

Theory, Context, Design and Technology

TRANSPORTABLE

Edited by Robert Kronenburg, co-edited by Filiz Klassen

ENVIRONMENTS

3

**Also available as a printed book
see title verso for ISBN details**

Transportable Environments 3

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Taylor & Francis

Taylor & Francis Group

LONDON AND NEW YORK

First published 2006
by Taylor & Francis
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

Simultaneously published in the USA and Canada
by Taylor & Francis Inc
270 Madison Ave, New York, NY 10016

Taylor & Francis is an imprint of the Taylor & Francis Group

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This edition published in the Taylor & Francis e-Library, 2006.

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British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging in Publication Data

Transportable environments III / edited by Robert Kronenburg, co-edited by Filiz Klassen.— 1st ed.

p. cm.

Includes bibliographical references.

ISBN 0-415-34377-1 (pbk. : alk. paper) 1. Buildings, Portable. I.

Title: Transportable environments 3. II. Title: Transportable environments three. III. Kronenburg, Robert. IV. Klassen, Filiz, 1965-
NA8480.T734 2005

721—dc22

2005010636

ISBN 0-415-34377-1 (Print Edition)

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Photography: 15.2 (right); Edward J. Hogan: 15.3; Panelite: 15.4–15.5; Marcel Wanders: 15.6; Alusion: 15.7; FTL Design Engineering Studio (photography by Michael Lent): 15.8–15.10; ONL (Oosterhuis Lénárd): 15.11; Society of Manufacturing Engineers, Fundamentals of Composites Manufacturing: Materials, Methods and Applications © 1989: 16.3; Jordan Brandt and Alejandro Ogata: 16.1–16.2, 16.4–16.9; Carolina Rodriguez and John Chilton: 17.1–17.11; © Neil Burford and Christoph Gengnagel: 18.1–18.11; Jenson Scientifics, LLC: 19.1b; University of Central Arkansas: 19.2; G. Glldea: 19.3a, 19.3b; Dr Jonathan Hare, The Creative Science Centre, Sussex University: 19.3c; F. Escrig: 19.4; H. Kobayashi, B. Kresling and J. F. V. Vincent, *Proceedings of the Royal Society*, London, B265, No. 1391: 19.5, 19.6; D. S. A. De Focatiis and S. D. Guest, *Phil. Trans. the Royal Society*, London, A360: 19.7; LOT-EK: 20.1–20.7; Fotoworks/Benny Chan, 1998: 21.1; Daniel Hennessy: 21.3; Robert Kronenburg: 21.5; Office of Mobile Design: 21.2, 21.4, 21.6, 21.7; Renzo Piano Building Workshop: 19.8; Santiago Calatrava: 19.9, 19.10; Matias Creimer: 23.1; Jessica Davies, Yvonne Cheng, Johanna Doukler and Tamsin Ford: 24.1; Rocco Sabalones Cetera 2004: 25.1; Piet Mazereeuw: 28.1; Janet McGaw: 29.1; Kaija Vogel (drawings) and Camellia Koo (photography): 30.1.

Foreword

This book results from the third conference in the Transportable Environments series, the objective of which is to examine the international range of research and practical activity in the field of portable architecture and its context. The first conference was held at the Royal Institute of British Architects in London in 1998, the second at the National University of Singapore in 2001. These locations were chosen because of their dramatically different geographic and cultural contexts – the concept of mobile building is undoubtedly a global one, but regional conditions can and do have dramatic effects on the form that architecture takes. By staging the most recent 2004 event in Toronto, Canada, the ambition was to attract delegates from diverse backgrounds to a new locality and to expand the opportunity to share current experiences affecting both local issues and lessons of global value.

This conference set out to explore the character and manifestation of the transportable environment, whether a building, a landscape or an interior space brought into existence in a specific location for a limited or specified period of time. The ambition was to present a public and academic forum where examples of research, design projects, buildings and cultural contexts requiring programmatic, constructional and design responses to evolving technological, social, economic and cultural conditions could be discussed. Because of the way in which the world is changing, flexible, transformable and transportable design is as important now as it was when, in past millennia, nomadic ways of life were dominant across the planet. Conference meet-

ings are points in time, gathering diverse viewpoints and research opinions that stem from a specific historical moment in architectural development. A book establishes and communicates this taste of the variety of thought and practice and provides a more accessible resource for those who were not there. In that way it is rather like the architectural manifestation we set out to explore – ephemeral, contextually based – but, with this volume, having some lasting, useful and transportable impact.

The three keynote speakers in Toronto embody three important aspects of the field – theory, design and practical research. Dr Alberto Pérez-Gómez's work challenges the highest level of theoretical and historical architectural research. Ada Tolla and Giuseppe Lignano of LOT-EK are artists, architects and designers, whose work is at the cutting edge of innovation. Their projects and proposals challenge typical architectural design solutions by searching for new approaches. Chuck Hoberman is a creator of long-standing reputation responsible for tried and tested deployable structures that have found their way into all aspects of design culture from stadium-sized building to children's toys.

Complementing these speakers were a range of thematic papers, poster projects and performances. The aim of the conference was to gather research, knowledge and the experience of national and international experts with first-hand information on theoretical, educational, technological and design issues in a global and cross-disciplinary context. This book has its beginnings in that event but it is not simply a set of proceedings because each of the contributions

that are included have been reviewed and updated so that they can be appreciated outside the context of the conference setting. In some cases project presenters have been asked to extend their work into a full essay, in others the emphasis has shifted or expanded to fall more directly into the themes of this publication. Like the previous *Transportable Environments* volumes, this work brings together a diverse range of viewpoints on many of the different manifestations this form of architecture takes. The study of transportable environments is a search for new interpretations of existing and innovative building technologies to fulfil requirements that cannot be met by the use of existing built forms. Though the essays

within this work explain many interesting and important issues, they inevitably raise many more questions, making clear the enormous potential for further academic scholarship, research and design excellence that remains.

The editors must extend their gratitude to the keynote speakers, essay and project authors, and all the conference delegates who made Toronto such a memorable event; to Sarah Bonnemaison and Vladimir Krstic for their valuable counsel as members of the review committee; and to Caroline Mallinder and publishers Taylor & Francis for their continued support of this latest volume.

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Theory, History and Context

Polyphilo's Thresholds: Alternatives for Nomadic Dwelling

Alberto Pérez-Gómez
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Over the centuries, nomadic life has offered humanity real possibilities for fulfilment, revealing to the individual a sense of participation in the cultural order and the natural world. Whether for the bedouin in the desert or the Christian pilgrim in the Middle Ages, enacting our condition of passerby upon the face of the earth by walking and belonging to no permanent physical place held a profound significance. The man-made structures that made this possible, such as the tent, the icon or the tabernacle, were imbued with genuine symbolism, touching all orders of life from the social and political to the religious. Our own project of mobility and contemporary cosmopolitanism only appears as new and revolutionary when seen against a civilization obsessed with permanence and predictability, a civilization that believes its destiny is to dominate and possess an external reality transformed into natural resources, while consciously or subconsciously concealing mortality and the ultimate ephemerality of all things human, from personal belongings to the powers of the mightiest empire. This dominant world-view is a relatively recent phenomenon.

It is important to recall that prior to the nineteenth century in Europe, much care was given to ephemeral structures in cities, such as triumphal arches, *tableaux vivants* and the like, built for specific religious or political celebrations. These singular events, lasting one or a few days, which revealed a political order through the transformed city, were universally significant for the inhabitants, conveying a sense of purpose and a general existential orientation. In a similar way to permanent architecture,

ephemeral structures are capable of revealing a 'poetic image', one that affects us primarily through our vision and yet is fully sensuous, synaesthetic, thus capable of seducing and elevating us to understand our embodied consciousness's participation in wholeness. In addition, traditional architectural theories, which after Vitruvius privileged formal, monumental representations of geometrical order, always did so cognizant of the ephemeral condition of human life on earth, seeking to reconcile our human capacity for stability and precision that seemed to reflect the character of the eternal cosmos, with an openness to the gift of death.

During the last two centuries, our Western cultures have become increasingly obsessed with positive reason, excluding poetry and mythical stories as illegitimate forms of knowledge. Early democratic systems freed the individual from traditional, often oppressive, political orders, yet they also forced humanity to confront the abyss of nihilism. The reaction was a new and radicalized attachment to private property, to ethnic groups or nationalistic institutions, and to the production of historicist or technological architecture: ossified monuments with an inherent capacity to be transformed into ideological 'symbols', becoming potentially destructive and contributing eventually to the horrific genocidal wars of the twentieth century. It must be acknowledged that the political and epistemological revolutions of the eighteenth and nineteenth centuries contributed much to the physical freedom and comfort of the individual, the new voyeur and consumer of the metropolis. Yet they also tended to conceal the very nature of the human condition, its

fundamental uncertainty, which, as a mediaeval Japanese poet once said, is what makes life wonderful and worth living.

Once Western humanity became fully modern, embracing the values of a progressive history between the eighteenth and the nineteenth centuries, the possibility of placelessness became real and, with it, nomadic life could become a potential nightmare. The genius of place, associated to the linguistic reality of traditional cultures, slowly vanished from our experience, progressively substituted by the isotropic, homogeneous space-time of technology. Seeking to solidify a historical reality into a stable and predictable ground for action, a crucial yet most difficult endeavour without the aid of the imagination, architects were often called to produce nostalgic monuments on the basis of ideological programmes such as liberalism, fascism, communism, all issuing from the ideals of the French Revolution. The result: historicist traces like the neo-Greek or Roman forms of Nazism, or the pseudo-scientific forms of international corporate architecture. Architecture embodies political values which tend to become repressive, and this has traditionally been implemented through heaviness and monumentality. Today, after the shortcomings of globalization have become more evident and our world struggles with its political and economic crises, it is only fair to seek alternatives.

It is crucial, nevertheless, that the project for a new nomadism be understood in the full context of our postmodern existence. In a true Nietzschean spirit we may believe that the strong values of traditional cultures, such as nationalism or ethnicity, should be weakened. Our architecture, however, must remain the repository of memories that allow for further action. This is crucial in a world increasingly reduced to a global village, in which religions and myths are no longer an intersubjective ground of being. It is not enough to resolve a technical problem of portability or sustainability, or simply to declare that the

alternative to globalization is cultural nomadism in a post-traditional environment. We may abhor the monumental heaviness of old architecture, affirming as it did theocentric or false political values. Yet it is imperative that once we embrace 'lightness' as an alternative, we become fully aware of its implications, stepping outside a dialectic. The issue is not merely to oppose sedentary and historical to nomadic and ahistorical. As architects or designers we are called to envision a better future, our projects necessarily retain a utopian vector as part of their ethical dimension. Whether we design an ephemeral or a permanent structure, this ethical imperative is primary. In order to embrace it, we must understand that the ephemeral object must simultaneously offer a dwelling place and therefore, paradoxically, be *memorable*. And this is indeed the difficulty. Ephemeral architecture needs to be critical in the same measure as, say, the architecture of a museum: opening our being to death, while celebrating our human capacity to think the eternal. It doesn't do this merely by being technically responsible, built with light or recycled materials. For human life, even at its most precarious, seeks play and well-being, and never merely survival.

In my book *Polyphilo or the Dark Forest Revisited* (1992), I dealt with these issues in the form of a love story, a story of delayed material fulfilment that celebrates our human condition outside a simple dialectic, a condition characterized as 'bitter-sweet' by the Greek poets who invented Eros/Amor, the divinity of love, neither perpetually fulfilled nor perennially lustful. It is a story that celebrates the nomadic condition of modern technological man, caught in the liminal place of a fully carnal body and homogeneous mental space, always in transit, always crossing a threshold, travelling for the sake of the trip, rather than in view of a known destination. This narrative is also a theory of architecture as poetic image, suggesting alternatives to architectural practices based primarily on instrumental methodologies.

Instrumental theories have been dominant for two centuries. Most recent ones postulate the use of computers with a complete disregard for history and embodied consciousness (with its oriented spatiality). Leaving behind the computer's utilitarian justification as a tool that might improve the efficiency of architectural production, these theories claim the tool's capacity to generate 'new forms', totally 'other' from our traditional 'orthogonal' building practices. Indeed, recent powerful software packages are now capable of treating surface as the primary element in design, allowing for unimaginable configurations that are at once structurally sound and open up an infinity of formal possibilities. These instrumental processes are necessarily dependent on mathematical models, themselves designed by computer engineers working with specific economic interests in mind; extrapolated to architecture, they often become an empty exercise in formal manipulation. Fuelled by a host of technological dreams or nightmares, architects soon forget the importance of our spatial engagement (verticality) in this inescapable and particular form of bodily consciousness, with the world that defines our humanity, our historicity and gravity (the 'real world' of bodily experience into which we are born, and which includes our sensuous bond to the earth and all that is not human).

The reality of architecture is infinitely complex, both shifting with history and culture, yet also remaining the same, analogous to the human condition which demands that we continually address the same basic questions to come to terms with mortality and the possibility of transcendence opened up by language, while expecting diverse answers which are appropriate to specific times and places. Architecture possesses its own 'universe of discourse', and over the centuries has seemed capable of offering humanity far more than a technical solution to pragmatic necessity. Architecture and the design of the environment configure the 'limits' of human culture; they open a clearing for all the great

achievements of art and civilization. Our technological world, obsessed by infinite progress and the obliteration of limits, is often sceptical about architecture having any meaning *at all* other than providing shelter. Yet our dreams are always set *in place*, and our understanding of others and ourselves could simply not *be* without architecture. We know architecture allows us to think and to imagine, it opens up the 'space of desire' that allows us to be 'at home' while remaining always 'incomplete' and open to our personal death, this being our most durable human characteristic. Without limits we simply cannot be human. Even cyberspace could not 'appear' if we were not first and foremost mortal, self-conscious bodies *already* engaged with the world through direction and gravity. We don't merely *have* a body, we *are* our bodies.

Architecture and design, operating at the limits of language, between nature and culture, between that which can be articulated in words and the unspoken and obscure, communicates to us the possibility of *recognizing* ourselves as complete, in order to dwell poetically on earth and thus be wholly human. The products of architecture have been manifold, ranging from the *daidala* of classical antiquity to the gnomons, *machinae* and buildings which Vitruvius names as the three manifestations of the discipline, from the gardens and ephemeral architecture of the Baroque period to the built and unbuilt 'architecture of resistance' of modernity such as Le Corbusier's La Tourette, Gaudi's Casa Batlo or Hejduk's ephemeral 'masques'. This *recognition* is not merely one of semantic equivalence; rather it occurs in experience, and as in a poem, its 'meaning' is inseparable from the experience of the poem itself. As an 'erotic' event, it overflows any reductive paraphrasing, overwhelms the spectator-participant, and has the capacity to change one's life. In order to propitiate such events the designer must necessarily engage language, a story capable of modulating intended actions (projects) in view of ethical imperatives, always specific to each task at hand. The

practice that emerges with such a theory can never be an instrumental application, but rather appears as a 'verb', as a process that is never neutral and should be valorized. *This process in fact erodes the boundaries between the artistic disciplines concerned with space* and is not constrained by the specificity of the material or size of the designed object.

This has been the story of an architecture of resistance since Piranesi, passing through John Hejduk, Daniel Libeskind and Peter Greenaway. From the moment when the traditional divisions among the fine arts were subverted, first in epistemology and eventually in practice, between the eighteenth and the early twentieth centuries, the most significant works that 'construct' a mysterious depth, a significant spatiality, belong within my story. The book *Polyphilo* tells a story as a sequence of visits to some of these works, as a revelation for the man in transit, ephemeral truths that disclose and conceal simultaneously, maintaining a tension between the absence of gods and our desire and capacity to wait.

Polyphilo's plot is based on an older treatise, a most significant work in the European tradition of architectural theories, one that merits a short exposition and helps explain my own project. The original is entitled *Hypnerotomachia Poliphili* (Colonna, 1499), published in Venice in the late fifteenth century. The *Hypnerotomachia* is very different from other Italian Renaissance treatises on architecture with their rational emphasis and interest in mathematical principles, such as Alberti's *De re aedificatoria* or, later on, Palladio's *Quattro libri*. It is a Neoplatonic narrative articulating architectural meaning in relation to our human search for erotic fulfilment, a basic description of the human condition, equally applicable to the contemporary nomad. The interest of architecture is presented as a search for unity, an alchemical quest, through making. Architectural meaning is *experienced* as a sense of completion/order by the nomadic architect, in the mind's eye, before it is articulated in words or math-

ematical ratios, just as architecture is *made*, and its principles are 'found' rather than imposed from a concept, as a prescriptive recipe.

The story is a dream within a dream. Poliphilo dreams about being in a threatening dark forest and narrates the myriad things he saw, a veritable strife for love, which is the meaning of the Greek words in the title. In an erotic trance which is both fulfilment and the infra-thin space of perpetual expectation, he tells of many ancient marvels, architectural monuments, most of them in ruins, encountered in his search for Polia, his beloved. In this vein, always thirsty, he describes a pyramid and obelisks, a great horse, a magnificent elephant concealing the tombs of a king and a queen, a hollow colossus, and a triumphal gateway with its harmonic measurements and ornamentation (Figure 1.1). After suffering a major scare behind the threshold, passing the test of a frightening labyrinth, he is brought back to life by a wonderful encounter with five nymphs, embodying the five senses. They show him several fountains and he partially quenches his thirst by drinking the tepid water springing from a stone nymph's breasts. He is then taken to a magnificent bath where the nymphs disrobe and he is filled with desire, missing his Polia, architecture, always beyond the five senses. Eventually they arrive at the palace of a queen, who embodies free will. He is invited to a splendid meal and expresses his admiration for the variety of precious stones and materials that are worn by all those present, and describes a game in dance. After the festivities, he is taken to visit three gardens, the first made of glass, the second of silk, and the third containing a labyrinth. He eventually arrives at a crossroads: the site of three doors with mysterious inscriptions among which he must choose. Behind one Polia awaits him. Without either realizing the meaning of their physical proximity, she takes him to admire the four triumphs of Jove: four processions whose chariots and artefacts celebrate the stories of the classical poets explaining the effect of various kinds of



1.1 Woodcut from *Hypnerotomachia Poliphili* (1499) by Francesco Colonna

love. Then they witness the festival of Vertuno and Pomona and the ancient sacrifice of Priapus. Their journey seems to culminate with the description of a magnificent circular temple of great beauty, celebrating an *axis mundi* of water and fire, where the sacrifices of miraculous rites and ancient religion once took place. It is here that the couple fully acknowledge their loving encounter.

Yet, immediately after, Poliphilo and Polia are separated. The revelation brought about by place is but a brief event. Their human pilgrimage must proceed. They arrive at the coast to wait for Eros, at the site of a ruined temple where she persuades him to explore in search of admirable ancient things. He descends into a dark pit. There he finds, among many beautiful monuments and epitaphs of lovers separated by death, a mosaic mural depicting hell, a place without architecture, the place for men and women who have either loved excessively or have refused to love. Scared again, he returns to Polia, just in time to meet Cupid who has arrived in his ship propelled by beautiful rowing nymphs. Both climb aboard, and Love uses his wings as sails. Sea gods, goddesses and nymphs pay tribute to Cupid and the vessel arrives triumphantly at the island of Cytherea, across the sea of death. Poliphilo then describes the forests, gardens, fountains and rivers on the island, as well as the procession of triumphal chariots and nymphs in honour of Cupid. In the centre of the island, the final place of arrival, he describes the circular theatre made of alchemical glass with its venereal fountain and its precious columns. Mars makes love to Venus, followed by a visit to the innermost enclosure containing the tomb of Adonis, where the nymphs tell the story of the hero's death and of the sad celebration of his anniversary commemorated every year by Venus, the lover.

The nymphs then ask Polia to tell her own story, the origin and difficulties of her love. Polia agrees and her words fill the second book. She gives a genealogy of her family, explains her initial inclination to ignore Poliphilo, and provides a detailed account of the final

success of their affair. Following Polia's account, Poliphilo concludes by describing their embrace, a passionate kiss, in the happy place of dwelling. Then he is awakened by the song of a nightingale and realizes that he has been dreaming. He is sad and alone, the space of love is the space of architecture, the space of the design arts. Neither exclusively path nor place, it is definitely a space with limits, and it is 'bitter-sweet', a place that may allow humanity to keep on dreaming, while *knowing* that it is dreaming.

Hypnerotomachia Poliphili's essential intention to articulate a possible ethical position through a narrative that acknowledges important models for the practice of architecture is very relevant. Creatively reading Heidegger, the Italian philosopher Gianni Vattimo has demonstrated how art works in our traditions may indeed embody 'weak truths', significant revelations for the present and suggestions for further action in the future, an alternative to the presumption of absolute truth in traditional religion, science and technology. Thus my modern rewriting of the Renaissance romance examines paradigmatic works of the twentieth century. In addition, Poliphilo's search, like ours, is never finished. The space of desire remains always open, yet limited. This is an architecture for a pilgrim seeking knowledge and initiation, always in transit and transformation, where even stone monuments acknowledge and celebrate their ephemerality. Also important is the basic phenomenological lesson of *Hypnerotomachia*, connecting architectural meaning to embodied experience through discourse, rather than simply accepting meaning as an effect of exclusively mental or linguistic processes.

In order to contemplate the potential architecture of the future as a *poiesis* or making that is not solipsistic, that is, capable of effective communication, phenomenology offers important insights. It leads to a recognition, through personal experience, of the body as the site of meaning, a body always engaged with a given world in a pre-reflective

transaction, upon which other meanings are constructed. To this primary reality the work of art and architecture speak in the medium of the erotic. Erotic knowledge is never experienced by the mind alone. It always occurs in the world; it is of the flesh. It is knowledge of things by the individual body and is also of beauty, which is the whole. Erotic knowledge is a paradigm of 'truth as unveiling', the Heideggerian *aletheia*, as opposed to the objectifying 'truth as correspondence' inherited from Plato by Western science and metaphysics. It is a disclosure of *being*, one that is never given once and for all but that speaks of the presence of lighting, of the horizon that makes 'things' possible.

Plato himself, quite in opposition to his better-known articulation of truth, in the myth of the cave as a light that excludes all shadows, insisted that *agathon* (the sun) makes truth visible but is never to be beheld directly, for its force would blind us: truth and goodness are therefore not objects of pure contemplation, as in science, but are perceived through full bodily experience. The only time when humans may behold the sun directly is at dawn, a time that is, even today, the most propitious for the retrieval of poetic discourse, for speaking of the truth. This is the extended time/site of my own version of *Polyphilo*.

The modern hero also dreams, and the narration takes place entirely during crepuscular time. Polyphilo dreams about being in a threatening dark forest, the technological world with its capacity for human-generated apocalypse, and narrates the myriad things he saw, a veritable strife for the manifold love of all, which is the meaning of his name in the title. He tells of many postmodern marvels deserving of a place in the memory theatre of the future, portable architectural monuments encountered in his search for Poly, his beloved.

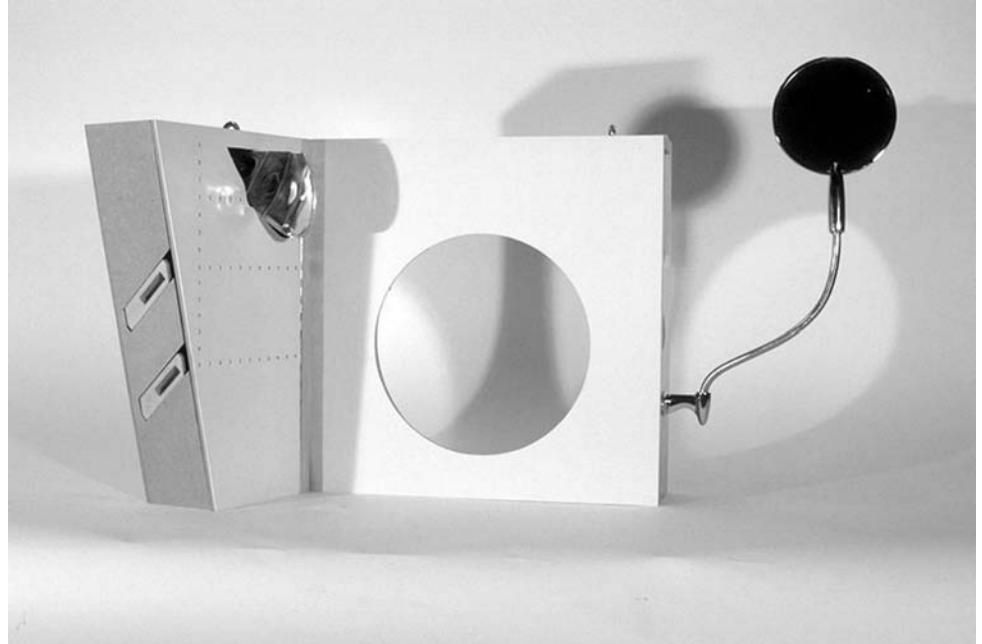
His dream takes the form of a trip through our modern, scientific geography, one that occupies three paradigmatic spaces: the private domestic

space of the hero's bedroom, the public space of airports, and the space of the airplane, beyond a conventional categorization that now seems inoperative. These spaces are only modulations of the technological continuum, of a single quantitative universal entity, our 'intersubjective' reality, at odds with the mythical landscape of places that constituted the ground of classical or traditional architecture. The technological trip *par excellence*, air travel, occurs as a revolution of the globe, the totality of our finite space, at approximately 60 degrees North latitude during twenty-four hours of measured time. The technological trip is deconstructed through the paradigmatic human dream, the dream of flight, which underscores all architecture present and past still devoted to reconciling man, the vertical creature, with gravity. Polyphilo travels westward through the homogeneous space of our scientific universe; he is constantly in motion but arrives nowhere. And time is suspended, always the day's breaking lights. He is always in the same place yet visits magical architectural objects pregnant with meaning, works that constantly question the assumption of a universal, geometric space as the place of human existence. His time is therefore always the present, catching up with the time of his departure, the simultaneity of simulacra; yet it is always sunrise, a privileged time of day that propitiates the fictional articulation of human temporality and that may allow for a return of mythopoetic narratives, even now, as we find ourselves at the end of progressive history.

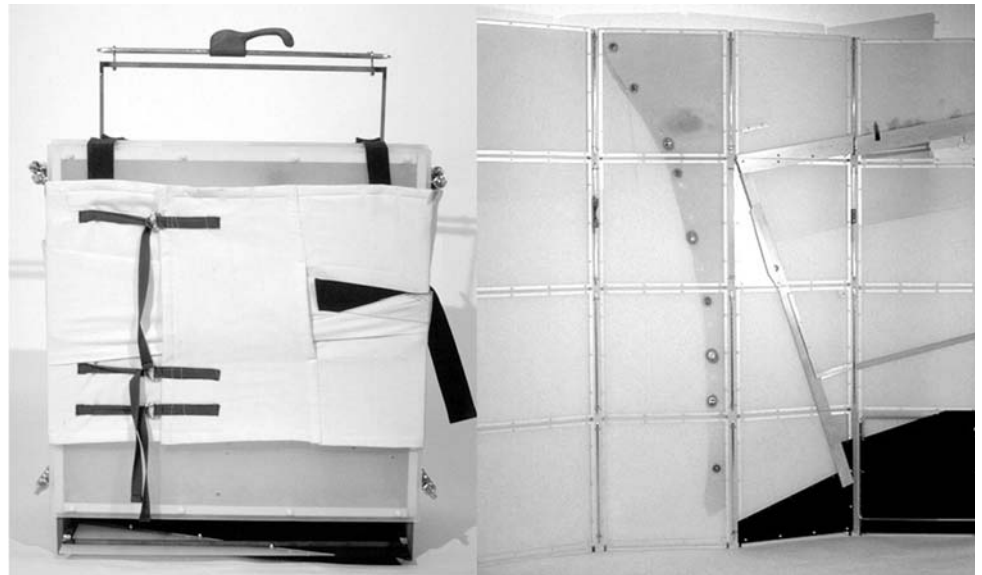
The modern dream of Polyphilo is a dream of flight, with its vertical motion, one still capable of going somewhere. This motion of the poetic imagination allows the modern hero to 'inhabit' the diverse works and 'deobjectify' them, describing their 'place-making' characteristics, extracting a philosophical and ethical lesson for the architect of the future. These works range from known to unknown projects of designers, artists and architects, from figurative, metaphysical or surrealist to abstract painting, sculpture, literature and drawing. They are all portable.

Alberto Pérez-Gómez

1.2 'Doctor' from the exhibition *Polyphilo's Thresholds* by Louise Pelletier, Martha Franco and Alberto Pérez-Gómez



1.3 'Pantaleon' from *Polyphilo's Thresholds*



The text of *Polyphilo* has been the point of departure of many projects. Few of the selected works illustrated here include four portable objects intended to animate the anonymous space of transit, in this case, and with specific reference to *Polyphilo*, the waiting space of an airport. Drawing from the book and tacitly acknowledging the demise of 'place' (*genius loci*) as a culturally given condition, we recognized *threshold* was our operative context, stepping outside the traditional dialectic of path and place. The notion of threshold as a metaphor for architecture's liminal condition between reason and the irrational (at the limits/origins of language) is central, as it is also a fundamental concept in *Polyphilo*, where it is articulated as a typical condition of modernity since the end of the eighteenth century. The exploration of architecture/threshold is urgent in a world increasingly transformed by speed and new modes of communication. Threshold was given a specific programme by using 'com-media dell'arte' characters as a memory of the public realm, and 'objects/ types' of the domestic environment as a memory of the private.

These 'Polyphilic' objects, in the tradition of the Greek *daidala*, are constructed of well-adjusted and harmonious parts, and hopefully capable, as in the tradition of the *Iliad* and the myth of Daedalus, of transforming natural place into cultural space, revealing, through abstract construction, precision and metric wonder (eurhythmy), the 'luminosity' of the more-than-human world that makes humanity possible. In the early twenty-first century, these are objects for everyday use, yet marvellously unfamiliar, with a site in a domestic environment, but also a function in the perpetual threshold of an airport waiting room. These objects, originally generated

from collages of recognizable aeronautical structures, are intended to 'make place' and transform the space of transit into 'dwelling', a space for the dramatic interaction among Pulichinella, Doctor, Angel and Pantaleon: an open plot between Man, Woman, Doctor and Angel; everyone's plot.

Doctor, a medicine cabinet (Figure 1.2), travels and becomes a 'personal care' case to use in an airport facility, particularly in case of emergency, to domesticate hygienic surroundings, perhaps allowing us to face ourselves in moments of solitude, or if the end arrives unexpectedly. Pulichinella, a light table, and Pantaleon, a dressing screen (Figure 1.3), become the centre and the skin of a nomadic dwelling, the perpetual dance of Hermes and Hestia, a repository of memories in the form of containers for images. And Angel's receptacle opens to become, only when utterly void, a *chaise-longue* on which to wait for angels, to listen for a light flapping of wings or for unintelligible whispers. Angel provides a sleeping bag for house guests, a dream site for a traveller in transit (Figure 1.4).

Only by acknowledging limits, and making architecture the site of such limits, can we be free and have access to real flight, to the dream of flight which reveals the human spirit (our breath) and that has nothing to do with infinite technological mobility. These objects are portable, yet deliberately cumbersome. They are difficult to assemble and relatively heavy, yet their site is the threshold. They animate the threshold and make the in-between alive with significance, beyond the traditional dichotomies. They are both rational and dream-like, portable and permanent, simultaneously uncanny and familiar.



1.4 'Angel' from *Polyphilo's Thresholds*

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- Colonna, F. (1499) *Hypnerotomachia Poliphili*.
Pérez-Gómez, A. (1992) *Polyphilo, or the Dark Forest Revisited: An Erotic Epiphany of Architecture*. Cambridge, Mass.: MIT Press.

The Figure of the Spiral in Marcel Duchamp and Frederick Kiesler

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[A]s you know, I am interested in the intellectual side, although I don't like the word "intellect." For me "intellect" is too dry a word, too inexpressive. I like the word "belief." . . . I believe that art is the only form of activity in which man as man shows himself to be a true individual. Only in art is he capable of going beyond the animal state, because art is an outlet towards *regions which are not ruled by time and space*. To live is to believe.

(Duchamp, 1973, p. 137; emphasis added)

I started to perceive space not as a void but as a link between every object, both of nature and man-made. There was a continuity held together by visually nothing, but this "nothing" was nothing else but the breath of the cosmos. (Kiesler, 1996, p. 134).

In this chapter, the modern experience of movement and mobility is situated within new theoretical and practical descriptions of space and the context of the urban milieu in the early twentieth century. It is proposed that movement and mobility in Modernist discourses of art, architecture, and technology represented more than the application of technological innovation to practical problems of social and economic efficiency. Movement and mobility also expressed utopian aspirations for new, unified expressions of space appropriate to the transformed conditions of modern urban experience. One pervasive motif of utopian spatial thinking in avant-garde art and architecture was the spatial and temporal figure of the spiral. The focus of my argument is on the idea that the figure of the spiral represents an

ambivalent reconciliation of the experience of relentless change and movement found in the modern city with the promise of stable formal expression. I suggest that the spiral in avant-garde theory and practice produces a kinetic model of an indeterminate and primary spatial dimensionality as a foundational order of the city, supplanting the traditional idea of the city founded on the figure of the labyrinth. In the context of this chapter, I reconstruct the image and meaning of the spiral motif through an examination of the correspondences and exchanges between the artistic practice of Marcel Duchamp and the architecture of Frederick Kiesler from the 1910s to the mid-1940s.

In Duchamp's and Kiesler's evocation of the spiral figure, it is technology that frames the construction and sets in motion an image of spatial and temporal orientation within the chaotic existence of the modern city. The rhythms of the city – both the physical movements produced by technological innovation but also the social practices required to keep technological systems in motion – had an ambivalent reception in the nineteenth and early twentieth centuries. Paradoxically, new scales of productive activity resulted in increased disruption to people's lives, including constant destruction of the existing city precisely in order to rebuild it in a new image. A consequence of destruction was the dislocation of communities and the impossibility of forming memories of place in relation to fixed landmarks and repetitions in everyday life.

Nevertheless, the new technological conditions of production and mobility also produced new forms of

experience. The early actuality film by the Edison Manufacturing Co., *A Trip from New Brooklyn to New York via the Brooklyn Bridge* of 1899, presents a unique image of modern mobility produced by the technology – the train – that in other respects had so disrupted the form and life of the city. The camera, placed on the front of a train traveling from Brooklyn to Manhattan over the Brooklyn Bridge, presents the film viewer with an almost magical experience of transformation. At the center of the bridge, the viewer of the film experiences a brief moment in which the everyday spatial context of city is lost in a virtual tunnel produced by the movement of the camera in relation to the rhythmic structural members of the bridge. The experience is that of continuous movement into a space whose depth appears to recede indefinitely (Figure 2.1). This image of movement, produced technologically by the moving train, the camera, and the system of cinematic projection, concentrates the experience of movement into a mesmeric spatial form. The framing of the camera – from a viewpoint beyond the particular experience of any one individual – becomes a paradoxical means of domesticating the incessant, chaotic experience of movement in the city.

I suggest that mediation by the technologies of physical movement and their transformation through the production of a mass cinematic image perform a task that is often lost in discussions of movement and mobility. These images transformed the abstract, spatial extension of modernity by reintroducing spatial directionality, orientation, and meaning for a mass subject. Movement here becomes more than an abstract state of being (or loss of being); through the mediation of the cinematic image, and through art and space in Duchamp and Kiesler, movement and mobility are grounded in a new, kinetic experience of space, more so than being the physical overcoming of spatial limits.

In the experimental work of Duchamp and Kiesler, a new description of space may be summarized by the idea of kinetic motion, both virtual and actual. The kinetically charged image signifies a space of social and metaphysical freedom for Duchamp and the reconciliation of man with nature and art for Kiesler. By examining selected projects of each artist related to the figure of the spiral as well as spatial and architectural designs in which they were both involved between the years 1915 and 1945 – focusing on their conceptual correspondences but also the divergences in their intentions and realizations of different environments – I articulate the meanings and significance of movement and mobility in this era and broadly discuss some of the implications for the theory and design of transportable environments.

Duchamp and Kiesler: points of correlation

Kiesler's essay on Marcel Duchamp's *Large Glass*, entitled "Design – Correlation: Marcel Duchamp's Big Glass" (Kiesler, 1996), suggests that he saw in Duchamp's masterwork a confirmation of his own theory of *correalism* in which he emphasized a new unity between man, nature, and art. Kiesler's interpretation of the *Large Glass* in this article was idiosyncratic. Presumably guided by his work as an architect, it passes over other interpretations of the *Glass* as a modern allegory of desire to emphasize the *Glass's* Constructivism. He states that painting, sculpture, and architecture have become one in the *Glass* (Kiesler, 1996, p. 38). He sees Duchamp's use of plate glass as similar to the architect's use of glass in modern building. For Kiesler, plate glass is the paradigm of modern materiality as it has the unique ability to both divide and connect space. Further, the traditional expression of painting and sculpture is transformed in the *Large Glass* into the direct expression of "naked" materials technologically handled and poetically applied. Direct expression of materials in place of traditional ornamentation of surfaces is



2.1 Thomas Edison. Film stills: *A Trip from New Brooklyn to New York via the Brooklyn Bridge*, 1899

also a fundamental paradigm of modern design (Figure 2.2).

Ironically, part of Duchamp's artistic persona was his renunciation of the role of artist along with a critique of theories of individual artistic expression. As part of this critique, he actively encouraged the interpretation of his work as anesthetic, the indifferent product of engineering and scientific and mathematical research more than the expression of any personal artistic vision (Henderson, 1998). Among Duchamp's works, many are constructed interventions that confound normal descriptions of space. *Sculpture for Traveling* of 1917 was a portable object consisting of brightly colored rubber bathing caps cut up into strips and stretched across his studio on string. The better-known *Door* was a reconstruction of the material fabric of his studio such that the door was paradoxically always both open and closed (Figure 2.3).

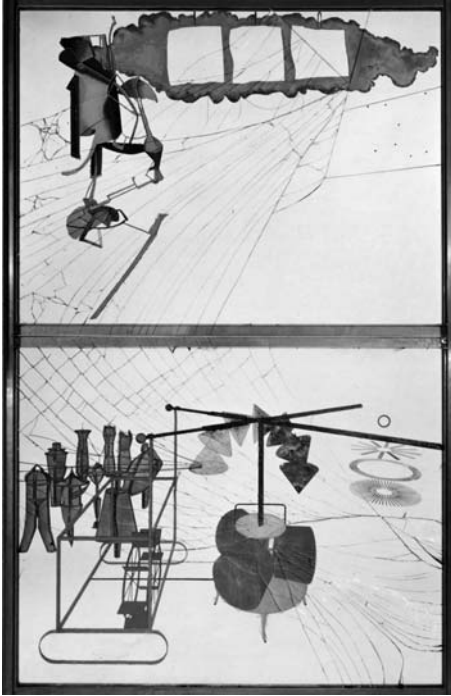
The majority of Frederick Kiesler's architectural work was in the areas of theater, shop display, and exhibitions. Though he designed many buildings, with the notable exception of the *Shrine of the Book* in Jerusalem they remained unbuilt. Kiesler was part of or acquainted with many of the avant-garde movements in the early twentieth century: the Vienna Secession, Russian Constructivism, De Stijl and Surrealism. Common to each of these movements was an emphasis on the construction of a new unity of space appropriate to modern life. It is in the context of the idealist aspirations of these movements that the figure of the spiral emerged in his work in the theater. In 1924, he built a spiral stage construction in Vienna known as the *Space Stage* that demonstrated new plastic ideas promoting direct contact and continuity between performance and audience in an all-round setting (Figure 2.4). He subsequently designed a prototype for an *Endless Theatre* characterized by a circular plan and egg-shaped section. In this design, the figure of a double spiral ramp formed the stage and spiral ramps

mediated the plan organization and complex levels of audience seating. The fundamental idea guiding the precise geometrical articulation of the theater was the intertwining of the implied movement of the audience and performers in relation to the spiral figure as well as the proposed physical movement of various elements of theatrical mechanisms, stage, and seating to adjust for various types of performances.

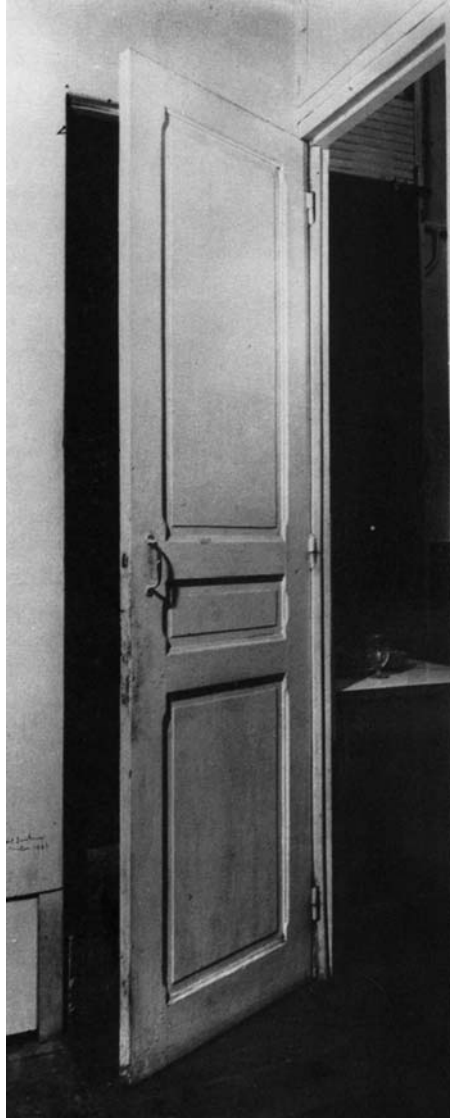
Over the years and in many types of projects including theatrical architecture, commercial design and display, exhibitions, and housing, Kiesler continued to innovate with the integration of spatial design and the incorporation of various forms of virtual and actual moving building elements to advance his concept of a flexible kinetic space appropriate to the manifold functionality he theorized as critical to the modern age.

Duchamp's *Anemic Cinema*: indeterminate space

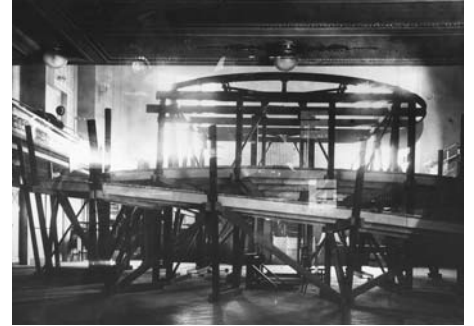
From the early 1920s through the 1930s, Duchamp produced a series of optical disks, later known as *Rotoreliefs*, patterned on the model of his *Bicycle Wheel* readymade. These consisted of circular disks with patterns based on variations of the spiral motif. Once set in motion (on an apparatus that Duchamp had designed, built and tried to sell at an inventor's fair as a novel, technological experience) the patterns produced the optical illusion of an ever-receding spatial depth or, depending on the patterns, spatial projection (Figure 2.5). In conjunction with Man Ray, in 1926 Duchamp created a short film based on the idea of the optical disks entitled *Anemic Cinema*. In addition to various spiral patterns, he interjected an explicit sexual content through alliterative phrases mimicking the arrangement and movement of the spiral pattern in between the presentation of each different spiral design. Of the many meanings evoked in the film, it is the nature of the kinetically produced image of space that bears on this chapter.



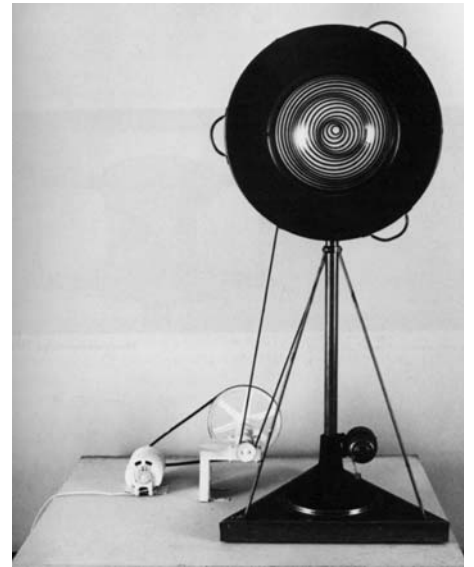
2.2 Marcel Duchamp. *The Large Glass*, 1915–23



2.3 Marcel Duchamp. *Door*, 11 rue Larrey, Paris, 1927



2.4 Frederick Kiesler. *Space Stage*, Vienna, 1924



2.5 Marcel Duchamp. *Rotary Demisphere – Precision Optics*, 1924

I would suggest that the spatial image produced through Duchamp's apparatus intentionally thwarts our habitual perception of objective space and time. It reveals a space in which all objective determinations, including that of the self, are rendered indeterminate through the principle of conceptual and actual kinetic movement.

Much speculation upon Duchamp's work, especially the *Large Glass*, centers upon ideas of a fourth dimension of space. While the significance of the fourth dimension in Duchamp's work has been debated, it remains significant that his understanding of advanced mathematics and geometry far exceeded a cursory interest, attaining a level that was the most advanced of any artist of the time (Adcock, 1983). Speculation on the fourth dimension traversed mathematical, scientific, artistic, and spiritualist discourses of the late nineteenth and early twentieth centuries. Mathematically, the idea of the fourth dimension derived from the development, in the early nineteenth century, of various forms of non-Euclidian geometry. It is significant that these new geometric systems severed the link between the logic of mathematics and the experience of the world apprehended by the senses. Constructed speculatively on the questioning of Euclid's fifth postulate, to be true these geometries did not need verification in the world but primarily required internal, logical consistency. The result was that worlds other than the one perceived by the senses could be postulated conceptually. The possibility of a fourth and, further, n dimensions, in science and art in the early twentieth century was the result of this epistemological shift.

Duchamp's artistic production rests on the paradoxes produced between conceptual and perceptual knowledge and expression. It is impossible for four- or more dimensional *objects* to be directly apprehended by the senses as their hypothesized four-dimensional reality always results in an impossible three-dimensional reality. To be fully perceived

they would have to be seen from many different points of view at the same time. Nevertheless, four-dimensional objects could be evoked to our understanding through approximations of their character. The critical link in imagining space and time from the third through to the fourth dimension was movement. Adcock (1983) has stated that Duchamp's readymade *Bicycle Wheel* is a conceptual approximation of the moving reality of the fourth dimension through its potential double movement, simultaneously around its own axis of rotation as well as around the axis of the forks. *Anemic Cinema*, as a moving image, puts an accent on the kinetic production of an approximation – the illusion – of an anesthetic, conceptual space outside of the habitual experience of the three-dimensional world.

What is seen in the readymades, *Anemic Cinema*, and the *Rotoreliefs* is an expression of movement different from but nevertheless consistent with his earlier, famous painting *Nude Descending a Staircase* (No. 2). The difference resides in the anesthetic quality of Duchamp's work already discussed. The earlier abstract painting refers to the representation of human movement abstracted through stop-motion photography developed by Marey and Muybridge. In contrast to the logic of abstraction, the rotating optical disks cannot be said to represent anything. Even the rotating textual segments – alliterative phrases with overt sexual connotations – have been described as an attempt to transform language into kinetic, visual hieroglyphics rather than to express logical discursive meanings (North, 2002). The rotating disks produce an illusion from the relation of kinetic rhythms between the technical apparatus of the rotating spiral, the direction of the movement in the film, and the body of the viewer.

As Judavitz (1996) has noted in her analysis of *Anemic Cinema*, the most significant (among many) allusions of the moving spirals is that of an eye. With this allusion, the conceptual spatiality of the fourth dimension produced in the film can also be