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An awful lot of hype surrounds not only computer technologies but also their collective product, the Net, and the Net's most fantasy-laden component, cyberspace. Much of this commotion is due to a fascination with what the digital telecommunications revolution and its associated soft- and hardwares promise but have yet to deliver. In their nascent incompleteness, indeed in a form still more dreamlike than actual, these technologies are ripe, as it were, for various imaginary schemas, projected futures, dreams, hopes, and fears. Just as the emergence of steam, electrical, telephonic, and other technologies clearly exerted powerful effects on the imaginations of the populaces in which they appeared (which seem to decrease to the degree that these technologies become normalized and socially integrated into the banalities of everyday life), exponential growth has also occurred not simply in technological advances but more significantly in cultural fantasies surrounding the eruption of new and altogether different futures from those we had previously envisaged. Cyberspace and virtual reality (VR) represent arguably the most intensely concentrated focal points for this phantasmatic explosion, firing the imaginations not only of the technologically literate but of those interested in entertainment, knowledge, and information—in short, of global populations.

Digital technologies have transformed the storage, circulation, and retrieval of information by transforming information of all kinds into binary form and reducing

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matter into silicon and liquid-crystal traces (the chip and the screen). Perhaps the most striking transformation effected by these technologies is the change in our perceptions of materiality, space, and information, which is bound directly or indirectly to affect how we understand architecture, habitation, and the built environment. These changes are most apparent in the development of complex systems of simulation, storage, and circulation of information and representation now labeled cyberspace and virtual reality. Cyberspace has been considered a "parallel" universe to our own, generated and sustained by global communications networks and computers linking disparate physical spaces and individuals through a shared virtual space, the space of linked, networked computers and their users.¹ The contours of this virtual space and its various contents can be generated, manipulated, and to some extent controlled in ways unheard of in the space(s) that we normally take for granted, which I will describe as lived, everyday space.

The simultaneous fascination and horror evoked by such technologies may result from how they are seen to supplant or replace those technologies to which we are accustomed, which we now designate as "real" and which we no longer see as technological interventions but as modes of everyday operation in the real. (An initial hypothesis: the virtual is not a pure, self-sufficient realm with its own fixed features and characteristics. Rather, it is a relative or differential concept whose status as virtual requires an actual relative to which its virtuality can be marked as such.)

The simulated environments offered by the Net and VR technologies have generated heated debate between two equally stringent and, I believe, equally naive, groups. On the one hand are the technophiles and cybernauts who see in this technology the key to new spaces, new identities, and new relations, in short, new worlds, open and

available, tailored to one's individual predilections and tastes—that is, who see in VR the potential for a world of unfettered choice. They believe there will be a choice not only of spaces, sites, and environments but also of bodies, subjectivities, and modes of interactions with others: "Cyberspace will not merely provide new experiences . . . it will change what humans perceive themselves to be, at a very fundamental and personal level. In cyberspace, there is no need to move about in a body like the one you possess in physical reality."²

Whereas many see in VR the ability to aspire to God-like status, to create, live in, and control worlds, to have a power of simulation that surpasses or bypasses the uncontrollable messiness of the real, others (sometimes even the same writers) revile and fear VR's transformation of relations of sociality and community, physicality and corporeality, location and emplacement, sexuality, personal intimacy, and shared work space—the loss of immediacy, of physical presence. These individuals may lament the replacement of face-to-face contact with connections established only through electronic mediation or the transformation and reduction of sexual relations from the directness of the bed to the immense technical mediations required for synchronous or asynchronous teledildonics.

Unashamed apologists of cybertechnologies and nostalgic Luddites yearning for days gone by see VR as a powerful force of liberation and a form of ever-encroaching fascistic control, respectively. In a sense these technologies carry both possibilities; but rather than explore technological potential and its relevance to architectural practice—something I am unfortunately unable to do—I hope to see, more broadly and philosophically, how conceptions of virtuality, simulation, computer reproduction and rendering transform our understanding of the real, matter, space, the body, and the world. Neither idealizing

nor reviling these emerging technologies, I hope to explore potentialities that are not clearly or simply associated with cybertechnologies alone but are latent in the very idea of futurity.

I must confess that I don't know much about computers. But I know that I like them. I like them not simply because they are incredibly convenient labor-saving tools or devices (I would like my vacuum cleaner if the same were true of it, though in fact we have merely a passing familiarity) but because the computer and the worlds it generates reveal that the world in which we live, the real world, has always been a space of virtuality. The real is saturated with the spaces of projection, possibility, and the new that we now designate as virtual in order to keep them contained behind the glassy smoothness of the computer screen. My computer makes this clear to me, although if I had thought more carefully about the strangeness of writing, of inscription, I would have seen the virtual there too, just as rich and rife with potential as cyberspace itself. The virtual reality of computer space is fundamentally no different from the virtual reality of writing, reading, drawing, or even thinking: the virtual is the space of emergence of the new, the unthought, the unrealized, which at every moment loads the presence of the present with supplementarity, redoubling a world through parallel universes, universes that might have been. I want to explore what the passion for the computer and the attachment to its virtual images, spaces, and projects entails for the notions of habitation that govern architecture, urban design, and the psychologies of inhabitation.

The concept of virtuality has been with us a remarkably long time. It is a coherent and functional idea already in Plato's writings, where both ideas and simulacra exist in

some state of virtuality. Instead of too closely identifying it with the invention of new technologies—as is the current obsession—we must realize that since there has been writing (in the Derridean sense of trace—that is, *as the very precondition* of culture itself), there has been some idea of the virtual. The text we read may be in real space, but to the extent that it is comprehensible to us, it also exists in a state of virtuality. We did not have to wait for the computer screen or the movie projector in order to enter virtual space; we have been living in its shadow more or less continually.

Yet significantly, and in spite of much of the accompanying rhetoric, the capacity for simulation clearly has sensory and corporeal limits that are rarely acknowledged, especially because the technology is commonly characterized as a mode of decorporealization and dematerialization. While the computer and its modes of simulation work with remarkable ease and offer pleasure in the visual realm, where we can enjoy the sight of virtual objects in virtual spaces, it is less clear whether we can draw a distinction between the virtual and the real in other perceptual modalities: it is hard to see what would constitute virtual sound and how it could be distinguished from “real” sound.³ Moreover, neither vision nor sound is virtual but rather the *objects* and *spaces* that vision and sound find as their fields of play. Vision, sound, touch, taste, and smell function in their same modalities as always. VR works, if and when it does, only on the assumption that the senses function as they always have, even in the face of perceptual inputs that have been drastically altered. Virtual objects are now capable of generating the same perceptual effects as “real” objects.

Jacques Lacan, in his earliest writings, ponders the intriguing attraction that specular images exert for the subject in the process of formation. When a real object is

reflected in a mirror image, the mirror contains behind its surface an object in a relation of inverted identity with the real object, existing in virtual space, the space behind the plane of the mirror. The mirror surface creates a virtual field that reflects the real, duplicating its spatiality and the object's visual characteristics. Gilles Deleuze later identifies a reciprocal interaction between the virtual and the real, an undecidable reversibility, as if the image could take the place of an object and force the object behind the constraints of the mirror's plane. Each makes a certain imperceptible contribution to the other, not adding any particular feature or quality but a depth of potential, a richer resonance. Lacan specifies that only through an encounter with a virtual counterpart, the double, do we acquire an identity; moreover, this identity remains irresolvably split because of an incapacity to resolve the differences between the real and the virtual body and because, in a certain sense, the real contains the space of the virtual image to the degree that the symbolic overcomes or supersedes the specular. In short, Lacan both affirms and undermines the reliance of the real on the space of virtuality, showing the necessity and impossibility of their separation.⁴ In a strange and rare congruence if not agreement with Lacan, Deleuze too, in his writings on Henri Bergson and the time-image, affirms that the real is only functional as such, exists in time, through its immersion in virtuality and saturation as the space of virtuality.⁵

The very term *virtual reality* attests to a phantasmatic extension, a bizarre contortion to save not the real (which is inevitably denigrated and condemned) but rather the will, desire, mind, beyond body or matter: this is a real not quite real, not an "actual real," a "really real" but a real whose reality is at best virtual. An equivocation in and of the real. An apparent rather than an actual "real." The two terms strain at each other, wrenching, as I will argue, the

reality of the real away from it, converting how we understand the terms thus oxymorically linked. The real is not so much divested of its status as reality as converted into a different order in which mind/will/desire are the ruling terms and whose matter, whose "real," is stripped away. The transformation of the real through the concept of the virtual interests me here as much as the technologies through which this change in conceptualization is made necessary.

To accomplish this transformation, it may be useful to contest a common misconception of the relation between the virtual and the real. As an example, I quote from a letter describing the conference session on "The Virtual Body" for which I wrote an earlier version of this paper: "Now, with the growing number of Internet communities, the real city is being challenged by the virtual city of the World Wide Web. In the historic city, a body is necessary to sustain oneself; in the new city of the Internet, only a mind need function. What are the implications of this re-configuration of the mind/body relationship to the continued viability of the city? How will the new collective of cyberspace, one that is conceptual rather than physical, understand the physical body and physical city?"

Explicitly spelled out here is a common set of representations of the (impossible) separation of body from mind, and thus real from virtual, a separation that I want to question, if only to show that the very real effects of virtuality and the virtual dimensions of reality cannot be so readily separated. This relation between the virtual and the real prefigures and is entwined with a whole series of other oppositional terms—among them, mind and body, culture and nature, origin and copy. Just as the separation of body from mind has long been the regulating fantasy not only of the philosophical enterprise but of those practices (including architecture) based on the privilege of its

terms (reason, order, truth, light, vision, etc.), so too the relation between the virtual and the real, while generated from a history of philosophy, has ramifications everywhere, from the most global of public spaces (today, the global space of broadcasting) to the most intimate of personal spaces (the space of individual inhabitation, production, and pleasure). It is the task of architecture, among other things, to negotiate how these spaces are to exist in contiguity with each other and how we are to inhabit them in times to come.

Implicit in the quotation above are a series of regulating assumptions that serve as mechanisms of containment regarding the impact of the virtual on the real. Among the most striking assumptions are (1) the separation of VR from the real and the material, the simulation from the original (seeing one as the dematerialization rather than the retranscription of the other); (2) the alignment of the real, historical city with the body and the virtual city of cyberspace with pure mind divested of bodily traces; (3) the linking of the “real” or “historical” city (the cities of the past) with the virtual or future city such that the latter is seen as the technological development, refinement, and replacement of the former (its evolutionary heir); and (4) the belief that the technological development of virtual communities and networks surpasses, displaces, and problematizes the body and, with it, identity and community as we currently know them.

These assumptions are quite typical of the discourses surrounding VR and cyberspace, which tend to be represented as spaces of disembodiment and thus as a new kind of space unconstrained by the limits of corporeality, available for the free exploration of either reason or imagination, or more positively as a space of bodily augmentation and displacement. What seems so alluring about the half-formed promise of VR technologies is the ideal of a world

of one's own that one can share with others through consensus but that one can enter or leave at will, over whose movements and processes one can exert a measure of control, and that brings with it a certain guarantee of pleasure without danger. In a sense, these assumptions are not all that far from the conditions necessary to produce the discipline and practice of architecture itself! (A second hypothesis: perhaps all technologies are modeled on architecture and thus implicated in architecture, at least an architecture that conceives of itself as the housing/clothing of bodies, matter, and spaces.)⁶

The ideal of transcending the body, suppressing corporeality, abandoning the sticky mess of material that constitutes our entwinement with the real, seems to have been pervasive throughout both philosophical theory (and through it, architectural discourses) and the mathematical and computational sciences that came together with engineering to design and produce computers and the virtual spaces upon which they now both rely. These disciplines are threaded together through the fantasy of a certain (always only partial) divestment from bodily existence and experience, indeed through a kind of resistance to death itself, here seen as the final limit of a body.

This pervasive fantasy of disembodiment is linked to the fantasy of mastery at a distance, of "tele-presence," the illusion of being able to leave the body at will and reappear elsewhere, to be present while not really present (a fantasy that is powerful in religious obsessions and in New Age belief systems). This fantasy is specifically articulated as such, without the slightest self-consciousness, in the writings of some pioneer figures in the area, and by many of the biggest names working on cyberspace, from Donna Haraway to Howard Rheingold, Michael Benedikt, Allucquère Stone, and William Mitchell. All in one way or another seek, desire, hope, or imagine some kind

of liberation, movement beyond and outside the body and its perceptual, sexual, or material limits in the mode of action-at-a-distance (which, significantly and rather strangely, Nietzsche has attributed to women as their special power of allure).

Benedikt clearly articulates this profound somatophobia: "Cyberspace . . . is nothing more or less, than the latest stage in the evolution of [Karl Popper's] *World 3* [the world of social objects, artifacts], *with the ballast of materiality cast away—cast away again, and perhaps finally.*"⁷ Countless other examples, with more or less sophification and consistency, can be cited. In a paper that openly acknowledges the ways in which prevailing conceptions of cyberspace are bound up in Cartesian dualism, Marcos Novak nonetheless, within the space of a paragraph, both affirms the inherent corporeality of all spaces, cyberspace notwithstanding, and declares: "If cyberspace holds an immense fascination, it is not simply the fascination of the new. Cyberspace stands to thought as flight stands to crawling."⁸ In short, cyberspace is a mode of transcendence, the next quantum leap in the development of mind, as flying transcends the bodily activity of walking. The relation between virtual or cyberspace and real space is conceived throughout as a relation of mind to body, or transcendence to immanence, with all of the hierarchical privileges accorded to the mind in Western thought.

More than most cultural theorists, Allucquère Stone—perhaps because of her dual intellectual investments as emblematic transsexual and as eminent cybertheorist/performer—finds the allure of cyberspace precisely that of transsexualism: the capacity of a supervening subject or mind to choose its body and modes of materiality, claiming experience of multiple subject positions even while appearing to acknowledge the inherent belonging together of any mind in and as a body. While she ac-

knowledges corporeal embeddedness, she is fascinated by the options available to a consciousness that can choose a male or female body, a black or white one: "How do people without bodies make love?"⁹ Are there people without bodies? What could they be? If they can transcribe, metamorphose themselves from one corporeal context to another, in what way is a person then embodied? (The very language of embodiment implies a "putting into the body": could this be a residual language of philosophies of disembodiment?) What would making love be without a body? To be fair to Stone, in a number of contexts, her work does quite precisely characterize the status of cyberspace; she does describe cyberspace as a locus of intense desire for refigured embodiment, and thus as something less than the transfiguration of human matter into cybernetic information.

Less self-promoting and ubiquitous theorists, even in their more self-aware moments, seem stuck within the conundrum: to supersede a Cartesian division between mind and body through notions of cyberspace is surreptitiously to reintroduce it where it seems most readily vanquished: "A grand paradox is in operation here: even as we are finally abandoning the Cartesian notion of a division of mind and body, we are embarking on an adventure of creating a world that is the precise embodiment of that division. For, it is quite clear that our reality outside cyberspace is the metaphysical plane of cyberspace, that to the body in cyberspace we are the mind, the preexisting soul."¹⁰

I am less concerned about this separation of mind from body, and of virtual from physical or real—although how it is possible to escape the body and the real is unclear to me, even or especially as one dons one's virtual gloves and goggles or lights up that necessary cigarette and prepares coffee to begin a heavy session on the computer—

than I am about how cyberspace and the space of virtuality require us to rethink matter and corporeality to accommodate their strange meanderings. I am less interested in the displacement from the physical to the conceptual, from the body to the mind, because I do not believe that such a displacement occurs now, or ever. If we don't just have bodies but are bodies (as I have argued elsewhere),¹¹ there can never be the threat of displacing body in favor of mind or abandoning the real for the virtual. Rather, cyberspace, virtual worlds, and the order of computer simulation—whether imagistic or computational—show that our notions of real, of body, and of the physical or historical city need to be complicated and rethought to accommodate what they seem to oppose. My goal here is to rethink some of the more traditional concepts—the physical, the corporeal, the real, the material—in light of the unhinging that concepts like the virtual and the conceptual propose. These terms continue to refuse their external status as oppositional terms and instead are seen to inhabit the very heart of the real and the material. This virtual is not a geometric, spatial, or technological concept, nor is it structured by phantasmatic or imaginary projections alone; rather, it is the domain of latency or potentiality, given that the boundaries between the virtual and the real or the physical are unsustainable.

What does the concept of cyberspace offer architecture? At least two things: the idea of a disembodied, nonmaterial, or transcendental notion of design, design disembodied from matter; and the idea of a simulation, reproduction, enhancement, or augmentation of the senses and materiality. What role do computers play in architecture? They function primarily as sites of simulation and calculation, as networks of information and exchange.

Is there something distinctive about the computer's architectural inflections? Does computer technology imply a particular modality of the visual simulation of lived or mobile space (the space of cybernetic planning and design), which remains in principle no different from drawings and plans in their more conventional forms? Is computer technology distinctive because of the mobilization, the animation of space that it brings, the simulation of its inhabitation? Is it the capacity for multiple calculations (structural, financial, mathematical, logistic)? These particular modalities and usages seem to preserve intact the fundamental structures of design, marketing, client refinement, and interaction with the profession, speeding up the time of communication while visually enhancing the experience of design. Yet both the space of computer simulation and the reconceptualization of virtuality do threaten to create major upheavals if their consequences and implications are not carefully considered.

More than functioning in the realm of design, planning, and projection, computer technologies are increasingly incorporated into building itself, as one of its devices. Rather than simply being seen as a device or tool at the disposal of the architect, designer, or planner, the latest technology (that is, as an instrument that in no way upsets the purpose for which the instrument or tool is used), the computer threatens, in the words of Roland Barthes, to change the object itself. The virtuality of the space of computing, and of inscription more generally, is transforming at least in part how we understand what it is to be in space (and time). The Net not only speeds up and enhances information storage and retrieval and communications structures, but it threatens to disrupt or reconfigure the very nature of information, communication, and the types of social interaction and movement they require. It threatens to transpose spatial relations into temporal

ones (the geographical dislocation of subjects is compensated for on the Net through both the instantaneity of communication and the dislocation of synchronous communications) and community relations into solitary sociality (the Net is mediated through the one-to-one connection between user and computer, even as the user and computer are wired up to the Net).

Can the computer screen act as the clear-cut barrier separating cyberspace from real space, the space of mental inhabitation from the physical space of corporeality? What if the boundary is more permeable than the smooth glassy finality of the screen? What if it is no longer clear where matter converts into information and information is reconfigured as matter or representation? I am thinking here of the implications of the rather wild and newly emergent discipline of artificial life, which has come out of the convergence of biological modeling and mathematical physics and which, like the domain of architectural applications, wants to simulate the (in this case, evolutionary) space of the lived world.

What would be a virtual house? Or is this way of formulating the issue already the problem? This question implies that one can design or build a virtual house within the confines of a real environment, fiddling about with one feature or detail, giving it virtuality in the otherwise bland real without understanding that the entirety of the environment—the real itself—is always already virtual insofar as it is open to time, historicity, and futurity. The relevant question is less “Can one design a virtual house?” than “How can one design in such a way as to bring out the virtualities of building and of the real itself?”

There seem to be two different ways of conceiving of virtuality in architecture: (1) as an entirely new technology developed through the use of computers, a technology that can or should somehow be incorporated into the way

that buildings work (security systems, electrical systems, even watering systems are now readily programmable rather than manual tasks); and (2) as an entirely new way of seeing, inhabiting, and designing space. The first concept involves understanding the space of virtuality, cyberspace, as a containable, separable field, entered voluntarily when one enters one's access code into a machine from which one can choose to walk away. (This is how the Net and its associated hardware and software are marketed: as enhancement of existing skills rather than the production of new needs and skills.) The second involves reconceptualizing the real and the relations of embeddedness, the nesting or interimplication (perhaps another name for difference) of the virtual and real within each other.

What does the idea of virtuality, rather than virtual reality, offer to architecture? The idea of an indeterminate, unspecifiable future, open-endedness, the preeminence of futurity over the present and the past, the promise not of simulation (which is a repetition, representation, or re-production of a real or an original—a copy, with its own particular joys and aesthetic delights) but of (temporal) displacement, not simply deferral but endless openness. The idea of open-endedness, indeterminacy of function or telos, or the openness of form needs to be reworked not only in technological terms but more urgently (since technological development seems to have its own often quite different pace) in terms of viable and aesthetic incorporations of an idea of virtuality, of futurity (of retroaction, the continually rewriting, rehabilitation, reinvestment of the present so that it is never fully itself). (A third hypothesis: we can only live in the real insofar as it is continually [re]inhabited, reinvested, and reinvented by virtuality.)

To return to that vexing question of the virtual house: it seems to me that the virtual house may well be the house

whose design incorporates whatever gadgets and technological features it desires (ranging from the megadigitalization involved in Bill Gates's house to the more mundane surveillance systems now readily incorporated in many homes and offices). The degree of its technologization is not a clear index of the degree of its openness to virtuality. If virtuality resides in the real (as the oxymoron "virtual reality" implies), this is because the real is always in fact open to the future, open to potentialities other than those now actualized. The challenge that VR poses to architecture cannot be reduced to the question of technology. If this occurs, then the question "How can this *x* (building, computer system, mode of simulation, structure of desire) function otherwise, open to difference?" is elided. And this is the crucial question that the virtual continually poses to the real: How can the real expand itself? The virtual poses no threat to the real because it is a mode of production and enhancement of the real: an augmentation, a supplementation, and a transformation of the real by and through its negotiation with virtuality.

Virtuality is not limited to the arena of technological innovation. Perhaps the most conventional of architectural forms and presumptions best illustrates what I understand as the impact, resonance, and richness that the virtual brings to the real: the wall. The capacity of walls, boxes, windows, and corners to function in more than one way, to serve not only present functions but others as well, is already part of the ingenuity and innovation of the virtual in the real. Makeshift, piecemeal transformations, the usage of spaces outside their conventional functions, the possibility of being otherwise—that is, of becoming—must be as readily accorded to the built environment as it is to all futurity.

1. In-Between

What does it mean to reflect upon a position, a relation, a place related to other places but with no place of its own: the position of the in-between? The in-between is a strange space, not unlike the choric space that Plato, in the *Timaeus*, posed as the condition of all material existence. For Plato, *chora* is that which, lacking any substance or identity of its own, falls in between the ideal and the material; it is the receptacle or nurse that brings matter into being, without being material; it nurtures the idea into its material form, without being ideal. The position of the in-between lacks a fundamental identity, lacks a form, a givenness, a nature. Yet it is that which facilitates, allows into being, all identities, all matter, all substance. It is itself a strange becoming, which is somehow, very mysteriously in Plato, the condition of all beings and the mediation of Being. There is a certain delicious irony in being encouraged to think about a strange and curious placement, a position that is crucial to understanding not only identities, but also that which subtends and undermines them, which makes identities both possible and impossible. The space of the in-between is that which is not a space, a space without boundaries of its own, which takes on and receives itself, its form, from the outside, which is not *its* outside (this would imply that it has a form) but whose form is the outside of the identity, not just of an other (for that would reduce the in-between to the role of object, not of space) but of others, whose relations of positivity define, by default, the space that is constituted as in-between.

Six In-Between: The Natural
In Architecture and Culture