

*Flows and Places*

The relationships of production, experience, and power are material processes that relate people and things to one another in historically specific ways. They constitute the fabric of society, realized, and contested, in space. The particulars of their spatial forms are neither accidental nor without consequences. Rather, they are a central aspect of the overall character of society. The analysis of the complex interaction between the structural logic of these relationships and the concrete materiality of their realization in and through space provides the organizing structure to Castells's entire work. People, as long as they are physical beings, cannot but live and act in space, and the spaces they create reflect and shape social life in its totality.

The transformations of space are, quite literally, the grounding of Castells's holistic perspective on interrelated social dynamics. All social processes have substantial spatial components, which in one way or another are materialized, and thus rendered empirically observable, in physical places, in particular cities and regions. A theory of space is therefore an essential element of a comprehensive social theory, and vice versa. In fact, Castells has always taken them to be coextensive. Quite simply, "there is no theory of space that is not an integral part of a general social theory."<sup>1</sup> In such a perspective, space is not a container. Space is not a given, nor is it stable. Rather, space is constituted by social relations and transformed along with them. In the following, I will sketch Castells's theory of space, with particular emphasis on the theory of the space of flows. Along with the emergence of a new type of space, Castells argues

that time has taken on new characteristics in the network society. I will focus on this argument in the second part of this chapter. In the final part, I will look at how Castells conceptualizes the interaction between the space of flows and the space of places, leading to a transformation of the urban landscape.

The analysis of the particular character of time and space provides the framework that integrates the various domains of the network society into a coherent theory. It constitutes the single most original aspect of Castells's entire theory.

### **Castells's Theory of Space**

Philosophically speaking Castells's theory of space as a (social) relation stands in the lineage of Gottfried Wilhelm Leibniz (1646–1716). Leibniz argued against the notion of space as an absolute entity which had just been proposed by Isaac Newton (1642–1727). Newton had conceived space as “God's boundless uniform sensorium,” implying that the reality of space is prior to the existence of things. Objects are located in space, which is unvarying and infinite with no relation to the objects in it. In contrast, Leibniz argued, that space is created in between things, and therefore there can be no such thing as empty space, not the least because this would be a substance without properties. It is the objects that create space. Space is constituted by the relationship among these objects. Without objects, there is nothing in between, hence there is no space.<sup>2</sup>

It is not a coincidence that debates concerning the nature of space preoccupied many of the leading thinkers of the late seventeenth and early eighteenth centuries. It was a time of profound change, not unlike our own. From the perspective of McLuhan's media theory, Newton's notion of space – absolute, infinite, and stable – betrays a “visual” bias, characteristic of “print culture” in general. The Leibniz–Newton debate took place at a time when European societies were deeply transformed, a process which laid the foundation for modern science and politics. Or, as McLuhan described it, Europe was entering the “Gutenberg galaxy.” Leibniz's notion of space – relational, finite, and flexible – is closer to what McLuhan called an “acoustic” conception of reality, characteristic in preprint, or more generally, oral cultures. In this sense, Leibniz defended an older sensibility against Newton's new, scientific worldview.

The same theoretical perspective suggests that today we are witnessing a similarly profound transition, resulting in the decline of

print culture. It is not that printed works disappear; after all, you are probably reading these words printed on paper. However, print is no longer the dominant medium of social communication. With this decline, certain key ideas that characterized print culture are being called into question, and notions that were once tied to oral cultures are being revived. This is not a cyclical return back to old concepts, as McLuhan sometimes seemed to suggest. Rather, following Walter Ong, this revival is better characterized as the "secondary orality" of electronic communication. For Ong the new orality is secondary because "the orality of telephones, radio, and television . . . depends on writing and print for its existence."<sup>3</sup> In other words, the now dominant informational mode of communication is giving new meaning to ways of conceptualizing the world which are in many of their aspects much older.

Thus it is also not a coincidence that today notions of space (and of time) are being reconceptualized simultaneously in many intellectual disciplines, after the domination of Western thinking by the Newtonian vision of stability and infinity for some three hundred years.<sup>4</sup> Rather, one can argue that this is again connected to profound cultural transformations related to the rise of new communication media. This "today" must be understood in a historical dimension. For McLuhan the exit from the Gutenberg galaxy began with the introduction of the telegraph (mid-nineteenth century) and accelerated with radio and the telephone (early twentieth century). The dominance of print culture was finally brought to an end with the rise of television as the preeminent medium of communication. This is why McLuhan argued in the early 1960s that we had left the Gutenberg galaxy. Almost 40 years later, Castells proposes that we have entered the internet galaxy.<sup>5</sup>

For Castells the contemporary transformation of space is directly related to the increasing importance of electronic communication. However, contrary to McLuhan, who concentrated on the transformation of perception (the shifting "balance of the senses"), Castells's focus has always been on the social ordering of things, much closer to Leibniz, for whom space was "an order of coexistence." "Space, as a social product," Castells has argued consistently since the early 1970s,

is always specified by a definite relation between the different instances of social structure, the economic, the political, the ideological, and the conjuncture of social relations that result from them. Space, therefore, is always an historical conjuncture and a social form

that derives its meaning from the social processes that are expressed through it. [Consequently,] it is absolutely necessary to study the production of spatial forms on the basis of the underlying social structure."<sup>6</sup>

Space, then, is a product of society. We cannot understand the specifics of space without understanding the society as a whole which creates this space; consequently, a space-centered analysis must always be holistic. This is so not only because space is not a fixed container, but also because space is not simply a mirror of social relations. Space is as much a product of society as it is a source of social dynamics. It is both a way in which the past reaches into the present, and raw material to build the future, used by social actors according to their own objectives and abilities. Many of the political disagreements within the New Urban Sociology of the 1970s can be traced to the fact that some (for example, Castells) focused on how the past reaches into the present, creating structural determinants, whereas others (for example, Lefebvre) focused more on how space could provide a resource to build an alternative future.

Space, in the last resort, cannot be conceived without time. They are expressed through one another. In Castells's perspective, their relationship is such that "space is the material support of time-sharing social practices. . . . [It] brings together those practices that are simultaneous in time."<sup>7</sup> If social actors are not present in the same space, they cannot share time, that is, interact in real time. For much of history, the only space that allowed for time-sharing was a place, that is, "a locale whose form, function, and meaning are self-contained within the boundaries of physical contiguity."<sup>8</sup> If it takes time to get from place to place, time cannot be shared across places. This does not mean places are not connected to one another, or that they are independent from one another. But their connection is defined precisely by the fact that they do not share the same time, for better or worse.

For a long time, this proposition seemed such common sense that it could be assumed without ever being specified. Indeed, Castells, for all his interest in space, regarded time as entirely unproblematic until quite recently. The space of time-sharing was assumed to be a place because time and space were taken to be coextensive. Analyzing the restructuring of capitalist production during the 1980s, Castells concluded that this common sense was no longer justified. Rather, a new type of space had been created. It enabled social

actors to share time across places. Suddenly social actors could be in the same temporal space without being in the same physical space. More importantly for a sociological analysis, key social institutions were being restructured to take advantage of this fact, thus gaining competitive advantages over those who continued to follow the conventional logic of time/space. In this restructuring process, these institutions, mainly capitalist firms, actively expanded the space of flows to the point where it became the material basis for the dominant processes in the network society. According to Castells, the threshold was passed in the second half of the 1980s.<sup>9</sup>

### **The Space of Flows**

Technologies have always shaped the social reality of space and time. Comparing ancient Egypt to ancient Greece, Harold Innis was the first to propose that the historical organization of space and time was closely related to the type of communication media dominant in a particular culture. He argued that writing in stone, characteristic of Egyptian culture, created a bias toward time, that is, a concern with the organization of deep traditions and long lines of ancestry. The management of time, and thus of society, was in the hands of a caste of priests, who interpreted the events of the present in relation to the divine flows of time. Writing on paper (or parchment), on the other hand, created a bias toward space, that is, a concern with organizing territory, with much less emphasis on tradition and ancestry. The management of space, and therefore of society, was organized by secular authorities which managed armies and trading routes whose meaning was determined within a human timescale.<sup>10</sup>

The great historian Fernand Braudel, and many others, showed how writing letters, keeping accounting books, and advances in maritime technologies were essential to extending commerce across land and sea from the sixteenth century onward, thus again affecting notions of time and space.<sup>11</sup> Alfred Chandler detailed how the introduction of the railway and the telegraph allowed, for the first time, the integration of the entire country into a single market. These technologies were key elements in the emergence of new organizational forms and new managerial approaches in late nineteenth-century America. To exploit the new economies of scale, economic enterprises of unprecedented dimensions and complexities emerged within a few decades. These giant corporations, and

the social conflicts they created, were decisively shaping the social, cultural and political development of the period.<sup>12</sup>

Anthony Giddens theorized “time-space distanciation” – the stretching of social relationships across time and space – as one of the hallmarks of modernity.<sup>13</sup> At the end of the 1980s, the geographer David Harvey summarized this historical trend in the concept of “time/space compression,” and noted a significant acceleration of social, in particular capitalist, dynamics due to new global communication networks.<sup>14</sup> Postmodern theorists, particularly Paul Virilio, have been paying close attention to changes in the social structure of time and space. Taking the notion of “time/space compression” to its logical conclusion, Virilio argued that space is being annihilated by computer networks, establishing the “dictatorship of speed,” leading, paradoxically, to “total inertia.”<sup>15</sup>

Castells concurs with the now conventional wisdom that social relationships have been expanded across distances at an ever greater rate and speed. However, he suggests that there is a historical limit to the process of “time/space compression.” Contrary to postmodern visions of finality, time and space are fundamental categories of social life and cannot disappear. Computer networks are not black holes. At one point, the negative, quantitative dynamic of compression (less space, less time) turns into a qualitatively new condition (a new type of space/time). This is exactly what Castells proposes with his concept of the space of flows: a new material basis for time-sharing on which the dominant social processes are reorganized and managed through flows. That is, through “purposeful, repetitive, programmable sequences of exchange and interaction between physically disjointed positions held by social actors.”<sup>16</sup>

It is worth going into the detail of the construction of the argument before looking at how it is applied. In Castells’s theory, time and space are inseparable and coextensive. In order to be in the same time (that is able to interact in real time), actors need to be in the same space, which, up to now, has always been a place. Consequently, the fact that two actors can be in different places – say, one broker working in New York City and one in London – but share the same time – the present of the financial markets – indicates that the social reality of space has been transformed. A new kind of space must be present which brings those brokers together in time without contiguity of physical space. Since time and space are coextensive, this new space is fundamentally different from physical space, yet connected to it. After all, our brokers are physical beings, one located in downtown Manhattan, the other in the City of

London. This new space, the space of flows, does not replace the geographical space; rather, by selectively connecting places to one another, it changes their functional logic and social dynamics.

For Castells, the emergence of the space of flows signifies, more than anything else, that we have passed a historical watershed and have, indeed, entered a new era. The notion of a watershed, with its thin line of separation, is always a bit problematic, since nothing is created in an instant, not even the space of flows. After all, the telephone has enabled real-time communication across distances for more than a hundred years,<sup>17</sup> and the financial markets have operated across continents in real time since the early 1970s.<sup>18</sup> So, what's new? New, Castells argues, is the relationship between the different time-sharing practices with their distinct material foundations. Until some time in the 1980s, Castells implies – without stating it explicitly – the social practices that relied on physical places for time-sharing were dominant over those built around time-sharing across distances. The effect of the growth of the latter was that they changed the social distance between physical places; hence time and space was compressed. To use a metaphor popular in the 1970s, the world was shrinking. Not anymore. As advertisements in the 1990s announced, “your office has just expanded.”

The space of flows does not indicate a linear shrinking of distance, but the establishment of an environment with a completely different, nonlinear spatial logic. Being part of the space of flows means being part of a context whose functional logic is based on real-time interaction, no matter in which places its constitutive elements are located. Though, crucially, not all places are able to provide the infrastructure required to become part of the space of flows. Generally speaking, the more complex the time-sharing activities are, the smaller the number of places which can master the necessary resources to provide the material basis for carrying them out. While it makes no sense to ask whether the financial markets are located in London, New York or Tokyo, it is no coincidence that the centers of twentieth century capitalism were able to transform themselves into the key nodes of the global financial markets in the twenty-first century.

The key to Castells's conception of the space of flows is its materiality, because it foregrounds how expensive and complex it is to create, maintain and navigate that space. In this particular sense, Al Gore's metaphor of the “information highway” is more apt than it was given credit for at the time. This extensive materiality introduces new sources of social exclusion and social stratification that

are manifest in new spatial patterns of urban development. Before considering its effect on geographical places, it is important to look at the materiality of the space of flows in more detail.

Castells differentiates between three dimensions that make up the space of flows. The first is the "circuit of electronic exchanges." These are the global information and communication infrastructures that enable real-time interaction across the globe. Importantly, this infrastructure does not just transport digital information around the world, but it is also the foundation of the accelerated movement of people and goods. Consequently, it is made up of information networks, but also of high-speed transportation links through air, land, and water. This infrastructure creates potentiality. These are the pipes and conduits of the flows. The ability to hook up to this infrastructure is the precondition for entering the space of flows. Disconnected from the technological networks, social institutions, places, and people are being marginalized. Even places which prosper by promising disconnection, say vacation resorts, do so on the basis of fast transportation links and deep information flows to selectively maintain those links deemed necessary. Rather than disconnection, they offer particular filters.

The massive, material infrastructure of the space of flows is highly maintenance intensive and requires advanced knowledge and services to work efficiently. Hence the network is not evenly distributed, but clustered in nodes and hubs, the second dimension in Castells's model. In such places, multiple services are provided and consumed, thus creating critical mass for a self-sustaining ecology capable of continuously (re)producing the material basis of the space of flows. The interlocking clusters of financial and administrative services created and managed in global cities are the best analyzed example. They provide the major nodes of the global financial markets, and much of their material and social basis.<sup>19</sup> However, Castells points out that, depending on the types of processes managed in the space of flows, the geography and functionality of its hubs and nodes differ. For example, the hubs producing academic and industrial knowledge, concentrated in what Castells calls "milieux of innovation," exhibit a different spatial distribution than those managing the production and distribution of cocaine, though there are certainly connections between them.

Yet, in all of these networks, the most important nodes require a certain size without which it is impossible to manage the intricacies of advanced processes that make up the space of flows. As Saskia Sassen has shown, advanced financial services are located in a

complex and extensive ecology, composed of other high-end legal and cultural services but also of low-level clerical and services labor, and close proximity to a major transportation link.<sup>20</sup> It is this size and complexity of the nodes that explains why the distribution of nodes follows a historical logic, and why the major cities still play a central role, despite the placeless logic of processes organized within the space of flows. It is difficult to create such a complex ecology from scratch, though it certainly can be done, as indicated by development of "technopoles," government-sponsored innovation centers, some of them located outside major metropolitan areas.<sup>21</sup>

But network nodes are not just an agglomeration of circuits and abstract, automated services. Crucially, they are also places where people meet and elites constitute themselves, Castells argues, as a cohesive social group. A particular spatial distribution of, and specific spatial forms created for, this elite provide the third dimension of the space of flows. The territory occupied by these people is separated from the territory of other social groups, first and foremost, by the very real barrier of pricing. They work in expensive offices, live in the most prestigious residential neighborhoods, eat at high-end restaurants with international cuisine, spend their leisure time in secluded clubs, and travel to exclusive resorts for vacationing. If pricing is not enough to keep out the local population, then walls, security services, and other forms of enforced separation are created. Gated communities provide the most visible physical expression of this trend. Around the world their construction has boomed in the 1990s, in direct relation to the growth of slums.<sup>22</sup>

In between, there is a global infrastructure of hotel chains, conference centers, VIP airport lounges, and limousines creating physical bridges between the nodes. Crucial for the smooth flow of people within these circuits, Castells argues, has also been the creation of a lifestyle and the design of "spatial forms aimed at unifying the symbolic environment of the elite around the world, thus superseding the historical specificity of each locale."<sup>23</sup> The dimension of a shared culture remains essential for the functioning of loosely coordinated yet highly interactive and complex networks. Ease of communication, personal trust, and the intimacy of face-to-face communication are still essential elements of interaction. The business lunch does not lose its role as a strategic site to initiate new relationships and close deals, nor does the bed. The ability of people from vastly different backgrounds to cooperate is based on a shared cosmopolitan culture. Leading universities, such as Boston's MIT,

the London School of Economics, or the Singapore National University, are not only important producers of advanced knowledge, but also producers of the global elite's shared culture. Thus a cosmopolitan elite culture has emerged with its own trends, fashions, and codes, taking its inputs from nodes in the network rather than from the particular places where its members happen to reside.

The space of flows is the infrastructure of high-speed, high-volume, high-precision communication and transportation, spanning the globe but clustered in specific places based on their ability to provide the resources relevant to advancing the networks' particular programs. Through this infrastructure, elites produce and process vast amounts of information based on which decisions are made. The logic of these decisions cannot be understood by reference to the geographic location of the decision makers, or of those affected by the decisions. Rather, the relevant frame of reference is their position within the overall global networks organized in the pursuit of wealth and power. This placeless logic separates the space of flows, its physical nodes and the people operating them, from their geographic environment, the neighboring local population and their local cultures. In the mid 1980s, Castells summarized this trend as the growing "contradiction between placeless power and powerless places."<sup>24</sup>

It was from this initial observation that the theory of the space of flows was developed at the end of the 1980s. Its elaboration was based on an extensive analysis of the transformation of the spatial distribution of the most advanced industries: microelectronics, finance, and certain sectors of manufacturing.<sup>25</sup> At the time, access to the global communication infrastructure was, by and large, restricted to major organizations with significant financial and staffing resources. The internet was nowhere near a public communication medium. In fact, in Castells's empirical analysis which supported the first formulation of the concept, the distribution of fax machines played a far greater role than access to the internet. This situation of unequal access to communication and information processing infrastructure deepened during the first half of the 1990s. The restructuring continued at the centers of wealth and power, whereas smaller organizations, let alone individuals, still had neither the resources nor the skills to enter the space of flows. During the first half of the 1990s, the difference between the global organization of wealth and power and the local organization of people and cultures was, quite arguably, the most accentuated. Only the elites were able to act globally. In this context, it made sense to

draw a sharp distinction between the space of flows, as the space of the elites and socially dominant processes, and the space of places, as the space of isolated and increasingly powerless local populations.

However, much has changed over the last decade. With the development of the internet into a mass medium, the range of people who can access the global communication infrastructure has grown exponentially. With several hundred million people online, it is not an elite space anymore, despite the continuing overrepresentation of the white, English-speaking North. In a way made possible by the lowering of the hurdles of access to the internet, small organizations and individuals have transformed some aspects of the social, technical, and spatial foundations of the space of flows. This has two important consequences in regard to Castells's model.

First, it is not only the dominant social processes managed by the elite that are organized in the space of flows, but an increasingly broad range of social activities, dominant and marginal, public and private, collective and individual, representing a much fuller range of human expressions, projects, and desires. Social movements, as we have seen, have found their way from the city to the space of flows at the end of the 1990s. Second, the dynamics of the space of flows no longer always supersede the dynamics of the space of places. On the contrary, from the Zapatistas to community networking and fully fledged digital cities, from the radical left to the radical right, social movements of all kinds are using the space of flows on behalf of locally rooted projects. Such initiatives are building linkages between flows and places. Using these linkages, people are finding ways to enter the space of flows without leaving the space of places, or to be more precise, to go back and forth easily. Furthermore, mobile technologies allow people to develop new spatial practices by coordinating each other, ad hoc, through the space of flows, congregating and dispersing in self-selected rhythms.<sup>26</sup> In short, in less than two decades, the space of flows has become a part of everyday life, not just influencing the lives of billions of people, but also providing resources which an ever growing number of people can draw upon creatively.

Does this require the theory of the space of flows to be revised? It seems clear today that the radical dichotomy of the space of flows and the space of places suggested in the late 1980s, and expanded in the first edition of *The Information Age* trilogy, has dissolved. Now the connections between the two types of space are much more

complex and flexible. This, however, fits well into Castells's general theory of space. Space, of all types, is a resource that can be mobilized, to varying degrees, by a wide range of social actors in the pursuit of their particular agendas. After all, what Castells remarked in the early 1980s still applies: "Spatial forms will be produced by human action. . . . They will express and perform the interests of the dominant class. . . . At the same time, spatial forms will also be marked by resistance from exploited classes, oppressed subjects and abused women."<sup>27</sup> This is not fundamentally different in the space of flows. Thus Castells had little problem in revising his own theory by pointing out that "the geography of the new history will not be made, after all, of the separation between places and flows, but out of the interface between places and flows and between cultures and social interests, both in the space of flows and in the space of places."<sup>28</sup>

Apart from this necessary correction, the basic elements of the theory of the space of flows still seem supported by empirical reality. Nearly all the strategically dominant activities – generating most of the financial wealth and administering the most powerful institutions – operate through the space of flows, and their relative power, compared to activities organized on a purely local basis, has only increased. The global elite is still relatively cohesive, dominating fragmented local populations, even if the resistance and mutual interconnection of the latter have increased. Finally, the dominant activities are still highly clustered in a few central nodes. After all, the internet, with its relatively open access, is only a small aspect of the space of flows, which also includes private and closed networks, such as the financial markets or corporate intranets (which are global as well).

Today, the most powerful processes of resistance also operate through the space of flows.<sup>29</sup> This strengthens the hypothesis that the space of flows is the space of power, including, today, counterpower. For social movements this is not without risks. It could replicate the tension between flows and places, between the leaders who need to operate increasingly in the space of flows in pursuit of coalition building, and the communities, who build their resistance around places. However, it remains to be seen how this tension actually operates within the projects that utilize the space of flows on behalf of local identities. Given the extraordinary creativity of new social movements in building their own sociotechnical tools and strategies, this tension could turn out to be the source of important social innovation, leading to new models of representation and

political articulation that invigorate the democratic processes currently under so much strain.

Yet the theory of the space of flows is not just about the growth of time-sharing practices across distances; otherwise we could still speak of time/space compression. On a more abstract level, Castells suggests that all these practices that are organized within this new space share certain characteristics which are particular to this space. This is another aspect of Castells's soft techno-determinism. Similarly to McLuhan, Castells argues that technologies have certain biases that shape the social organization built with them.<sup>30</sup> The space of flows is an integral part of the general transformation of the dominant pattern of social organization from fixed hierarchies to flexible networks. The connection between the new material basis of dominant social processes and their organizational form lies in the particular character of this new type of space, namely, its *binary spatial logic*.

As a material infrastructure, the space of flows is highly clustered in particular geographical places. Castells and many others have established this point empirically. There is no end of the city, and announcing the "death of distance" was premature.<sup>31</sup> Indeed, analyzing the spatial distribution of content production, which does not require the most sophisticated of infrastructures, Castells shows that even the internet is "overwhelmingly a metropolitan phenomenon . . . adapting to the preexisting metropolitan structure, rather than reversing it."<sup>32</sup>

However, from within the space of flows, particularly in respect to flows of information, the spatial distribution looks entirely different. Within the space of flows, there are, in principle, only two states of distance: "here" and "not here," presence and absence, no distance and infinite distance. It is this condition that allows nodes to flexibly connect within one another, no matter where they are located, because they are all "here" in the same time-sharing environment that is the space of flows. The connection between nodes, then, is dominated by functional considerations. Of course, organizations have always differentiated their components functionally, but conventionally the functional logic and the geographic logic overlapped and stabilized one another. Not anymore. Now they are being decoupled through the space of flows.

However, as Castells stresses, "the space of flows is not placeless, although its structural logic is."<sup>33</sup> The ability of a node to contribute to the program of a network is often directly related to its location, but seen from point of view of the network, nodes are differentiated

functionally, not geographically. Seen from the point of view of places, we are witnessing the fragmentation of their ordering into a nonlinear pattern of locales which are increasingly disconnected from one another. Not because they are isolated – on the contrary, they are often hyperconnected – but because their integration no longer happens on the basis of their geography, but on the basis of their function in specific networks, coordinated through the space of flows. This enables two adjacent places to be part of completely different functional processes, shaped by dynamics that have no relation to one another. In other words, the functional integration of distant places through the space of flows, and the fragmentation of physical places into disconnected locales are complementary. Fragmentation is the effect imposed by the nonlinear logic of the space of flows on the organization of the space of places. In this sense, Castells's analysis from the late 1980s still remains valid:

while organizations are located in places, and their components are place-dependent, the organizational logic is placeless, being fundamentally dependent on the space of flows that characterizes information networks. But such flows are structured, not undetermined. They possess directionality, conferred both by the hierarchical logic of the organization as reflected in instructions given, and by the material characteristics of the information systems infrastructure.<sup>34</sup>

This is the core of Castells's concept of the transformation of space. The space of flows is a material infrastructure that enables functional units to be organized into a single whole, operating in real time, independent of their geographical location. This applies as much to the global financial markets as to "virtual communities," as well as to those social movements which, as Castells puts it, "think local and act global," advocating local identities by mobilizing through the space of flows. The exact configuration between the nodes and their relation to the space of places depends on the program of the network. Yet, even for the Zapatista support network, the central organizational determinant is the ability of various nodes to support the indigenous struggle in Chiapas, rather than their proximity to it. It is not a contradiction to be a Zapatista in New York City. Such distant supporters are much more than a vague solidarity movement. They are key resources on which the struggle on the ground can draw directly and without delay. Their role is very different from that of the students marching against the Vietnam War, who had to rely on mass media as their (one-way) access to the nascent space of flows.

## The Time of Flows

If Castells's current conception of space is implicitly Leibnizian, his conception of time is explicitly so. For Leibniz, in close analogy to space, there is no absolute, infinite time because "instants apart from things are nothing and they only consist in the successive order of things."<sup>35</sup> In other words, time is sequence. The sequence of events is what creates time, and the historically determined way of how this sequence is ordered constitutes the social character of time. This social character of time is always the result of a specific mix of multiple temporalities, but one tends to be dominant. It structures the most important processes of a given context, thus creating its characteristic type of time. For example, in the Middle Ages, the temporality was cyclical. It followed the rhythms of nature, which still dominated those of human culture. There was no sense of progress, and the past, present, and future were not clearly differentiated. This cyclical rhythm of human life took place on top of a linear flow of divine time, starting with the creation and ending with the day of the final judgment. However, this divine flow of time had little effect on the succession of things in everyday life. Only an elite group of priests was allowed to relate the two spheres together. Any unsanctioned announcement of the end of time and the imminent arrival of the final judgment was prosecuted as a severe act of heresy. Clearly, God's time was not for everyone to read.

A key element in the establishment of modernity was the secularization of linear time and the reordering of social relationships through the diffusion of mechanical clocks.<sup>36</sup> In Lewis Mumford's classic formulation, "the clock is not merely a means of keeping track of the hours, but of synchronizing the actions of men."<sup>37</sup> Clock time became the dominant social temporality, making possible notions such as punctuality, hourly wage, saving and wasting time, and the strict separation of past, present, and future. The British historian E. P. Thompson identified the new "time regime" as the central element in the transformation of peasants into workers.<sup>38</sup> Of course, cyclical temporalities continued to exist, but their relative importance decreased. The mechanical clock was a source, and a powerful symbol, of the growing dominance of man over nature. The establishment of daylight saving time in the twentieth century (1916 in the UK, 1966 in the US) can be seen as one of the most recent steps in a long process of the reordering of social rhythms through the clock. Due to an arbitrary decision, people across the world are

now moving their clocks forward and backward each year, highlighting the pure conventionality of modern time regimes. The only people who had difficulty with this new invention in time were those who lived closest to the rhythms of nature, fishermen and farmers. Characteristically, their protests made no difference.

Castells argues that cyclical and linear temporalities have in common that they establish relatively predictable sequences. Indeed, it is this very ordering of events into sequences that establishes the relational notion of time in the first place. Under the influence of informationalism, the predictable sequence of events is being disturbed in an increasing number of areas, from the natural to the cultural, from the individual to the collective. If time is sequence, and informationalism reorganizes events into instances without meaningful sequence, then time itself is being called into question. This is what Castells means by "timeless time," the "systemic perturbation in the sequential order of phenomena."<sup>39</sup>

In the current discussion on the transformation of time, many different concepts have been proposed. John Urry, for example, notes a multiplicity of temporalities, ranging from the "comptime" of the financial networks to the "glacial time" of the environmental movement, from the "biological time" of organic growth to the "clock time" of industrial organization.<sup>40</sup> With the concept of "timeless time" Castells does not want to add yet another notion of temporality, but tries to account for the effect created by the interaction of all of them. In the German discussion, the notion of *Verzeitlichung der Zeit* has been proposed.<sup>41</sup> Usually, this is translated as "temporalization," but it might be translated more adequately as "timing of time." The idea is that the production of time, contrary to the classic Newtonian concept, is itself a historical process. Time is constructed in time. In the social sciences, this is not a particularly controversial idea, but increasingly it is also accepted in the natural sciences.<sup>42</sup> What *is* new, Castells suggests, is that there is no longer a dominant temporality, neither traditional biological time, nor modern clock time, nor any of the others. The cumulative effect of the interaction of multiple temporalities, without reference to a dominant one, is a chaotic fluctuation in the sequence of events. Society as a whole, so runs Castells's thesis, has lost its ability to establish a reliable pattern of sequence in relation to which individual and collective actors can organize themselves; hence they are forced to embark on the hazardous project of establishing their own temporality. As John Urry's list indicates, some have been more successful than others in this regard.

The formulation of “timeless time” itself may not be particularly helpful, as it defines time by what it no longer is, a sequence. Time that is not time, a paradox, and like many paradoxes this one feels a bit shallow. Timeless time is the only significant building block of his theory where Castells is forced to rely on a negative definition, post-time. Following the same logic, the space of flows would have to be called “placeless space,” and thus would be much less convincing. It is perhaps best to think of the term “timeless time” as a place holder, waiting to be superseded by a more nuanced, forward-looking notion. However, a terminological weakness itself says little about the significance of the development it tries to make visible. A shattering of predictable sequences (rather than sequence itself, I suppose) into an order whose logic can only be established after the fact – in a wide range of areas, for a large number of people – would indeed be a different social experience, compared to time seen as an orderly succession of things. But is this so? Are we, as a society, becoming unable to (re)produce time reliably?

Castells presents a very uneven case in support of this strong claim. The financial markets are excessively timebound, but their time is manufactured and arbitrary, with the future defined by a range of contracts which are often specifically designed to affect the future on which they are speculating, with the past being discarded – unless it is reintroduced into what is essentially a never-ending real-time present. Time is measured in seconds or less, and the future is a commodity than can be traded like any other. The order of events, that is, time in the proposed relational sense, is a function of the environment itself, characterized by information turbulences, rather than a predictable sequence based on some inherent properties of the things themselves, or on a stable referent such as clock time. Perhaps such a collapsing of the future into the present is the case for all speculative social dynamics. But this is not Castells’s concern. Rather, he argues that it is the *dominance* of this notion of time as a stochastic present, imposed by the financial markets on the global economy, which is historically new.

Similarly, Castells suggests, flexible work destroys the linearity of work time, in the sense that working hours and working time are no longer conforming to the regimented linear time of the factory, but also not returning to anything even loosely resembling a cycle. Time is no longer an objective category, but managed as a resource “with reference to the temporality of other firms, networks, processes and products.”<sup>43</sup> Contrary to Harvey’s notion of “time/space compression,” time is not necessarily compressed. Time can also be

selectively stretched. Events may only be recorded to be retrieved at a later date and then acted upon. The key point is that the instantaneous processing of information with the help of an advanced computing infrastructure allows a modulation of the temporal layout of processes according to shifting demands and strategies. Thus their sequence becomes strategic, and so unstable.

From the individual's point of view, Castells continues, the breaking down of reliable rhythms can be experienced on all timescales. For an increasing number of people, work is no longer nine to five. Rather, adapting to a dynamic global economy, it can shift through the day (and the night). Throughout the year, periods of excessive workload can be followed by periods of underemployment or unemployment. This is rendering traditional work patterns with stable employment and long-term career options – reflected in an employer's social responsibility and an employee's loyalty – less and less standard. "The key phenomenon seems to be the increasing diversification of working time and working schedules, reflecting the trend toward the disaggregation of labor in the work process. . . . Under such new arrangements, working time may lose its traditional centrality throughout the life cycle."<sup>44</sup>

Such unpredictability requires new types of organizations which are able to adapt to the fast changing environments, thus bringing further pressure on those that are still organized more inflexibly. For example, under such conditions, it makes sense to spread the family income over two wage earners: the uncertainty introduced by the new volatility is better managed when it is spread. Thus the new time regime is contributing to the transformation of the traditional, patriarchal family structure.

If we take time to be the sequence of events, and social organizations to be crucial in establishing their temporal patterning, a possible connection between the transformations of the social morphology and of time comes into view. Put simply, social institutions organized as flexible networks are less capable of stabilizing time than rigid hierarchies. Rigid hierarchies are too inflexible to deal with multiple temporalities; their historical rise to dominance, from the seventeenth century onward, was connected with the imposition of a dominant temporality, clock time, on everyone. Flexible networks, by their very flexibility, are not capable of doing this, and nor do they require it.

Unlike in traditional cultures organized as networks, nature plays at the most a subordinate role in structuring time in the information age. What we are witnessing, Castells seems to suggest, is

the emergence of a temporality based on a form of organization – networks coordinated by instant flows of electronic data – unable to stabilize time because it is itself so dynamic and fluid. This new organization is operating in a completely artificial environment – the space of flows – which itself has no natural or otherwise fixed, or at least inherent, temporality. Similar to space, the characteristic logic of the new time is also binary: “now” or “not-now.” As a consequence, each network has to create its own temporality, ranging from the microseconds of the financial markets to the millennia of the ecological movement. Yet none of these temporalities has become dominant. Rather, they are interacting in unpredictable ways, inducing systemic disturbances into the flow of social time.

Despite the ecological movement’s attempts to anchor social time in the rhythms of nature again, the perturbations introduced by advanced technologies, Castells argues, reach deep into even the most fundamental biological processes: birth and death. In advanced societies, the norm today is birth control, and great efforts are undertaken to extend this control to women around the world, with varying degrees of success depending on economic and cultural conditions. As Castells notes, “in close interaction with the cultural and professional emancipation of women, the development of reproductive rights has altered the demographic structure and biological rhythms of our society in just two decades.”<sup>45</sup>

But it is not just that women in advanced societies have fewer children and have them later. These are statistically well-established facts. Castells’s argument goes beyond that. The development of reproductive technologies expands the time range during which women can have children and, most importantly in this context, it allows a differentiation between roles that have traditionally been inseparable. For example, the legal and the biological parents may not necessarily be one and the same anymore, and the biological mother may not necessarily be the mother giving birth. As a consequence, what were once stable, natural sequences of reproduction are now becoming mixed up. Children are born after the death of the mother, or conceived after the death of the father, and they can be orphaned before they are born, making for a rather strange succession of generations. Considering the still to be realized promises of genetic technologies, the range of interventions into the natural processes and rhythms of conception and birth are likely to grow. This leads Castells to the conclusion that we are headed toward “the final blurring of the biological foundation of the life-cycle concept

... [This] is another form of the annihilation of time, of human biological time, of the rhythms by which our species has been regulated since its origins."<sup>46</sup> To look to the annihilation of time might be a bit excessive, a consequence of the problematic negative concept of "timeless time": after all, people are still born, and they still die, in this sequence. Nevertheless, the rhythms at which they do so are certainly becoming more varied, and variable.

Through the concept of timeless time, Castells argues that informationalism, based on the "twin revolutions in microelectronics and genetic engineering," is introducing a new temporality that is characterized neither by natural rhythms, nor by a unifying abstract time ordering society along its fixed grid. Rather, the new temporality is characterized by an absence of a fixed sequence itself. How convincing is this assertion of a new temporality? For the moment, it is very intriguing but also very tentative. The argument is strongest in highlighting that in an increasing number of social processes the rhythms of the clock or those of nature are no longer dominant, or that they can at least be substantially distorted. They don't disappear completely as points of reference, but they interact with a different temporal patterning based on advanced computing and biological technologies. Established sequences of when things are done, throughout the day and throughout a person's life, are being mixed up for a growing number of people. Does this amount to an annihilation of time, any more than the space of flows annihilates space? The problem is that this assertion, which is a staple of postmodern theory, does not fit into Castells's basic framework according to which "space and time are the material, fundamental dimensions of human life."<sup>47</sup>

However, this still leaves the question of whether meaningful sequences are really disappearing from social life, thus suspending the network society in "eternal ephemerality," where everything is now and nothing is fixed. Here again, some hesitation seems warranted. Castells uses the example of "instant wars" as an indication of the nonlinearity that can be created by the most technologically advanced armies. However, the whole notion of "instant war" is dubious, particularly if we view the actual fighting on the ground (or in the air) not as an isolated instance, but as one moment in a long chain of events that is extremely structured and controlled. Taking Nato's war against Yugoslavia or the war against the Taliban in Afghanistan as examples, then all we can really say is that the duration of a war is directly related to the difference in power between the two armies. As Castells points out, if both armies are

weak, wars can, and do, still grind on for years. However, that superior armies tend to win decisive, and rapid, victories is hardly new. It took Nazi Germany not much longer to occupy Poland in 1939 than it took the US to oust the Taliban in 2002, reminding us that in German "instant war" is best rendered as *Blitzkrieg*.

For now, the notion of a timeless time remains a promising speculation on a key topic. To move beyond that, two strategies could be pursued. One would be to anchor the new conception of time in a sustained and explicit theoretical argument.<sup>48</sup> Here, as elsewhere, this is not Castells's approach. Yet, in this case, he also fails to pursue the other possible strategy: empirical analysis of the temporal structure of a wide range of processes. Long-term social processes such as the transformation of time need to be studied over the appropriate timescale. However, Castells's analysis is primarily cross-cultural, rather than historical. For the study of time, this is problematic. Its transformation can only be grasped diachronically, yet Castells's analysis is by and large synchronic. However, one cannot study time in a snapshot. Yet he already claims that we "are decisively undermining the orderly life cycle *without* replacing it with an alternative sequence."<sup>49</sup>

Announcing the dissolution of one social pattern without any replacement is a tell-tale sign of a premature conclusion. There is no reason to believe that people will not be able to create meaning under such conditions, or find new ways to anchor the rhythms of their lives. There is anecdotal evidence that the cellphone-based cultures of teenagers are developing different notions of time, with plans constantly shifting around in relation to other events, thus undermining notions of punctuality and planning but replacing them with values such as connectivity and coordination, notions closely related to issues of timing.<sup>50</sup>

To move this argument beyond the anecdotal it would be necessary to include new temporality in the analysis of all social processes, rather than confine it to one brief section and never mention it again. By contrast with other underdeveloped concepts, such as Castells's notion of power, discussed in the previous chapter, there is nothing that suggests that the study of new temporalities, and the cumulative effect of their interaction, cannot be made into a substantial part of the theory of the network society as it stands now. This indicates both the strength and the centrality of this line of analysis. It just hasn't been done yet. Such a lack of development and integration becomes more striking considering the way Castells has made the space of flows into a central aspect of his

analysis of production, experience, and power. The space of flows provides a key element not only in the transformation of all these processes, but also in the treatment of the space of places, that is, of cities in the space of flows.

### Cities in the Space of Flows

Castells's analysis of the transformation of contemporary cities centers around three interrelated concepts: the "informational city," the "metropolitan region," and the "dual city." The first deals with the technical dimensions of this transformation, the second highlights new spatial forms, and the third focuses on changing social structures. These concepts differ from Castells's earlier theories about urban transformation. As discussed earlier, at the core of Castells's attempt to redefine urban sociology in the late 1960s was the search for a particular urban problem, that is, a social dynamic that was self-contained within a specific place, the city. Collective consumption, and the social movements built around it, provided a focus for the analysis of urban dynamics rooted in the particulars of places (say, struggles over an urban renewal program in Paris, or squatters at the edge of Santiago de Chile).

The new concepts are based on a radically revised perspective on the relationship between places and processes. With the emergence of the space of flows, translocal processes increased their influence on the development of local spatial forms. Social actors, such as urban social movements, which were operating exclusively on a local level, were losing whatever influence they had gained over the development of their neighborhoods and cities (which was probably never as extensive as Castells had assumed during the 1970s).<sup>51</sup> To keep up with this development, Castells shifted his perspective away from places to cross-border processes, which, of course, affect physical places but whose logic cannot be understood with reference to these places. This new focus has underlain the analysis of urban dynamics since *The Informational City* (1989a). A decade later, this new perspective has been taken up widely in urban research. Stephen Graham summarizes the consequences of this reorientation in the following way:

When our analytical focus centres on how the wires, ducts, tunnels, streets, highways, and technical networks that interlace and diffuse are constructed and used, modern urbanism emerges as an extraor-

dinarily complex and dynamic sociotechnical process. . . . Cities and urban regions become, in a sense, staging posts in the perpetual infra-structurally mediated flow, movement, and exchange.<sup>52</sup>

The informational city is, quite literally, the material basis, the staging post, of incessant flows of information, goods, and people. It is built upon wires, highways, and airports which are connecting those places and activities that constitute nodes in the space of flows. Seen like this, it is evident that no city is ever entirely informational, and the real unit of the informational city is not geographic but functional. It is a process, Castells claims, not a place. From this perspective, he criticizes the concept of the global city, originally proposed by Saskia Sassen,<sup>53</sup> as “misleading,” because it is

a prisoner to a nineteenth-century, hierarchical conception of our society and space. What characterizes our society is its structure in networks and nodes, not in centrality and periphery. . . . In fact, hundreds and thousands of localities are connected in global networks of information-processing and decision-making. All large metropolitan areas . . . are thus global to some extent, with their relative nodal weight in the network varying depending upon time and issues.<sup>54</sup>

In other words, most cities have global components, and even in those cities where the largest number of global nodes are concentrated there are important places whose character is primarily local. After all, New York City is not just Manhattan, but also Queens and the Bronx.

In a seemingly paradoxical development, the clustering in cities of the information infrastructure (in Castells’s view the key to reshaping all other infrastructures) creates processes that make the city obsolete, from an analytical point of view, as a frame of reference. Yet, as Castells stresses again and again, this is not the end of the city. There is no empirical evidence that telecommuting is replacing the journey to the workplace for a relevant number of people. Telework complements office work and so contributes to the flexibilization and individualization of working patterns. Yet, for Castells, even in this regard it is more an effect of economic restructuring than its cause. Thus the places of living and of working remain closely connected, contributing to the fact that for the vast majority of people everyday life, and the identity built through it, remain local.

In fact, the transformation of cities takes place amidst a trend of worldwide urbanization. For the first time ever, the majority of people on the globe now live in urban areas. Formerly rural areas are either integrated into the new informational mode of development (intensive high-tech agriculture, or alternatively, extensive "natural" parks and preserves), or marginalized, forcing people to migrate to the cities in the hope of finding better chances for survival. However, these urban areas are not cities in the traditional sense of distinct cultural and political constructions. The new urban unit is no longer the individual city, but the metropolitan region. In terms of the economy, Castells already argued this in the early 1970s, when he noticed that three intersecting dynamics were transforming the city into a "metropolitan region": public and private transport within the city, enabling its inhabitants to travel much longer distances; the introduction of new communication technologies into the processes of business; and the intensification of air transport linking regions to one another.<sup>55</sup>

Today, however, the metropolitan region no longer only characterizes the spatial distribution of advanced economic sectors: this new structure can be found in the configuration of virtually all its elements. Thus they are not simply very large cities; rather, they are "urban constellations scattered throughout huge territorial expanses, functionally integrated and socially differentiated, around a multi-center structure."<sup>56</sup> Most of these regions develop without deliberate planning. They emerge simply as an accumulated effect of many individual reorganizations whose aim was to take advantage of new infrastructural possibilities (which, in return, were expanded in the process). This lack of planning is indicated by the fact that most of these regions do not even have a name, an identity, or clear boundaries. In fact, the size of a metropolitan region, Castells suggests, is only limited by its ability to organize such flows efficiently, hence the central importance of communication and transportation infrastructures. They provide the key link between informationalism and the new spatial pattern characteristic of contemporary urbanism.

The emergence of the metropolitan region can be observed around the world, from the San Francisco Bay Area with almost 7 million people, to the Hong Kong–Guangzhou region with some 40–50 million inhabitants. Such huge constellations blur the distinctions between city and countryside, between center and periphery. Within the metropolitan region the social character of places is nonlinear, since their connection and integration are established

through the space of flows, rather than through proximity. For example, advanced services centers link up across patches of intensive agriculture, bypassing underdeveloped areas and slums, creating functional units in a patchwork of areas, selectively connecting to some and disconnecting from other sections of the region. The spatial pattern is one of radical fragmentation rather than gradual transitions. Yet fragmentation does not mean disorganization, or disconnection. Rather, it is the spatial expression of a new logic of integration/exclusion realized through the space of flows. In many ways, the concept of the metropolitan region realizes to the full an observation Castells made in the early 1970s but could not integrate into his place-focused analysis, namely, that the real structures of cities are "flow patterns."<sup>57</sup>

The general pattern of selective integration and segregation finds its expression also at the level of social structure, captured in the image of the "dual city," that is,

a system socially and spatially polarized between high value-making groups and functions on the one hand and devalued social groups and downgraded spaces on the other hand. This polarization induces increasing integration of the social and spatial core of the urban system, at the same time that it fragments devalued spaces and groups, and threatens them with social irrelevance.<sup>58</sup>

The key argument of the dual city is not just that of accentuated social inequality, because social inequality as such can have many causes. Rather, the dual city implies that the type of inequality, its social and spatial expression, is directly linked to the economic and political changes which accelerated during the 1980s. The economic restructuring, with its concentration of decision-making functions and its decentralization of execution, has relocated/downgraded many jobs in manufacturing on which the middle class depended. The dismantling of the welfare state aggravated this trend. It had provided not just assistance to many but also secure and well-paid jobs in its administration and in the programs it financed. At the same time, a significant number of jobs have been created in the information and knowledge intensive sectors, which in turn rely on an even more significant number of low-level service jobs to support the new professional lifestyle. Thus the economic restructuring reduced middle class jobs while expanding job opportunities at the high and at the low ends.

As Castells observed in 1989, "the differential reassignment of labor in the process of simultaneous growth and decline results

in a sharply stratified, segmented social structure that differentiates between upgraded labor, downgraded labor and excluded people."<sup>59</sup> The exclusion, in turn, not only prompts the development of alternative, resistance identities, but also creates the spatial and social basis for the criminal economy to establish itself as the "perverse connection," taking over the lives of the local population. Around the world, slums and ghettos provide the operational basis for organized crime. It is often an important source of social services in areas that have been abandoned by the official city administration. In return, the local population is forced to accept its protection.

The "dual city" is not an entirely unproblematic concept, because it suggests that there is only one dualism, namely income. Castells is well aware of this shortcoming.<sup>60</sup> Nevertheless, he keeps returning to income stratification because it is the clearest link between the dual and the information city, even if the degree to which income stratification becomes a dominant characteristic of the social structure varies among the different metropolitan models.<sup>61</sup>

The three concepts – informational city, metropolitan region, dual city – are classic ideal types. They serve as entry points into an extraordinarily wide range of issues, allowing distinct and complex empirical realities to be integrated into a broad and general framework. Within this framework, the single most important, and the single most original, element is the theory of the space of flows. With it, Castells shows, convincingly in my view, that a new material basis has been created for the reorganization of social processes. This applies not just to the economy, for which the theory was originally developed, but it lends itself to the analysis of all social processes that involve, directly or indirectly, advanced telecommunications. The key aspect of the space of flows is not its separation from the space of places, but its ability to fragment localities and reintegrate some of the components into new functional units on the basis of their connection to the space of flows. On the ground, this creates an entirely new, nonlinear pattern of land use characteristic of contemporary urban development. The analytical clarification of this key point, the emergence of a new spatial logic, expressed in the space of flows and the fragmentation of physical space in a variable geography of hyperconnection and structurally induced "black holes," is one of the most substantial and original aspects of Castells's entire theory of the network society.