloshinov, and to many
others, for that matter, should also draw additional attention to the limitations of theories of language and meaning currently popular in academics and often influential in professional development.

1.10 part i: deconstruction of shared meaning

The direction of my interests in meaning took on a more specific shape when I read *Group Decision Support Systems, an inquiry into theoretical and philosophical issues* (1991) by W.J. SCHEPER. In its first half, SCHEPER applies the premise that different persons can have so-called shared, or identical, meaning. It is then more of a problem how to establish it. And for the solution of so-called messy problems – which is what group decision support systems might come in useful for – it is highly desirable that their shared meaning is developed. So, shared meaning is good, more shared meaning is better.

SCHEPER does much to redress his earlier modernist bias in the second half of his book. But that was after his text had already inspired me to treat the particular issue of shared meaning in a qualitative manner, rather than quantitatively. At that time, my ideas were that the degree of identical meaning has an optimum that is dependent on several variables. And the measure for the optimal set of shared meaning would not so much be what is actually shared but, on the contrary, what is not shared. Then, I already supposed that participants contribute most effectively and efficiently to a joint effort when they complement each other.

In search of relevant variables, I thought it nevertheless wise to stick to my original schedule for my own first half of research and its publication. It consisted of three strands that I wanted to integrate. The first is that of semiotics. Inspired long ago by R. STAMPER's pioneering *Information in Business and Administrative Systems* (1973), and based on further readings in structuralism, especially, I had discovered the value of semiotics for studies in information systems. That is documented in my book *Aspecten en Fasen* (1991). For this treatise, and in the spirit of *ars inveniendi* (VAN PEURSEN, 1993), I choose to con-

10. A discovery at an even later stage has been G. MANNOURY's *Handboek der Analytische Signifika* (1947 and 1948). See also note 3 in Chapter 9. The concept of significs, especially as developed by the Significs Movement in the Netherlands during the 1920s, appears to have many grounds in common with subjective situationism. What is especially lacking in significs, though, is the radical orientation at the Schopenhauerean concept of the will (see Chapter 6) underlying subjective situationism.

The Bakhtin Circle of which VOLOSHINOV was a member, was active at about the same time as the Significs Movement in which MANNOURY was engaged.
centrate as much as possible on primary sources. That is why I include work by Peirce. The results are reported in Chapter 2.

Some additional remarks are in order about my sources. I cannot escape the impression that much of what is considered science is a largely self-contained process of academic secondary literature. I do not doubt its value for other purposes. But usually a reference just includes a name plus year of publication. It does not allow me to get an idea of what an author’s particular position toward a reference is. And this is what is really needed for the design aspect of science. So, I then read it for myself. This is exactly what I have done for this treatise. I have read in-depth several sources that I find are taken for granted too much for modern theories of information modeling. The results are often surprising. I find myself contradicting what secondary literature on the same sources usually only indirectly contains, that is, without explicit regard for conceptual grounds.

Again, I admit to not at all having consulted secondary literature to exhaustion. But who can still claim s/he does? And as I have already indicated, the aim of this treatise is not an attempt at an authoritative review of secondary literature in whatever specific discipline, thereby adding to the stock of secondary sources. My purpose is to create a theory-as-design. I believe the best place to look for inspiration is in earlier primary sources. In the cases of both Schopenhauer and Peirce, I find my choice fruitfully confirmed. Of course, by commenting on their work, and on the works of several other thinkers, I create a secondary source, too. However, I derive my opinion as directly as possible from the primary sources. I acknowledge that my procedure does not prevent me from possibly repeating opinions, i.e., duplicating earlier interpretations of primary sources. I am partly comforted, however, by the realization that is has currently become practically impossible to establish complete overview in any discipline, anyway. It is therefore only logical that I abstain from even any attempt at interdisciplinary overview. Rather, I scan related sources and by way of making a preliminary inventory report on those that I find relevant. The absence of extended discussion with other secondary sources is as much, as I am fully aware, an affront to traditional science as it is, as I am fully convinced, too, a necessary limitation for arriving at the change of paradigm attempted here. An exception, actually, is the work of Peirce. I believe it has been severely misrepresented in several of the publications that I studied as a primary source, especially by Eco. Such contradictions I also report. However, I do so completely without the ambition for recognition of myself as a Peircean scholar. I only test an inventory of ‘materials’ for their soundness for inclusion in my design. What during tests prematurely breaks under realistic strain must be discarded, as every responsible engineer knows.

Returning to an introduction of the three strands that I set out to integrate,
after mentioning an interest in semiotics as the first one I continue with the second. This second strand I had already fully developed. The modeling approach that attributes different behaviors to a particular object, with each behavior determined by a particular situation, is documented in a part of *Informatiekundige ontwerpleer* (Wisse, 1999) and, extensively, in *Metapattern: context and time in information models* (Wisse, 2001). The last-mentioned book is composed (p xiii) “of five parts, each focused on explaining a specific hypothesis.” Those hypotheses are (pp xiii-xiv):

1. The recognition of multiple contexts results in a powerful approach to conceptual information modeling. By paying consistent attention to the aspect of time, the approach [called metapattern] is augmented even further.
2. The metapattern is richer than purely object-oriented approaches to information modeling.
3. The metapattern offers a frame of reference for understanding and analyzing a variety of specific patterns.
4. The metapattern is eminently suitable for designing innovative patterns[, illustrated with a design case study] for financial accounting systems.
5. The metapattern helps increase uniformity in the structure for information systems, while simultaneously enabling the systems’ plural form behavior.

Chapter 3 of this treatise may be seen as the formulation of the ontology underlying the metapattern approach to conceptual information modeling. The metapattern technique is here summarized in Chapter 4. Its integration with my research on PEIRCE has proven fruitful. Whereas PEIRCE expresses dynamics of sign use by an irreducible triad of concepts, I progress the model of semiosis to an ennead. So, instead of his three concepts, I distinguish nine. The original three triadic elements of PEIRCE remain intact, but reappear as dimensions along each of which three more finely-grained concepts are positioned. At that stage of my research I really thought that I was well on my way to discovering relevant variables for explaining shared meaning in relevant detail.

Chapter 5 describes a study that I had originally planned for developing the semiotic perspective. What I hoped to discover were useful contributions to a constructive revision of the concept of shared meaning. Upon closer inspection, however, with *A Theory of Semiotics* (1976) ECO departs from PEIRCE’s fundamental semiotic concept. He violates the irreducibility of the triadic relationship between sign, object and interpretant. ECO reduces the triad to a dyad. As this reduction characterizes much of modern semiotics and, as such, bears a limiting influence on theories of information modeling, knowledge representation, etcetera, a critique is warranted. I have therefore retained Chapter 5. Where applicable, I call my own conceptual scheme as it develops in Chapters 2 up to 4 into the service of criticism. In addition, a critique of
ECO’s semiotic theory provides me with the opportunity to introduce some of the surprisingly balanced and important ideas of DE SAUSSURE (1857-1913), a pioneer in linguistics. I also quote from VOLOSHINOV as an illuminating critic of ECO’s semiotics, in his case avant la lettre.

The study of SCHOPENHAUER was planned, and executed, as the third strand of Part i. It entails the coup the grace for any naive concept of shared meaning. My Informatiekundige ontwerpleer (1999) already squarely rests on the assumption of subjectivity of all knowledge. But I need SCHOPENHAUER to make the radical consequences of transcendental idealism crystal-clear. What I was originally looking for in his work were directions on different orientations of participants in whatever activity they jointly undertake. That would support a case of complementary efforts. What I come away with from SCHOPENHAUER’s epistemology, however, is that differences between individuals are not only more characteristic, as I already thought, but even essential. The productive start of a behavioral theory is the assumption that there are nothing but differences between behaviors. As a consequence, shared meaning is a counterproductive concept.

1.11 part ii: compliance through exchange

All in all, Part i of this treatise has kept the structure I originally planned for it. I place emphasis on the individual sign user, first. That choice ends up even more relevant than I thought. As far as sign use, or semiosis, is concerned there is only the individual sign user.

What then, happens between sign users? Based on what I find is the surprising but inescapable outcome of Part i, in Chapters 7 and 8 of Part ii my corresponding theory of meaning is sketched. I call it an anatomy of meaning, for it only outlines a structure. From the anatomy’s perspective, VOLOSHINOV’s dialogical theory can clearly be recognized as closely related but lacking the psychological emphasis for added variety.

Freed from traditions holding that meanings exist exterior to, and thus are shareable by, participants in communications, my anatomy of meaning is strictly individualistic. Of course, as an exchange must be consummated, in an equally important sense my anatomy of meaning is through-and-through sociological, too. But what is invested in a sign as intended cause, at that particular moment all depends on the individual who produces the sign. And the particular effect it evokes at that particular moment all depends on the individual who acts as the sign’s observer. It is a psychology of momentary behavior in an actual exchange and a sociology of the development of behavioral potential through exchanges.
I repeat that it is especially SCHOPENHAUER’s conceptual scheme that spurs my radically intrapsychological assumptions. I simply apply the most fundamental of all his concepts. That is the will or, in the plural, are the interests. The will, or interests, of an individual person is prior to his intellect. In fact, his intellect is (only) instrumental to his (primary) interests. It aids an individual in his actions but, as SCHOPENHAUER remarks, not always with beneficial results. By definition, every individual acts in – search of – fulfillment of his interests.

An action may be carried out in – any configuration of – three different modes of causation, SCHOPENHAUER also informs. One of these modes seeks to elicit motivationally induced responses. It fits the nature of signs, or information, perfectly. It follows that one person will offer a sign in his exchange with another person for the purpose of gaining compliance with his own interests through the (re)action of the other person. All communication may be classified under this single approach. For even a so-called objective account directed at other is nothing but an attempt to convince the other about self’s necessarily subjective idea of reality.

Chapters 9 up to 12 contain my discussion of publications by AUSTIN, SEARLE, MEAD, and HABERMAS, respectively. As with ECO, it turns out that their theories of meaning are all qualitatively different from the anatomy that I propose. They all presume, one way or another, shared meaning. As VOLOSHINOV calls it, they are committed to abstract objectivism. I apply my own newly-found perspective, and that of dialogical theory, for critical appraisals of their works. It helps to uncover several premature contradictions which should be taken as an indication that concepts from monological speech act theory (AUSTIN, SEARLE) and the theory of communicative action (HABERMAS) must not be uncritically applied in the theory and practice of business information modeling.

The sequence of Chapters 9 through 12 results from the research orientation to offer comments on HABERMAS. He builds his own ideas on those of many others among whom I found AUSTIN and SEARLE on speech act theory, and MEAD on social psychology especially relevant as introductions to the theory of communicative action HABERMAS designed. The choice of treating AUSTIN (Chapter 9) before MEAD (Chapter 11) has admittedly been arbitrary. SEARLE (Chapter 10) who mainly elaborates speech act theory, however, needs to immediately follow AUSTIN. Directly or indirectly, these four authors have inspired the language action paradigm of information modeling.11 I have

11. Language action theory may be considered a branch of action theory and/or the philosophy of action. Limiting myself to – what I recognize as primary texts on the principles of – language action theory as relevant for conceptual information modeling, I have
tried to discriminate between sense and nonsense in their conceptual schemes. Especially where my comments have turned out predominantly critical, they should aid in understanding – shortcomings of – of the language action view of information systems.\textsuperscript{12}

The critical Chapters (nrs 5, 9, 10, 11, and 12) take up a large proportion of space while hardly contributing to the constructive development of my theory of semiosis & sign exchange. However, I decided against shortening them, moving them to an appendix, or even leaving them out altogether. I retain them in the main text. They serve the literally critical purpose of removing obstacles to more productive conceptual grounds of business information modeling. And the reader who does not need convincing can always skip those chapters. Then again, I especially consider the five critical chapters an incentive to consult primary sources\textsuperscript{13}.

\textsuperscript{41} not explored extensively the wider field. Like language action theory, analytically oriented theorists occupy the field of action theory, with often an ensuing estrangement through emphasis on logical formalization. An overview of the more general action theory provide, for example, M. BRAND (editor) in \textit{The Nature of Human Action} (1970) and H. LENK (editor) in \textit{Handlungstheorien interdisziplinär: Handlungserklärungen und philosophische Handlungsinterpretation II} (two volumes, 1978 and 1979). A key assumption of such action theory is a rational concept of the will, or volition. It is therefore opposite to the Schopenhauerean concept I adopt, especially in Part \textit{ii} on the anatomy of meaning, as a ground for my ontological design.

\textsuperscript{12} In the Netherlands, J. DIETZ (1992, 1996) incorporates the language action view into a modeling approach.

\textsuperscript{13} The difference between primary and secondary sources is usually not clear. I suggest to consider a source \textit{primary} when its author is mainly occupied with attempts at original theorizing, regardless of his degree of success. A \textit{secondary} source, then, entails mainly comments (upon primary sources or upon other, earlier, secondary sources). According to this criterion, large portions of especially the work of HABERMAS are secondary in nature. He presents his own theory of communicative action, so to speak, in between commentary. Likewise, here I develop subjective situationism while constructively applying and deconstructively criticizing concepts from other sources.
influence to the theory and practice of information systems. Such critical
evaluation was not at all planned at the outset of my research. It grew out of
my curiousness for primary sources. What they say differs much from my
expectations. However I find it does not matter scientifically it has turned out
differently. Regardless, my results should be reported. As critical inquiries they
are at this stage, I believe, necessary – and as far as I can judge, original – to
remove obstacles for development of (more) productive conceptual grounds
of business information modeling. I am aware that this goes against the pref-
erence of much of current academic practice, favoring increasing formaliza-
through successive secondary sources. But with exclusive attention for
continued formalization, innovation of a qualitative nature effectively stagn-
nates (VOLOSHINOV, 1929, p 78):

Characteristically, what undergoes systematization is usually (if not exclusively) someone
else’s thought. True creators—the initiators of new ideological trends—are never formalistic
systematizers.

My aim is to strike a balance. I develop some formalization, especially in visu-
alization technique. I stop at the degree that I judge necessary and sufficient
for the method of trial & error in proposing an “ideological trend” oriented at
information modeling. Conceptual grounds and ideological trend—and para-
digm, for that matter—are synonymous. To a similar degree I ground my criti-
cism in order to prevent some other theories from being effective in my own
design.

Chapter 13 stands somewhat apart. It shows how the theoretical designs
may put to practical uses. From the earlier paragraphs in this Introduction it
should already be clear that the emphasis of this treatise is theoretical. I there-
fore limit myself to examples. These are suggestions for applying the ontol-
ogy/metaphysics of subjective situationism, including the anatomy of mean-
ing whereby every sign is a request for compliance, to—some aspects of—
business information modeling.

An appendix introduces KnitbITs®. It concerns software, currently at pro-
totype stage, derived from the metapattern technique and to be applied for
developing information systems with full variety in situations and time. It is an
indication of a proof-of-concept, i.e., confirmation that the design of this
treatise actually results in improved practical information systems.

1.12 an additional note on method

Up to this point I have already, throughout this introductory chapter,
explained how I conduct my research and design. That includes explanation on
how I report the theory of subjective situationism here in a manner that is
consistent with it. An additional note should help to clarify my ‘reflexive method’ even further.

I like to think that my method for conducting ontological research fits the classical tradition of the philosophical essay. The next chapter, on PEIRCE, shows that with sufficient “cognitive mass,” even a limited supply of additional signs can fire a host of intellectual activity. The theoretical development continues in a similar vein throughout this treatise. It is the scientific method of the essayist to build a conceptual system through a process of writing trials (discovery and invention), evaluating them (justification), learning from errors, etcetera. It has an essential design orientation. Every sign that is produced in the process may set new dynamics of interpretation in action. It is actually all semiosis, but on a larger scale than is usually attributed to it.

I am fully aware that a confession to essay-as-method goes against the current grain in many academic circles. That used to be different, though, until approximately the beginning of the nineteenth century. Nowadays, a return is already accepted in other circles under the influence of, for example, JACQUES DERRIDA (1930—) and his deconstructivist approach to meaning. A major theme of his work is interpretive play between identity and difference (DERRIDA, 1967) which is precisely what subjective situationism sets out to conceptualize clearly.

How most finished treatises, by departing from an essayist track, are caricatures of the processes of their creation is acknowledged—with currently unconventional and admirable honesty, I would say—by S.J. GOULD in Ontogeny and Phylogeny (1977, p vii):

Although the result is, I trust, tolerably ordered, this book arose in a haphazard way. Its genesis and execution were probably typical of most general treatises. We rarely separate the logical and the psychological aspects of research and we tend to impute the order of a finished product to the process of its creation. After all, the abandoned outlines and unused cards are philosophers who are the most deeply critical of metaphysics.” For this reason, DERRIDA’s work is criticized for being only critical, not constructive. I value deconstruction as an often all too necessary prelude to construction; it is therefore definitely constitutive of construction. See quotations taken from MYERS (1961) throughout this treatise, and my own subjective situationism, of course, for concepts of metaphysics that avoid the elusive search for “ultimate metaphysical certainty.”
in the wastebasket and the false starts are permanently erased from memory. It is for this rea-
son that P.B. Medawar once termed the scientific paper a “fraud”; for it reflects so falsely the
process of its generation and fosters the myth of rational procedure according to initial out-
lines rigidly (and brilliantly) conceived.

In the current treatise, the logical and psychological even coincide. The order
and structure of semiosis is therefore optimal for presenting its result. To do
otherwise would indeed amount to committing a fraud.

What GOULD leaves out is the distinction between science on the one hand,
and academic institution on the other. In my view it is similar to the difference
between religion and church. My interests are scientific and professional,
rather than academic. A viable science attempts new, more encompassing
ways of understanding. No justification will ever have any ground without
discovery and innovation first establishing it. When academic institutions
continue their bias toward evaluation and specialist formalization, they do not
foster scientific innovation but conservation and inevitable decline.

When the essayist approach is considered unscientific by academic stan-
dards, I can only remark that the works I have reviewed, from PEIRCE to
HABERMAS, should all be judged equally unscientific. For their authors are
similarly involved – with in my opinion varying degrees of success, but that is
besides the current argument – in theoretical innovation. Or, are they innova-
tive designers without exception? An observation worth considering here is
that the ‘heroes’ of this treatise, SCHOPENHAUER and PEIRCE, only received
academic recognition long after producing their groundbreaking works. And
their radical innovations are often still not properly studied and understood
through academic evaluation. The same can be said about VOLOSHINOv. In
contrast, the established academics MEAD, ECO, AUSTIN, SEARLE, and even
HABERMAS will be seen to have fostered conservative theories while proclaim-
ing original status for them.

Conducting my own trials, etcetera, I often return to even my most funda-
mental layer, that is, to axioms. When I can profitably make modifications I do
so, even where it means rebuilding all that needs to rest on it. As I have already
indicated, the last major revision before declaring this treatise finished was
weaving in the perspective of dialogical theory as I learned it from VOLOSHI-
NOV’s Marxism and the Philosophy of Language. Finally, I am myself assured that
the conceptual grounds as I present them here responsibly support the post-
modern variety of individual life.

Regretfully, in many scientific disciplines it has become irregular to report
on research in first-person singular form. Again it is helpful to consider that
the authors reviewed here have no qualms about performing their discourse
on fundamental concepts as a subjective genre. But of course, the favored
impersonal style of – much of the rest of – modern academic science reflects
its particular ontology, that is, naive realism. My return to the classical essay, with the author explicitly standing for subjective opinions, is also designed to stress fundamental characteristics of subjective situationism. I point out once again that I designed the style of this treatise to be consistent with the ontology it presents. Another reason why VAN PEURSEN identifies VON TSCHIRNHAUS as a key figure in the history of philosophy illustrates my choice of repositioning fundamental concepts together in a triadic system of dimensions. Elsewhere such concepts are mostly considered disjunct. VAN PEURSEN argues that VON TSCHIRNHAUS inaugurates (1993, p 134, my translation from the Dutch) “a transition from ontology to epistemology, precisely as access to ontology.” In Experiencing and the Creation of Meaning: A Philosophical and Psychological Approach to the Subjective, E.T. GENDLIN remarks on “psychotherapy and related fields” (1962, p 49):

There is widespread dissatisfaction with the present method’s inadequacy in dealing with subjectivity, but subjectivity itself is not yet being employed as a reference of scientific concepts.

How I explain my personal writing in Informatiekundige ontwerpleer should help to clarify my design choice for this treatise, too (1999, p 11, here translated from the Dutch):

I emphasize that the text does not provide a linear report of completed research. And I did not practice empirical, positivist science in the sense of, especially, replicable experiments. Instead, [...] I give special attention to the individual intellect. This subjectivistic approach entails, by definition, that experiments by the intellect are irreproducible. It follows because the intellect is instrumental in both developing and executing the experiments on itself. Therefore, as part of every experiment – I might call it a process of thought that is consciously experienced, or is not – its very instrument changes, too. It is this assumption that destroys the ground for replication.

It definitely is a view of science that departs from objectivist canon.15 It is precisely for this reason that I believe it holds promise for addressing the vital question of information system and their stakeholders’ success.

15. For psychology, S.S. RAKOVER devotes a large part of Metapsychology: Missing Links in Behavior, Mind and Science (1990) to the “enduring problem” that elimination from scientific concerns of “private behavior” presents. J. RUESCH observes in Disturbed Communication that (1957, p 189) “[t]he communication engineers define successful communication as the establishment of identical information in sender and receiver. In the study of human communication, this criterion cannot be applied because neither participant nor observer can ascertain whether the statement of the first person has been completely understood by the second person.”