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Can East Timor go with the flow?

A critical discussion on Manuel Castells'
concepts of Network and Flows

by [Bertil Rolandsson](#)

Abstract

*Frequently, when the social impact of cyberspace is discussed, difficulties in controlling communication are stressed. It is said that our social interaction in cyberspace is dictated by networked information flows beyond any actor's control. However, arguments are usually vague, it becomes difficult to grasp what these cyber-flows really consist of. In this article, some critical thoughts concerning the matter are therefore presented. Manuel Castells' trilogy, *The Information age: Economy, Society and Culture* is used as a theoretical frame; important notions about the concepts of networks and flows are made by elaborating with his sociotechnological perspectives. The discussion is limited to the context of cyberspace, and an article about the virtual independence of East Timor illustrates the arguments. In many aspects the question of flows is seen as a question of power, i.e. it is a matter of who has the power to influence and is not just exposed to other actors or to other unpredictable consequences. Accordingly, the article focuses on how we can understand social actors' power (or lack thereof) in influencing a global cyberspace.*

Contents

- [1. The virtual independence of East Timor - an exercise of virtual power](#)
- [2. Where is the power?](#)
- [3. Flows and nodes](#)
- [4. The network - a way of organizing complexity](#)

[5. Flows - a matter of faceless impacts or various practices?](#)

[6. A space of flows - to lose control](#)

[7. A reflective summary](#)

[8. Conclusion](#)

[9. Some final remarks](#)

[About the author](#)

Information technology is said to sustain global networks where various actors can neglect the control of state actors, and where the outstretched *and* intensive communication becomes difficult to survey. (C.f. Held 1995:21, Castells 1997:258pp) Such arguments usually associate cyber-communication with an impact that is difficult to relate to any actors' intentions. It is about cyber-networks constituted by *flows of information*, that sometimes are described as *faceless* or maybe initiated by hidden strategies, but always with a social impact beyond any actor's control. However, arguments are vague and the term *flow* has to be dealt with, which is something I will be doing in this article.

Manuel Castells' trilogy, *The Information age: Economy, Society and Culture*, will here be used as a theoretical frame. *Networks* and communication *flows*, sustained by information technology are seen by Castells as the material base for the constitution of a new global network society. I will try to present some critical thoughts concerning his view on the matter. By limiting myself to cyberspace, I will ask in what sense we can apply his perspective on flows, i.e. how are they organized, and what do they imply. In order to illustrate my arguments, I will use an article about the "virtual independence of East Timor". Further examples from cyberspace (mainly the Internet) are used as a complement. In many aspects I see the question of flows as a question of power, i.e. it concerns who has the power to influence and is not just exposed to other actors (or to other unpredictable consequences). Accordingly, my focus will be on how we can understand social actors' power (or lack thereof) to influence a global cyberspace.

Cyberspace is frequently pictured as an electronic space, or a public domain without any territorial boundaries, and too widespread to be controlled by any single authority. (Loader 1997:4) Castells' general description of the complex society we are living in corresponds with this idea, and cyberspace can also be seen as a useful metaphor related to Castells' arguments. As a matter of fact, it seem to be one of the most central ideas in his discussion about the social, economical and cultural implications of information technology. Nonetheless, it should be underlined that even if the information technological dimension is important, Castells' focus of attention is much wider. The purpose of this text is therefore not primarily to criticize Castells, but to discuss how socio-electronic flows within cyberspace can be understood.

[\(To the top\)](#)

1. The virtual independence of East Timor - an

exercise of virtual power

My starting point is an article from the NBC's electronic news report on the declaration of East Timor's "virtual independence". According to the article, this declaration is based on an East Timor top-domain project in Ireland, initiated by an organization called Connect-Ireland together with the 1996 Nobel Prize winners Ramos Horta and Bishop Belo. The declaration can, according to the NBC, be viewed as "a political statement of independence, since top-level domains are generally given only to established nations". Because East Timor is currently occupied by Indonesia, this is of course a political statement that annoyed Jakarta. A spokesperson from the Indonesian embassy in London "told the Irish Times that while Indonesia fully respected the freedom of cyberspace, it was concerned that this front has been misused by Connect-Ireland to spread a campaign against Indonesia... The handover of the domain to the government of East Timor is beyond imagination since the government of East Timor will not exist'."(MSNBC, 1999)

The Indonesian government had been showing signs of giving in to world pressure by offering East Timor some autonomy, when, in January 1999, 18 virtual robot attacks simultaneously knocked out the server hosting this top-domain. It happened suddenly and the technical manager of Connect Ireland was taken by surprise: "When we found we were being attacked at a level that we couldn't keep tabs on, I literally ran downstairs and pulled the plug". Later they found out that the attacks came from "countries as far as Australia, Japan, Holland and the United States", which meant difficulties in tracing those responsible. Still, one conclusion drawn in the article is that these attacks were launched from a group unsympathetic to the declaration of virtual independence, and speculations about whether the Indonesian government was directly or indirectly involved could not be excluded.¹ (MSNBC, 1999)

[\(To the top\)](#)

2. Where is the power?

The story of East Timors' virtual independence is not to be investigated in detail; rather my intention is to use it as a reference while elaborating with the idea of possible information flows. More precisely, the East Timorean case illustrates how outstretched relations in cyberspace can be thought of in terms of power (or lack thereof). The concept of power is then simply understood as the impact that, irrespective of social conditions, may be triggered of/achieved by social actors. (C.f. Weber, 1983) The case illustrates how new telecommunications and computer networks make power possible within a global and intensified interaction. Given the fact that the server for East Timor's virtual independence is in Ireland, as well as the difficulties in pointing out the actor(s) responsible for the attacks, also implies that cyberspace might constitute a problem in controlling communication.

Castells defines power as relationships between human subjects

...which, on the basis of production and experience, imposes the will of some subjects upon others by the potential or actual use

of violence, physical or symbolic.

This is a definition that so far seems to apply to the relation between the Indonesian state and the top-domain project, (the latter can be seen as a social movement). The case of East Timor also seems to suit his more extensive reasoning where the institutionalized power of state actors is the foundation, but where

...the microphysics of power, embodied in institutions and organizations, diffuses throughout the entire society, from work places to hospitals, enclosing subjects in a tight framework of formal duties and informal aggressions.... (1996a: 15)

Accordingly, cyberspace is a digital condition that may facilitate the diffusion of micro-power, at the same time as it intensifies the communicative complexity that links micro-power with institutionalized state power and cultural and economical interest. A network of complexities transcending e.g. the territorial delimitation of a nation-state evolves. Castells is here claiming that the power of state actors is not disappearing, but it is becoming problematic. (C.f. 1997: 359) Many authors have stressed such a complex picture of power when discussing the implications of cyberspace. The question is, though, in what sense it applies to the case of East Timor. After all, this case illustrates both how a social actor escapes state power within a territory, and how state-actors can strike back: i.e. a procedure that appears to be fairly ordinary. Concerned actors are playing hide and seek according to new conditions realized by the new technological organization of communication, but does that mean that we can talk about information flows that are difficult to control.

[\(To the top\)](#)

3. Flows and nodes

According to the above, the pervasiveness of communication mediated by information technology is a subject that occurs in all sorts of texts, let it be literature (e.g. cyberpunk), or social research. Saskia Sassen, for example, talks about an electronic space where the importance of non-state actors at the financial market is growing. With the help of information technologies, a new order of magnitude is created that escapes the governing capacities of both private and government overseers:

New information technologies have brought instantaneous transmission, interconnectivity, and speed to the financial markets. Gross volumes have increased enormously even when relative flows between countries are not relatively higher. The speed of transactions has brought its own consequences: trading in currencies and securities is instant, thanks to vast computer networks. And the high degree of interconnectivity in combination with instantaneous transmission signals the potential for exponential growth. (Sassen 1996:43)

Sassen is simply using the metaphor of flows in order to emphasize globally outstretched relations and the interactive intensity characterizing these relations. The American President's Commission on Critical Infrastructure Protection is in a similar

way discussing flows in terms of security and vulnerability. The United States is said to be increasingly dependent on a global communication infrastructure, creating "new cyber vulnerabilities, which we are only starting to understand". The established global networks produce a complex picture of power and control, which includes the possibility of someone mounting an attack on infrastructures by exploiting the dependence on computers and telecommunications:

It heightens risk of cascading technological failure, and therefore of cascading disruption in the flow of essential goods and services. Computerized interaction within and among infrastructures has become so complex that it may be possible to do harm in ways we cannot conceive... Adding to our physical vulnerability is the fact that information readily available on the World Wide Web (WWW) may disclose to a terrorist the best place to set explosive charges for maximum disruptive effects (1999:5)

The organizational complexity of power that these cases — as well as the case of the virtual independence of East Timor — indicates, can be summed up by referring to Castells conceptualization of flows as relations that link places (nodes). Two *organizational* features will then emerge. Firstly, a network sustained by new information technology and not necessarily bound to traditional nations and territories can be constructed. Actions in cyberspace may therefore escape the control of state actors. Secondly, an important aspect is the instantaneous character that technology gives communication. (Castells 1996a) This makes it difficult to survey or control information; surprises are constantly turning up, and not without an impact.

Both these characteristic features make it difficult to trace actors on the Net. It is not impossible for actors to conceal their identities, but the complexity may also favor communication converging in spontaneous and unpredictable consequences. This may motivate why Castells talks about flows. However, the aspects mentioned are organizational features, and we still do not know what it is that really makes information flow. Our reasoning seems to include potential distinctions between a range of intense and outstretched relations in cyberspace, which we so far have ignored. After all, there is a difference between e.g. vulnerabilities like cascading technological failures and a declaration of virtual independence. We cannot just conclude that everything is fluid; these differences might be important and have to be discussed.

[\(To the top\)](#)

4. The network - a way of organizing complexity

Before jumping to any conclusion, our discussion about the organization of networks should be extended. Castells is describing a new network society that is being shaped culturally, politically and economically. The flows previously mentioned are the main features constituting this society, and to be able to understand their impact he stresses the convergence between new information technologies and new organizational shapes. Computers are said to "have induced decentralized networks, rather than centralized institutions". (Castells 1996b: 13) The morphology of the network is said to suit an increasing complexity of interaction and unpredictable patterns of development arising

from spatially outstretched social activities. (Castells 1996a: 164pp) This converging process concerns the diffusion of power, where knowledge and information is applied "to knowledge generation and information processing/communication devices, in a cumulative feedback loop between innovation and the uses of innovation". Consequently, the diffusion of technology is endlessly going to amplify the power of technology as it becomes appropriated and redefined by its users. (1996a: 32)

What is said above have its parallels in e.g. discussions about knowledge-based production, or the consequences of the break-up of "older, mass-production industries and the growth of new, computer based production and 'flexible specialization'." (Crompton 1998:18) To Castells, this shift from vertical bureaucracies to network-shaped corporations, makes it possible to reduce the uncertainty caused by an increased organizational and global complexity. It is to be seen "as a response to the need to cope with a constantly changing operational environment." (Castells 1996a: 168) Still, it can also be claimed that the complexity thereby is increased, i.e. an already complex pattern of communication becomes more complex. Corporations, namely, have "to become a network itself and dynamize each element of its internal structure" to be able to internalize the benefits of external network flexibility. (Castells 1996a: 164) The inside and the outside of the corporation seem to fade, and the horizon of the network expands. The implementation of network shaped corporations is then not simply reducing uncertainty; rather it appears to be a matter of having the capacity to deal with uncertainty ad-hoc.

[\(To the top\)](#)

5. Flows – a matter of faceless impacts or various practices?

Castells claims that increased interconnectedness and processes of decentralizing responsibility characterize this development, which means that the wide horizon of the network becomes open to frequent "articulation errors", i.e. a "partial or total lack of fit between what is wanted and what is available". Because of the interconnectedness these errors may evolve or instantaneously coincide, causing micro and macro effects with great intensity. (Castells 1996a: 166) This is one reason why the power of any concerned actor can be seen as limited within cyberspace. The American Commission on Critical Infrastructure Protection comes to a similar conclusion. As mentioned, they are suggesting that cascading technological failures can cause disruption in the flow of essential goods and services. The point here is that we are dealing with a situation caused by corporations transforming themselves into a web of multiple networks, and these networks are embedded in a multiplicity of institutional environments. (C.f. Rosenau 1992:109p) This makes it difficult to point out responsible actors, to control their actions, or to be fully prepared for the effects. Accordingly, Castells draws the following conclusion:

Power still exists, but is randomly exercised. Markets still trade, but purely economic calculations are hampered by their dependency on unsolvable equations over-determined by too many variables. The market's hand that institutional economists tried to make visible has returned to invisibility. But this time, its structural logic is not only governed by supply and demand but also influenced by hidden strategies and untold discoveries

played out in the global information networks. (1996a: 195)

Because these networks are characterized by *real-time* (instant) communication, circumstances may become extremely fluid and complex. We have instantaneous transmissions of information across the globe, which cause a situation where the speed of transactions has brought its own consequences. It causes a turbulence that signals Sassen's declared potential for exponential growth, at the same time as this turbulence becomes difficult to survey. This may lead to a situation where there are obvious problems in tracing actors triggering information flows, and the impact may therefore appear to be *faceless*. Castells even illustrates this complexity with situations where "computers themselves, by random effect on their programs, have been triggered at the same time in preventive buying or selling and are themselves the 'speculators'." (1996b: 30)

In the quotation above, Castells is also stressing the importance of influential hidden strategies. Even if effects and power are randomly distributed, someone apparently has to be responsible for the strategies played out on the Net. Hence, his argument has two edges, which makes him somewhat difficult to follow when the term *flow* is to be analyzed. Considering the rapid technological development and the early stage of the electronically sustained global network, he may of course claim that he has to express himself metaphorically. Still, our purpose is to discuss how these flows could be conceived, and when we e.g. try to understand the virtual independence of East Timor, an *anonymous* flowing impact becomes problematic. After all, concerned actors can be distinguished, and even if the origin of the digital robot attacks almost seems "faceless", the intention behind them is clear. In this case, there does not appear to be any flows transcending its initiators, and we may therefore need a more specified/less abstract way of conceiving the practice of power.

This does not mean that the occurrence of the triggered flows described by Sassen and Castells can be excluded. The speed of financial transactions bringing its own consequences, or e.g. cases of viruses rapidly contaminating computers all over the world, illustrate such flows. The latter may be thought of in terms of a "macro virus", (like e.g. the infection of the virus "Melissa" during spring 1999). Viruses are often spread through e-mail attachments. When the document attachment is activated, an application is created which replicates the e-mail, and it is then passed on to e.g. the first 50 addresses in the recipient's address book. Thereby, we get an instant contamination where the virus strikes independently of directions defined by its initiator. (C.f. Chris Nutall 1999) Flows that are amplifying themselves, however, only seem to be one phenomena taking place in cyberspace.

So far, we have been talking about hidden actors, acting more or less randomly, but also actions by distinguishable actors, and even faceless cascades of technological failures. By referring to these networked relations as flows their specific characters seem to be overshadowed by an abstract metaphor for general complexity and continuous social change. Simply, the term flow might be a bit too elastic for a general description of global cyber-relations. (C.f. S. Fuller 1999)

[\(To the top\)](#)

6. A space of flows – to lose control

It is said above that the power associated with these flows is exercised by untold discoveries and hidden strategies. Initiatives may even coincide, taking the cause of impact beyond distinguishable actors (like individual companies, formal groupings and even nations). In light of this, Castells concludes that we are approaching a society fundamentally dominated by flows. These flows are reproduced within the so-called "space of flows", which is manifested by networks of organizations and institutions, and characterized by interconnectivity and real time communication. (1996a: 412) Communication becomes intensive, and just like the difficulties in tracing those responsible for the attacks on East Timor's top domain, there will be difficulties in distinguishing actors and their initiatives.

Castells then goes one step further, by emphasizing that "the networks of flows tend to become largely autonomous of the power-holders that control the nodes of the network. The flows of power are easily transformed into the power of flows: this is a fundamental characteristic of the new society". (1996b: 29p) Accordingly, the network should be seen as the main operative unit, changing e.g. the economy, social stratification and society as a whole; it will contain a power that regularly intervenes and alters people's place-bound lives in a more or less unanticipated way. Ordinary people are thereby experiencing a loss of power over their everyday life. (C.f. Castells 1996a: 164p, 1996b: 26) As a matter of fact, all sorts of actors, such as e.g. social movements, but also state actors, will face this loss of power. Something Castells claims will lead to extensive reactions, where concerned actors defend their national identities/territories against flexible networks and the entire globalization (C.f. 1997:66pp)

Still some actors are said to have the power to condition social circumstances, even if it is in a defensive manner. Castells is not offering a specified or developed theory explaining why certain actors have the capacity or gets the opportunity to act. Instead, conditions to act seem to be more generally defined by whether the actors concerned are connected to the worldwide network or not, meaning that e.g. African conditions are less advantageous. (C.f. 1998:92p.) However, he opposes the arguments that the power of the state will disappear. The conditions on the "Net" may cause problems for the state, but it does not eliminate its influence. According to Castells, the state will in fact play a major role in e.g. the global economy: "on the basis of the defense of specific national interests they represents". (1996b: 26) That is, the state has extensive means for being defensive, and will therefore have some sort of power.

Power still rules society; it still shapes, and dominates us. Not only because apparatuses of different kinds can still discipline bodies and silence minds. This form of power is at the same time, eternal, and fading away... States can shoot, but because the profile of their enemies, and the whereabouts of their challengers, are increasingly unclear, they tend to shoot randomly... (Castells 1997: 359)

The Indonesian government's opposition to East Timor's top-domain can be seen as a defense of their specific national interests, and if they initiated the robot attacks, that is also manifested in cyberspace. The case illustrates how state actors are exposed to flexible cyber-networks and how they can defend themselves by taking advantage of the technological opportunities in cyberspace. Castells own case of the Zapatistas

displays a similar picture of an "informational guerilla". (Castells 1997)

Yet, some questions remain. For example, we still have to conclude that the mentioned virtual attacks were not randomly executed. After all, their target was clear. The attack was aimed at the top-domain project, making it a calculated action. Furthermore, all the actors concerned appear to be more or less discernible. Both actors exercised deliberate and calculable power that cannot be described by unpredictable flows. Additionally, nothing indicates that networks of flows became autonomous to the power-holders; "flows of power" does not seem to transform into "power of flows". Consequently, the actors concerned are not just exposed to global cyber-networks, they are also exploiting them. Contrary to Castells, this is not a matter of defensive protection against a global network. As a matter of fact, the top-domain project appears to illustrate a social movement using the global capacity of cyberspace in an offensive manner.

[\(To the top\)](#)

7. A reflective summary

Castells claims that in this new network society, the networks of flows tend to become autonomous of the power holders initiating/triggering them. That is, these flows will have a faceless impact on social life. However, we seem to get problems when trying to illustrate his thoughts with the aforementioned declaration of virtual independence. This East Timorese case does after all contain some distinguishable actors (with faces). We can for example point out those who initiated the top-domain. These are actors that may escape the government in Jakarta, but they are well known. What is more, the Indonesian government clearly expressed their concern about this virtual independence project. Discussing the organization of power within the space of flows — dictating the place-bound life of ordinary people — we also have to underline that the struggle over this top-domain concern the independence of a territory in real life. Estimating the impact of the virtual independence project will be difficult, but the purpose is to contribute to the struggle for a better place to live in. In other words, this top-domain illustrates how a conflict over a territory does not necessarily have to be understood as a defensive reaction against a global network. The East Timorese fight displays an offensive usage of the outstretched cyber-net.

Yet, some of Castells organizational features characterizing the network, can be useful when describing the global cyber-relation between the Indonesian government and the top-domain project. The actors involved in the top-domain project are e.g. taking advantage of Ireland's digital capacity, far away from South East Asia, which illustrates the idea of physical distance being overcome through information technology. The concern expressed by the Indonesian government indicates how the technological capacity makes it easier for information to escape the control of state actors, and the virtual robot attacks show that information technology makes world wide and instant information transmissions possible. Furthermore, these attacks were launched from various places in the world, which puts us in a situation where we can talk about hidden strategies played out in global information networks. According to the quoted article from the NBC, there were serious problems in tracing these attacks, which could imply that they were "faceless". However, the intentions behind the attacks appear to be pretty clear.

Additionally, Castells is stressing the importance of state actors defending their specific national interests. If the Indonesian government did launch the robot attacks, that could illustrate the defense of what they see as national interests. Cyberspace then becomes an arena where communication not only escapes the control of the state, but also appears to be a space that state actors take part in. This complicates the matter, because even if there may be activities that trigger unpredictable information flows, this cyber-attack is an aimed action with a clear intention. It is true that Castells ascribes the state some importance, still these types of aimed state actions would automatically be excluded by a network concept based on flows. I am convinced that Castells would agree that it is insufficient only to stress that information flows in cyberspace totally escape state control and limit the importance of the nationstate. However, using his network concept easily leads to that conclusion; it simply makes it difficult to describe how state actors are advocating their interest in cyberspace.

[\(To the top\)](#)

8. Conclusion

Concluding our reasoning, it looks as if ranges of different and networked power relations can be distinguished. It may therefore be questioned whether or not these cyber-relations can be generalized as flows. It is, of course, an empirical question to what extent our actions in cyberspace immediately drown in spontaneously converging masses of communication, and contribute to flowing impacts. However, we can at least point to the importance of not neglecting power relations with distinguished actors. Cyberspace offers a complex material base for the exercise of power; actors may hide away, power may be limited by unpredictable consequences, and in some cases this unpredictability maybe even amplifies itself (in the shape of cascading technological failures or faceless articulation errors). Nevertheless, the complexity does not seem to motivate a network concept where all relations in our whole society can be described as flows.

We have to make distinctions between various social activities in cyberspace, just like in "real life". We have to keep in mind that there is a difference between the 18 robot attacks against the top-domain and the transmission of e.g. a macro-virus. In both cases, we may talk about hidden strategies played out in global information networks, but the robot attacks have to be conceived as a well defined and directed manifestation of how cyberspace can be exploited (even by state actors). In contrast, the virus is triggered by someone and then ends up by coincidence in various computers all over the world, i.e. reminding us of a flow that distributes its effects randomly.³ Added to this, Sassen's financial flows indicate a case where the cause of *certain* financial effects is traced to the speed of communication, and not to actual intentions. Such a flow can truly be labelled as faceless. In all these cases, the technological capacities to transfer information world wide and instantaneously will cause problems in tracing those responsible, but that is no reason to neglect the difference between e.g. deliberate exploitations of cyberspace and cases where cyber-flows seem to strike randomly.

[\(To the top\)](#)

9. Some final remarks

Castells is talking about flows dominating our lives. They are "purposeful, repetitive, programmable sequences of exchange and interaction between physically disjointed positions held by social actors in the economic, political, and symbolic structures of society". (Castells 1996a: 412) Furthermore, they are connecting various nodes. The nodes should be seen as physical places, such as airports or important financial centers. Together, nodes and flows constitute what we have referred to as a networked space of flows, which includes all sorts of "material organization of time-sharing social practices that work through flows". (1996a: 423) Cyberspace is only one aspect of this space, which means that this article should not be regarded as a critique of Castells, but as a critical discussion on how we can understand *flows* in cyberspace.

Nothing prevents the term flow from being used when cyberspace is described, but it can be noted that a network concept usually refers to various relations, e.g. as dense or loose, centralized or decentralized, as a one way relation or as reciprocal, etc. When networks are investigated, the main point of focusing on relationships is that it questions who has a relation with whom. (C.f. Collins 1988:414p) Castells has exchanged these specified relations with the term "flows". As mentioned above, they are purposeful, repetitive and programmable sequences of interaction between disjointed nodes held by social actors. But flows also gives an impression of freely and continuously moving information, that goes beyond any actors' control or intention. In some cases, this may fill its purpose, but the preceding discussion suggests that this is not always the case. We have been able to make several distinctions between social practices exploiting the global network of communication. Talking about flows therefore seems to leave us with a blunt description of a global cyberspace. Questions concerning what counts under what circumstances still have to be answered.

It can be claimed that Castells is only talking about flows as metaphors for unpredictable patterns of interaction in today's global society. The advantages of using such a metaphor should not be totally denied. However, he is stressing that these flows dominate the dynamics of physically bound places and ordinary peoples' social life. The whole society is more or less dependent on these flows, and he even declares that they easily become autonomous from the power holders initiating them. (Castells 1996a: 428) Emphasizing such an impact ought to be a reason for not dealing with flows as if they were innocent metaphors. We simply have to ask ourselves what they consist of, at least if we apply the term to outstretched and intensive communication within cyberspace. As a matter of fact, if we are trying to describe and explain such cyber-communication, a network concept containing various relations, and describing who has a relation with whom, might better suit that purpose.⁴

[\(To the top\)](#)

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Notes

1. According to an article from the BBC's electronic news report the attacks resulted in that "the crackers set up their own domain host, need.tp, with possible aim of using it for fund-raising or propaganda on East Timor". (Chris Nuttall, 1999) Those interested in either the story about East Timor's virtual independence or other similar cases may find articles at e.g. Internet Security Review (www.isr.net), Connect Ireland (www.connect.ie), and the BBC's electronic news report ([www: http://news.bbc.co.uk/hi/english/sci/tech](http://news.bbc.co.uk/hi/english/sci/tech)). ([Back to the text](#))
2. There are several other examples illustrating how state actors may participate in cyberspace, e.g. police officers specially trained to trace drug trade. In connection with the bombing of Kosovo, the Serbian government was accused of being responsible of the virtual bombing of NATO's servers with various viruses. (BBC News 1999)
([Back to the text](#))
3. Having a fast and not directed distribution of a virus can of course be the intention of the initiator, but world wide transmission of the virus will be difficult to map or control. ([Back to the text](#))
4. The network concept that is used by Castells leaves us with too many questions. Stressing more specified relations would make it easier to distinguish a more multifaceted logic of global networking. This could be done through using Craig Calhoun's concepts of "Primary relations" (face-to-face relations), "Secondary relations" (indirect relations), "Tertiary relations" (an awareness of the relation without co-presence), and "Quaternary relations" (relations that occur beyond the attention and awareness of at least one party). (C.f. Craig Calhoun 1992, David Lyon 1997) However, my conclusion here is limited to the fact that cyberspace contains a number of activities/relations that may not always take the dramatic shape of a flow. ([Back to the text](#))

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