

Mediated Action and Representation On the Vicissitudes of Human Signification

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Abstract: The present text deals with a set of issues that are associated with human action and communication instrumented and mediated through complex symbol and sign systems. More specifically, it recounts in the medium of fiction analysis the complex signification issues involved in the transition from situated forms of action and communication, embedded in experiential knowledge, to abstract and disembodied systems of representation and meaning construction. The text is intended as a shortcut, perhaps an allegory, of the effects associated with the expanding social and organizational involvement of contemporary technologies of information and communication and the vicissitudes such an involvement is bound to give rise to.

1. Introduction

Contemporary man increasingly acts upon the world by means of data items, symbol structures and images that are constructed and mediated by an expanding ecology of technologies of information and communication. In a way, current developments recount a long journey of human distancing from immediate contexts through the invention and deployment of various symbol systems and schemes (Cassirer 1955; Eco 1976). Language, representation, specialized systems of writing and notation have been variously involved in the construction and mediation of the world. The diffusion of such systems have eroded and remade the contexts of immediacy and face-to-face human interaction in a long process of historical evolution (Goody 1986; Ong 1982; Wertsch 1991).

Contemporary technologies of information and communication expand and alter in some crucial ways the symbolic construction/mediation of the world. In so doing they bring new and in some respects far reaching effects on man-to-man and man-to-world interaction. Some of these trends have previously analysed by Zuboff (1988), Sotro (1991), Castells (1996), Kallinikos (1996, 1999) and others but the overall effect of these subtle changes has as rule been obscured by the euphoria created by the diffusion of the internet and the spectacular economic and political involvement of technologies of information and communication. Little wonder, the various debates on virtuality and the cyberspace do reflect the increasing awareness of a new sphere of real-

ity that is sustained by the expanding social and economic involvement of current technology (see, e.g. Benedikt 1991; Brook and Boal 1995; Hayles 1999; Heim 1998). But what is often missing in current literature is the persistent and systematic analysis of computer-mediated interaction by recourse to theories of human signification that recount the variety of modes of human action and communication and the broader historic and social context into which they have developed.

In what follows I seek to analyze some of these issues by placing their understanding within the context of fictional narrative. More specifically, I attempt to explore, discuss and exemplify issues of action and symbolic mediation by using fragments from the renown Italian novelist Italo Calvino's novel *Invisible Cities*. Such a venture may seem strange yet the philosophical vision and penetrating insight into the human condition of writers like Calvino and Borges (Sarlo 1993) more than justifies the project of bringing their work to bear on the understanding of some of the effects associated with contemporaries technologies of information and communication. Fiction has in addition the great merit in providing in one stroke a penetrating *in-sight* to the human condition that may otherwise necessitate lengthy analytical exposure. The present text has to be seen as an attempt to open a vista of meaningful questions, not to reach any definitive conclusions. Overall, the tiny part of Calvino's novel that I present and comment here is seen as an allegory of those vicissitudes and paradoxes that are associated with the distancing from immediate contexts and the human attempt to reconstruct, account for and control the world by means of the vicarious character of standardized systems of signification.

2. The Imperial Chess Game

Invisible Cities is a complex, non-linear, postmodern narrative that takes place in, at least, two levels. One level involves the description of fictional cities that unfold one after the other in several groups. The description of each group follows the encounters, in italicised writing, of the two major figures of the novel, the Chinese emperor Kublai Khan and the Venetian merchant Marco Polo. In the imaginary context of the novel, Marco Polo emerges as an agent of Kublai Khan, wandering across vast expanses of territory and returning periodically to the palace to report to the emperor on the state of his empire. The relationship and interaction between Kublai Khan and Marco Polo exemplifies and construes, in the narrative context of the novel, how the one as leader and the other as agent are separated by different life experiences, and divergent interests and preoccupations. As their names indicate, they are foreigners to each other and initially lack a common verbal medium to express their thoughts and exchange infor-

mation. In the absence of a common language the will to communicate must pass through the immediate signifying capacity of things and gestures:

From the foot of the Great Kahn's throne a majolica pavement extended. Marco Polo, mute informant, spread out on it the samples of the wares he had brought back from his journeys to the ends of the empire: a helmet, a seashell, a coconut, a fan. Arranging the objects in a certain order on the black and white tiles, and occasionally shifting them with studied moves, the ambassador tried to depict for the monarch's eyes the vicissitudes of his travels, the conditions of the empire, the prerogatives of the distant provincial seats.

The lack of common language and the recourse to objects as the only means of communication can be interpreted in many and not necessarily compatible ways. However, it gradually becomes evident from the unfolding of the novel that signification by objects is intended as a powerful metaphor for apprehending those modes of acting and signifying which are still tied to immediacy. Calvino construes an imaginary, evolutionary trajectory whereby accomplishment and communication initially bear the heavy traces of contextual involvement. Object mediated signification is powerful and suggestive yet lacks the abstract (and arbitrary) but standardized designations of verbal or notational systems of symbols and the rules by which they are brought into various combinations. Established systems of signification entail relatively clear designations of verbal or other signifying items that specify what they stand for (e.g. words in verbal language, items in accounting, notes in the musical score) while they are governed by combinatorial rules that provide the terms on the basis of which individual items are combined into greater signifying units. Object-mediated signification is different. It is, as suggested above, both powerful and forcefully constrained at the same time. It is the very physicality of things (i.e. a helmet, a coconut, a seashell, etc.) which is allowed to speak.

Signification by objects is inevitably tied to immediacy, the contexts in which objects have been encountered. For, though detached and removed from these contexts, the meaning and the world that objects qua signs are supposed to communicate cannot emerge unless the *object itself possesses the characteristics which it purports to convey* (Goodman 1976). A coconut may exemplify agriculture and the helmet an army but not the other way around. It is this intrinsic relationship of possession or the very affinity or similarity which ties objects to the contexts in which they have been encountered and thus empowers them to convey or relate to aspects of these contexts. We will confront this issue again, but let me meanwhile draw attention to what seems to me another crucial point in the passage, i.e. Marco Polo's attempt to reconstruct his

experience and convey his knowledge by arranging the objects in a *certain pattern*. It is not simply individual objects that signify but their shifting concatenations. The *ars combinatoria* of the signifying elements leads to what might be construed as an object-made discourse.

Kublai Khan was a keen chess-player; following Marco's movements, he observed that certain pieces implied or excluded the vicinity of other pieces and were shifted along certain lines. Ignoring the object's variety of form, he could grasp the system of arranging one with respect to others on the majolica floor. He thought 'if each city is like a game of chess, the day when I have learned the rules, I shall finally possess my empire, even if I shall never succeed in knowing all the cities it contains.'

This passage reveals in its evocative web of metaphors (i.e. the game of chess, signifying systems and their relationship to referential reality) the increasing complexity of human signification as it proceeds from individual items to the construction of greater signifying blocks and systems. Sense, i.e. the construction of meaning, has traditionally been connected with the transition from reference to structure, from the external world to which a text or a composite semiotic construction makes references towards its interior (see e.g. Barthes 1967, 1977; Leach 1976; Ricoeur 1977). There is a tension between sense and reference. Words or individual items in general combine into sentences and greater semiotic blocks whose meaningful content is driven away from the meaning and reference of individual items. The individuality of single items is overshadowed as their signifying content fuses and gradually dissolves into the totality of meaning constructed and conveyed by greater signifying blocks. Beyond the signification of individual items, it is the very logic, the structure or the system through which individual elements bear upon one another which opens up the space of meaning and reveals how a particular system and the artefacts it helps to produce signify. Kublai Khan, a connoisseur of the workings of such systems (a keen chess player), did not fail to observe that "certain pieces implied or excluded the vicinity of other pieces and were shifted along certain lines".

So Kublai Khan shifts his attention from individual objects and their separate significations towards the greater system formed by their combinations. But it is not particular combinations either which are the main interest of his concern, but the generative rules, i.e. the *ars combinatoria*, which lead to the object-made relationships and combinations manifested on each occasion. Individual objects and their instantiated combinations are no more than cues or means for grasping the rules which lead to the essential knowledge of the empire: "the day when I have learned the rules, I shall

finally possess my empire, even if I shall never succeed in knowing all the cities it contains.” The very image of the empire that results from the knowledge and application of the generative rules gains precedence over what such an image is supposed to refer to. Knowledge of the rules represents, it would seem, a special kind of knowledge, for it is concerned with mastery and control rather than disinterested reconstruction for the sake of knowing: “the day when I have learned the rules, I shall finally possess my empire.” Taken together the passages above seem to imply the following:

- objects are signs or symbols used as elements in a signifying system that conveys the experiences of the merchant;
- objects (signs) can be related to one another and combined into chains that exemplify, communicate and represent diverse states of the empire;
- concatenations of objects follow a *system* which, though relying on the signifying appearance and individuality of these objects, goes beyond them;
- such a system is generated and dissolved according to certain rules; it is these *generative rules*, neither the objects nor even the system, that constitute the essential knowledge of the empire.

Discrete, individual *elements* which can be *combined* into greater units according to certain *rules*, such is the picture of signification that emerges from the first two passages. It is a view that in essential points might be said to reecho technical models of signification and communication. Anyone acquainted with computational linguistics and the *symbolic paradigm* in artificial intelligence and cognitive science (Newell and Simon 1981) cannot avoid observing the structural similarities between its principles and procedures and the four requirements presented above. Complexes of acts or meanings can be broken down into a certain number of single or elementary units (symbols) which can be related and combined, according to certain rules (algorithms), to form larger signifying structures that reproduce the initial acts or meanings. Even the affinities with *semiotics* and *structuralism* and the principle of natural language's *double articulation* are obvious. However, the picture gradually becomes subtler, more complex and elusive, and it is therefore important to follow its slippery path. Relying on his observation of Polo's arrangements, Kublai Khan ponders over whether to replace the merchant's idiosyncratic system of representation with the ready-made and standardized world of the game of chess.

Actually, it was useless for Marco's speeches to employ all this bric-a-brac: a chessboard would have sufficed, with its specific pieces. To each piece, in turn, they could give an appropriate meaning: a knight

could stand for a real horseman, or for a procession of coaches, an army on the march, an equestrian monument; a queen could be a lady looking down from her balcony, a fountain, a church with a pointed dome, a quince tree.

Kublai Khan's comparison of Marco Polo's object-mediated and idiosyncratic discourse with the quadrangular and standardized world of the chessboard and the chessmen can be seen as a figurative way of describing the tension between context-embedded and abstract signification, between on the one hand the concrete and particular and on the other the general and universal. In the eyes of the leader, far removed from the action contexts of the empire, Polo's discourse appears as a useless bric-a-brac. It is on the contrary the finite and standardized world of the game of chess and the designations of chessmen yet to be agreed upon that could provide the possibility of reconstructing the facts and states that make up the empire. However, the potential designations of the signifying elements (the chessmen) remain ambiguous in a fashion that differs from the silent ambiguity of Polo's objects. For whereas the latter could be thought as indicators, samples or part-for-whole codings of the contexts in which they had been encountered, the chessmen's potential signifying ability extends over and embraces a multitude of phenomena: e.g. a queen could signify everything from a lady looking down from her balcony to a quince tree. And whereas the connection of "queen" and "lady" might be looked upon as alluding to an intrinsic (feminine) relationship between sign and referent, the affinities become more vague and distant in the other designations. In contrast to signification by things-objects, standardized embodiments of meaning break with similarity as a signifying principle. Intrinsic relationships between the sign and the referent are too much tied to immediate contexts to serve the functional interests of standardized representation other than in limited cases.

The transition to the standardized and ready-made character of the game of chess suggests that the replacement of experiential knowledge and the means by which it is conveyed by a formalized and decontextualized system of signification does not necessarily follow the logic of empirical incrementalism. Even though the homologies between Polo's object-made discourse and the game of chess are obvious, the latter involves a transition to a standardized system already in use. Actually, it is by means of the game of chess that Kublai Khan perceives and understands the peculiar combinations of the objects, rather than the other way around. Experiential knowledge is not simply transcribed or translated into another system but replaced and disregarded. Overall, the transition to the game of chess implies that the initial objects that bear the traces of the merchants's adventures, and have literally been involved in the contexts and sequences they attempt to reconstruct, are abandoned and replaced by the stan-

standardized appearance of chessmen, and their combinations dictated by an equally well delineated and standardized repertoire of rules.

The game of chess seems thus to provide a context of metaphors that seek to exemplify the puzzling questions and paradoxes involved in the ascent from the concrete and personal to the abstract, from context-embedded actions and meanings to standardized and decontextualized representations. Standardization always implies a disregard for the singular and contingent and a corresponding concern for the common and recurrent. Though the evolutionary path from immediacy to abstraction might be said to involve the entire history of mankind (Cassirer 1955), awareness of the questions involved sheds new light on the epistemology of the contemporary instrumental endeavour. Industrial and digital technology epitomize such an epistemological attitude by either regarding experiential knowledge as awkward and irrelevant or by decomposing and building simplified versions of it into the industrial and digital machines (Kallinikos 1996). Also modern societies might be said to witness innumerable times the social and epistemological steps and consequences of such a radical transition, on each occasion that a novel empirical domain is singled out and lifted from the edges of social life to become visible and institutionalized, the object of representation.

Following the trajectory of the whole narrative and drawing on what we have said so far, I would like to suggest that the passages referred to so far provide a nexus of metaphors that recaptures part of the issues and questions related to *the transition from an immediate system of signification still tied to sensations and objects qua signs to an abstract and disembodied language*. Selective objectification distances itself from worldly references and creates skew relationships with aspects of the world which attempts either to account for or create. Representation breaks with similarity as a basic form of designation. Or to put it otherwise, designation by similarity or any other kind of intrinsic relationship is overconstraining by being always tied to immediacy and the exterior world. The controlling and surveying attitude of representation needs to and does dispense with these constraints. The intrinsic relationships of similarity or affinity are exchanged for a worked-out and stipulated system of designations and combinatorial rules. But the challenge persists. Such a representing system must first demonstrate its ability to capture and reconstitute the empire:

Returning from his last mission, Marco Polo found the Khan awaiting him, seated at a chessboard. With a gesture he invited the Venetian to sit opposite him and describe, with the help only of the chessmen, the cities he had visited. Marco did not lose heart. The Great Khan's chessmen were huge pieces of polished ivory: arranging on the board looming rooks and sulky knights, assembling swarms of pawns, drawing straight or oblique avenues like a queen's progress, Marco re-

created the perspectives and the spaces of black and white cities on moonlit nights.

The way to the standardized system of representation – i.e. the game of chess -- is prepared and decided by the leader, for it would seem to fit better his detached position and his controlling preoccupations. The agent, on the other hand, has no choice but to rely on it to recount his experiences of the empire. Context-embedded knowledge must be either transcribed into another system or reconstituted and recounted by other means. The task is not easy but “Marco did not lose heart.” Now employing only the standardized significations of the chessmen and relying on the rules of the game he “re-created” the state of the empire. “The Great Khan's chessmen were huge pieces of polished ivory” which seems again to suggest a complex maze of metaphors and allusions. For in contrast to objects or “natural” signs, the pieces of polished ivory are human constructions. Both “polished” and “ivory” hint at the precious -- and reflecting? -- character of these elements and perhaps at the fact that they are the cumulative product of long and enduring human effort. As “huge” they are imposing and probably not easily manipulable. Institutionalized and standardized systems of signification seem to impose themselves on individuals. Without his objects-signs Marco Polo's knowledge has no other way of reaching beyond himself except through the deployment of the common and standardized world of the game of chess.

For Kublai Khan, the leader, the situation is different. It is precisely the road away from the contingent and particular towards the enduring and systemic that gives his detached position the ability to control, not necessarily know, his empire. Details and local situations must give way to regularities that cut across particular contexts helping thus the emperor to control his empire. In the different perspectives, interests and experiences of the novel's main figures one could perhaps recognize the fundamental tension mentioned above. That is, the tension between, on the one hand, the requirements of decontextualized knowledge and representation and, on the other hand, the characteristics of context-embedded modes of involvement and signification. Communication and involvement that rely on the principles of similarity and proximity seem to succumb or give way to the superior functional ability of distancing representation (Goodman 1976, 1978). However, various complications begin already to emerge:

Contemplating these essential landscapes, Kublai reflected on the invisible order that sustains cities, on the rules that decreed how they rise, take shape and prosper, adapting themselves to the seasons, and then how they sadden and fall in ruins. At times he thought he was on the verge of discovering a coherent, harmonious system underlying

the infinite deformities and discords, but no model could stand up to the comparison with the game of chess. Perhaps, instead of racking one's brain to suggest with the ivory pieces' scant help visions which were anyway destined to oblivion, it would suffice to play a game according to the rules and to consider each successive state of the board as one of the countless forms that the system of forms assembles and destroys.

I have already drawn attention to the difference between systemic relationships and the specific application of rules by means of which such relationships are produced. Rules, the *ars combinatoria* of the representational elements, are explicitly contrasted with the notion of system or model: "no model could stand up to the comparison with the game of chess." For, whereas a system or a model could be looked upon as a fixed and frozen arrangement of elements, the effectuation of a possibility, rules provide a wide space of possibilities whose realization seems to unfold along distinct but not determinate paths. Rules are, so to speak, constitutive but not determinative of the game (Searle 1995). They are not exhausted by their particular applications. As a metaphor for representation, the standardized and closed-upon-itself world of the game of chess reveals the resilient character and the almost unlimited capacity of representational systems to produce versions or to recapture the shifting state of the world.

But rules concern relationships between the representational elements themselves, not the particular designations, the worldly references of individual elements. They are combinatorial principles far removed from the tangible world and obviously devoid of denotative content. Rules are about the game, they concern the game itself. The application of rules, then, implies that individual elements signify -- mean and refer -- by entering into networks of fabricated, i.e. conceived and established, relationships. Objectified and institutionalized principles of combination (rules) are involved in the construction of the world, and this is a slightly different context to refer again to the projective or constitutive character of representation. Fascinated by the possibilities opened by the game of chess, Kublai Khan takes a further step into the disembodied yet promising world of representation:

Now Kublai Khan no longer had to send Marco Polo on distant expeditions: he kept him playing endless games of chess. Knowledge of the empire was hidden in the pattern drawn by the angular shifts of the knight, by the diagonal passages opened by the bishop's incursions, by the lumbering, cautious tread of the king and the humble pawn, by the inexorable ups and downs of every game.

The transition from Polo's object-mediated discourse to the standardized world of the game of chess, from context-embedded knowledge to decontextualized representation is thus consummated. Polo does not have to visit the empire any more. For, ironically perhaps, the knowledge of the empire is implicated in the finite number of representational elements and the set of rules that govern their combinations. The metaphor recaptures the epistemological steps which the transition from the concrete to the abstract, the irreversible turning away from immediacy and context-embeddedness imply. It also recounts, in the suggestive language of fiction, essential aspects of the debate surrounding the trajectory of information and communication technologies and their social and organizational involvement (e.g. Brook and Boal 1995; Dreyfus and Dreyfus 1986; Kallinikos 1996, 1999; Zuboff 1988). The knowledge once gained by the agent's expeditions, his direct confrontation with facts and situations is no longer relevant. Either has it to be transcribed and codified into a finite number of disjoint elements whose combinations are governed by a pre-given repertoire of rules or completely abandoned (Zuboff 1988). The fact that knowledge of the empire is implicated in the combinatorial rules of the representational elements suggests again an intrinsic tension between sense and reference. For whereas sense is definitively dependent on the direct application of rules and is therefore drawn towards to interior of representation, reference obeys a centrifugal movement and demands worldly anchoring.

3. The Limits of Representation

The radical step implied by Kublai Khan's decision to make a chess player out of an explorer seems to suggest that representation cannot exist except by negating the concrete and tangible world. Despite obvious differences, the evolutionary trajectory from speech through writing to electronic computation, and from tool-aided through machine-mediated to digitally-organized production, analyzed in the rest of this book, recounts the same problematic and epitomizes man's turning away from the tangible world of immediate totalities towards the dematerialized versions of representation. Such a radical shift is, however, not without problems:

The Great Khan tried to concentrate on the game: but now it was the game's reason that eluded him. The end of every game is a gain or a loss: but of what? What were the real stakes? At checkmate beneath the foot of the king, knocked aside by the winner's hand, nothingness remains: a black square, or a white one. By disembodiment his conquest to reduce them to the essential, Kublai had arrived at the extreme operation: the definitive conquest, of which the empire's multi-

form treasures were illusory envelopes; it was reduced to a square of planed wood.

The transition from the concrete to the abstract and the urge for an “essential” world implies by the same token the leap into a void and disembodied world. The *other* of the bulky, concrete and refractory state of things is an elusive and empty being. Calvino returns here again to the paradoxical relationship between sense and reference. What was the purpose of the game? What were the real stakes? Sense and meaning cannot totally dispense with reference. Even if sense is a question to be answered by the interior texture of a work, a fuller appreciation of what is posited in representation creates a centrifugal movement towards worldly references. Such a problem would, of course, have never appeared had the representational elements maintained unambiguous and demarcated worldly references. But the road, as we have seen, from things to words, from the molten world to representation and vice versa is a long and crooked one. Neither individual elements nor representation as a system (discourse) recapture and refer to tangible totalities. Had that being the case then the disembodied world of representation would have a definitive anchoring in the solidity of things, and meaning would be clear and transparent. But representation dispenses with similarity and intrinsic relations as signifying conventions. It proceeds selectively by objectifying facets of things, states and processes. Such distancing from the tangible being of the world hollows out meaning from the inside.

The *nothingness* which Kublai Khan confronts might be interpreted as the result of successive abstractions conveyed by elements whose materiality cannot and does not coincide with that of the referent.¹ As suggested above, the question of reference cannot be wholly exhausted and understood by recourse to individual elements. Of course, it would be possible to assume that reference cannot but be realized through individual elements. For, in contrast to the synthetic character of sentence and discourse, individual elements may seem to provide unambiguous correspondences to worldly things.² However, rather than being simply defined by unambiguous one-to-one correspondences to the extra-linguistic or extra-representational world, representational elements gain their signifying space through a complex and ramifying network of relationships with other linguistic or representational elements. Such an interdependence concerns the material (signifying, syntactic) and semantic constitution of the sign, and might be said to be intrinsic to signification. It creates the requirements for the very emergence

¹ That is, the arbitrary character of the sign which breaks with the principle of similarity.

²Ricoeur (1977) attributes this argument to Frege, the originator of the terms "sense" and "reference" and that which follows it to Benveniste; recall also, in this context, the structuralist notion of the value of the sign.

of the rules by means of which individual elements are combined and refer to each other.

Thus, it is Kublai Khan who becomes the cognitive victim of disembodied signification. The same leader that conceived and initiated the transition to an abstract and decontextualized system stands embarrassed and bewildered in front of the relationship of representation and reference, and cannot rediscover the connection between the representing elements and the world to which they are supposed to refer. The effacement of the tangible world, consequent upon its reduction to a standardized system of signification, i.e. “a square of planed wood”, impinges upon sense and meaning and calls for re-establishing the connections between sign and referent. It is Marco Polo's experiential knowledge of local contexts that provides the means for re-establishing such a connection and breathing life back into the disembodied world of representation:

Then Marco Polo spoke: ‘Your chessboard, sire, is inlaid with two woods: ebony and maple. The square on which your enlightened gaze is fixed was cut from the ring of a trunk that grew in a year of drought: you see how its fibres are arranged? Here a barely hinted knot can be made out: a bud tried to burgeon on a premature spring day, but the night's frost forced it to desist.’

Until then the Great Khan had not realized that the foreigner knew how to express himself fluently in his languages, but it was not this fluency that amazed him.

‘Here is a thicker pore: perhaps it was a larvum's nest; not a woodworm, because, once born, it would have begun to dig, but a caterpillar that gnawed the leaves and was the cause of the tree's being chosen for chopping down ... This edge was scored by the wood-carver with his gouge so that it would adhere to the next square, more protruding ...’

It is amazing how a small number of signs can constitute the starting point for a semantic journey that allows an entire (absent) world to reappear. Here, sense and reference seem to reinforce one another. For, upon the apparent simplicity of the wood, the nothingness which puzzles and bewilders Kublai Khan, are left the traces of a multitude of events which combine to make up the reality of this wood. These traces, lost no wonder in the compactness of its texture, can be brought to the fore and deciphered by the sharp and experienced eye. The road back to the world passes, then, through the labyrinthine structure of traces that support and thus constitute the world of representation. In the metaphor of the game of chess, the seeming nothingness of the black and

white tiles of the chessboard nonetheless support the chessmen, i.e. the signifying elements, and allows for the realization of rules through which these elements are combined. The lonely gaze of representation is, as it were, fixed on that receding succession of events, that alterity and absence by which it is haunted but also sustained (Derrida 1978, 1982). The latter can be vicariously restituted but not grasped. In Calvino's literary accomplishment, the limits of representation appear as the limits not of a copy view of knowledge but of a world view that conceives, posits and acts upon the world by means of its distancing and fabricated categories, and the elements that convey them. Representation and abstraction seem ready to dissolve into the succession of events by means of which they have been constituted. Sense and reference here reinforce one another.

It is Marco Polo who knows how to find the crooked path that leads back from the abstract to the concrete, from representation to worldly reference. Deciphering the signs, Polo is able to retrace the sequence of events lying silent and hidden behind the simplicity and muteness of the wood. In contrast to the detached leader, his remarkable ability is certainly connected with his knowledge of the empire, gained through confrontation with facts and situations and long experiential involvement. It seem paradoxical yet abstract forms of knowing both negate and rely on situated knowledge. A fuller interpretation of abstract statements or systems seems possible only in the background of local, experiential knowledge.

But a new signifying medium appears at this stage, i.e. natural language, which seems to be able to embrace and translate any other system of signification into its own terms (Barthes 1967; Eco 1976). The road back to the world is and cannot but be a *verbal* one:

The quantity of things that could be read in a little piece of smooth and empty wood overwhelmed Kublai; Polo was already talking about ebony forests, about rafts laden with logs that come down the rivers, of docks, of women at the windows ...

4. Further Remarks

Representation has in preceding parts of this book been distinguished from other modes of symbolization. Representation (*vorstellung*) is concerned with the social and natural worlds in so far as these can be cognitively objectified and made available in ways which promote mastery and manipulation. Representation coincides with modernity, is the latter's world view and, in this respect, manifests and embodies the technological vision and orientation of the contemporary world (Heidegger 1977a,b). Sym-

bolic mediation and interest in the taming of the world certainly antedated modernity, but representation differs from prior modes of symbolic mediation in that it forms a world view, an encapsulating framework that subordinates any other mode of understanding, and conceives and acts upon the world on the terms of its own preoccupations, schemata and categories. To be sure, “all symbolism”, as Cassirer (1944: 7) observes, “harbors the curse of mediacy”, but representation is not simply symbolic mediation, restitution by means of an other (see also Goodman 1976, 1978; Wertsch 1991). The terms by means of which such a mediation takes place are of decisive importance.

The present text reveals that representation differs from sheer symbolic mediation. As exemplified by the overarching metaphor of the game of chess, representation creates an asymmetry between the knowing man and the known world by imposing its own grid through which their relationship is constructed and instrumented. Representation, as a world view rather than a technique, fabricates the known, or verifies the unknown by means of the known (Heidegger 1977a).³ It creates a centre, so to speak, or a network of nodal points that colonize and subordinate the periphery. Representation, then, needs to be dissociated and distinguished from sheer symbolic mediation and the related concept of cognition. The wide spectrum of codifying techniques that characterize the contemporary world do not copy, map or simply mediate in abbreviated forms the diversity and extension of the world. They embody representation's world view, its imposing attitude, and thereby construct the categories and aspects of the world that they pretend to map or mediate. Decoupled from the world view which they embody, representing techniques appear as innocent techniques of world mediation.

Within this broad framework I have here reconstructed and interpreted Calvino's story with the view of using it as a shortcut for describing certain consequences of the technological reconfiguration of contemporary contexts of work, in particular the tension and mutual implication of abstract and experience-based forms of knowing, acting and signifying. The puzzling yet vital issues associated context-free and context-embedded knowledge are intrinsic to bureaucracy and decontextualized methods of work (Zuboff 1988) but they have been further enhanced and amplified by the diffusion of formal languages and the codifying procedures of digital technology. In this respect it is important to remind ourselves that, despite its physically-imposed and bulky appearance, industrial technology is itself the artefact of the representational world view (Heidegger 1971, 1977a,b). Digital technology does not dispense with materiality, but subordinates it to the organizing power of symbols (formal tokens), and thereby reassures and magnifies the representational attitude of the industrial world.

³ See in particular Heidegger's essay *In the Age of the World Picture* contained in *The Question Concerning Technology and Other Essays*.

The software and the electronic text embody the representational world view not only in their functional orientation but also in their very physicality.

Despite their significance, the questions of sense and reference as a specific instance of the friction of abstract and context-embedded forms of involvement and communication have seldom been considered as relevant outside the context of philosophy, linguistics and aesthetics.⁴ In this spirit, I have attempted, through the presentation and interpretation of fragments of *Invisible Cities*, to reveal the ambiguous and tense relationship that exists between representation and reference, abstraction and immediacy, mental artifice and the worldliness of the world. “The spirit cannot coincide with its object and this separation is infinitely sorrowful” de Man (1971) wrote. Representation cannot exist except by negating worldly reference. But negation already constitutes a relationship whose many and paradoxical facets we sought to approach by making use of both theoretical argumentation and literary imagination.

I am perfectly aware that the present analysis represents no more than a sketch, hopefully an inventory of questions and issues that need to be further explored, both theoretically and in empirical contexts. Though scarcely recognized, sense and reference are currently central questions of contemporary work and life. Their significance in future systems of production, consumption and administration will certainly rise as the world tends to be increasingly transformed into a vast electronic landscape. It is reasonable to conjecture therefore that sense and reference as problems of contemporary life will persist and, from many signs to judge, they will accentuate in the future. The mediated orality and iconic predominance of multimedia seem unlikely to do away with verbal and numerical marks and the textual organization of the contemporary world. But even if they manage to reintroduce iconic communication and the principle of a technologically constructed similarity in human signification they too would be marked by contradictions and paradoxes that remind very much of the issues we have attempted to deal with here.⁵

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⁴ For an exception see Kallinikos (1999).

⁵ For an instructive example see Castells' analysis of the interaction of the vice-president Dan Quayle during the American presidential campaign of 1992 with the imaginary figure of a woman by the name Murphy Brown, played in a television opera soap by the actress Candice Bergen (Castells 1996: 373-374).

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