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# Heaven and Earth – Cloud and Territory in the Internet

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**Abstract.** When John Perry Barlow declared Cyberspace as independent from the common territory and sphere of influence by economy and state in 1996 he could not know what happened afterwards. All the dreams of immateriality and exclusion from state power had to recede from a reality of internet infrastructures that became more and more massive, resource consuming and dominant.

What developed into the metaphor of The Cloud at the same time settled as a highly influential new power rivalling with democratic institutions of the state on its territory. According to Galloway it is the new means of power, the protocol, that reigns technology and society.

The key question of this paper is if there is a close connection between the family of internet protocols and the regulatory means of state. My tentative answer is: yes, indeed, there are close connections between the two spheres that seemingly were incompatible: heaven (The Cloud) and earth (the state territory) couple strongly.

The approach is done by Luhmannian Systems Theory, the term being “interpenetration“ and “structural coupling“. The example will be the Chinese Social Credit System.

The main thesis is that the Chinese Social Credit System couples its protocol to the laws and regulations of state and economy, also conceptualized as being protocols, via the internet as its common language. It turns out that the coupling and interpenetration could be highly efficient thus for the first time enabling a co evolution of a highly mobile turbo capitalist economy and a strict authoritarian state territory, a marriage between heaven and earth.

**Keywords:** Cloud, systems theory, internet protocols.

## 1 A very short history of the Internet

The internet, as we all know, is a result of the fear of the US government to be overtaken by the Soviets. It is a child of the cold war, an immediate effect of the so-called Sputnik Shock.

A research agency, the ARPA, did investigations for the US government on how the US could catch up to the Soviet Union. Especially if there were a nuclear war how the military still could function. Because it was known that a thermonuclear strike would

lead to a nuclear electromagnetic pulse that brings down electronics like telecommunication devices. It would not be possible any more to maintain the command chain, orders from the generals would not reach the soldiers. Absolute chaos.

So, the RAND Corporation in 1959 started work for ARPA on concepts of a communication system that would probably withstand the electromagnetic pulse. It was Paul Baran who published a series of reports on this in 1964, at the same time Donald Davies had the same technical idea in Great Britain. It was the idea of the packet switching instead of the common line switching that was used for the telephone connections. The lines are too vulnerable, a strike could destroy cables, no transmission through them would then be possible before repair. Packet switching could stand losses of packets because they could be sent repeatedly.

The packet switching brought redundancy to telecommunications, and with it brought resilience, the capability to withstand damage. And it brought diversity, since the packets could travel on whatever route, through cables, over landlines, by radio, you even could implement packet switching with carrier pigeons! This immense flexibility is a signature of the internet of today. No single carrier could monopolize the infrastructure, we now talk and exchange data by WiFi, Ethernet or Cellular Phone technology, to name a few, operated by different companies. Very many kinds of gadgets could use the internet: phones, computers, watches, tablets, fridges, cars. But how could all this work? Why isn't there chaos all about?

It is by conventions. In the case of the internet and its connectivity, we call the conventions: protocols! They leave freedom for the inside by maintaining strict regulations at the borders to the outside. In the internet it's all about the protocols. Protocols take care for stuff to happen that would be very improbable to happen without them. People call concepts like these: media. Protocols like the internet protocols are a hugely important type of digital media. They allow for things to happen that would never occur without them.

At this point we should employ Luhmann's notion of media:

“We would like to call media the evolutionary achievements that enter at those possible breaks in communication and that serve in a functionally adequate way to transform what is improbable into what is probable“ ([8], p. 160).

An open systems theoretical question for me, by the way, is whether the internet could be qualified as a medium of distribution alone. It also has aspects of a language and of a medium of success.

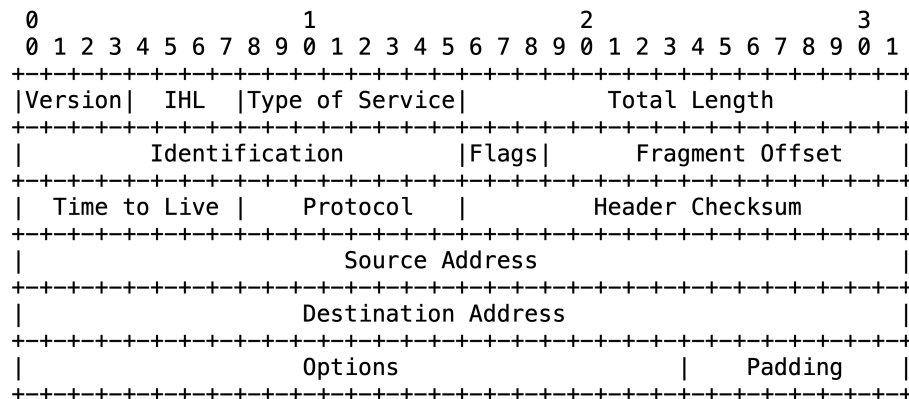
One of the basic protocols of the internet is: the internet protocol, issued by Jon Postel in 1981. The document is a so called „Request for Comments“, an openly negotiated proposal. You can look up all those RFCs in the internet, these are the documents that make up a huge part of the history of the internet. It is interesting to read these documents. They are not written in a formal language but in plain english. I quote directly from RFC 791:

#### 1.4. Operation

The internet protocol implements two basic functions: addressing and fragmentation. The internet modules use the addresses carried in the internet header to transmit internet datagrams toward their destinations. The selection of a path for transmission is called routing. ([12], p. 2).

Protocols address people. They are no algorithms but conventions written in natural language. And exactly this is one of the reasons why they could persist over such a long period of time: from 1981 up until today. These are at about four decades now, an eternity. These conventions all have to and can be implemented in whatever programming language that is in current use on rapidly evolving hardware.

An internet packet header looks like this:



**Fig. 1.** An Internet Packet Header ([12], p. 11)

Let's have a look at one of the fields:

Time to Live: 8 bits

This field indicates the maximum time the datagram is allowed to remain in the internet system. If this field contains the value zero, then the datagram must be destroyed. This field is modified in internet header processing. The time is measured in units of seconds, but since every module that processes a datagram must decrease the TTL by at least one even if it process the datagram in less than a second, the TTL must be thought of only as an upper bound on the time a datagram may exist. The intention is to cause undeliverable datagrams to be discarded, and to bound the maximum datagram lifetime. ([12], p. 14).

By issuing these RFCs everybody capable to do so could influence the development of the internet. The internet became a place of innovation, of independence, a world made

up of freedom and of ideas. The internet was once part of the counter culture, like LSD, and the hippies.

The interesting aspect in respect to systems theory is: a protocol constitutes a binary relation. The service works in case the protocol is obeyed, and it is denied if not followed strictly, thus it has also the nature of a code that governs connectivity, *Anschlussfähigkeit*, the very same word in English for the technical and the sociological term. Luhmann did a very similar characterization of the way structural coupling takes place between autonomous subsystems:

Structural coupling in this context means transforming analog (simultaneous, continuous) relations into digital relations that can be handled in accordance with an either-or schema, and also intensifying certain mutual irritation channels with a high degree of indifference toward the environment. ([9], p. 110).

I take this analogy as a hint that protocols have an immense importance for structural coupling, even if we do not mix up the digital with computers.

## 2 Grassroots

In 1996, the lyricist of the Rock Band Grateful Dead that also was part of the American counterculture, this John Perry Barlow published a manifesto to declare cyberspace independent. It starts like this:

Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather. [2].

What was the reason for such an emphatic outcry? The Clinton administration in 1996 passed a law to regulate the internet, mainly to open it up for regular business. This enraged the Internet people that wanted to be left alone. Although the beginning of this declaration still comes as a request, almost a little shyly, similar to the style of the founding documents of the Internet, the "Requests for Comments" ([7]), the strong utopia of an immaterial territory arose from this manifesto, which was – or at least should be – free of the power relations of late capitalism and socialism and could thus make everything new and better. The internet, according to its founders, should not be part of the state, it should remain somewhere else, at its own.

We now know, two and a half decades later, that this idea shattered to pieces.

How the Internet as a technical-social utopia relates to the state, whether it itself has a territory, if it lives in a cloud, or whether it perhaps behaves exactly the other way round, is what I want to lay out before you in the following.

### 3 The (im)materiality of the Internet

Cyberspace does not lie within your borders. Do not think that you can build it, as though it were a public construction project. You cannot. It is an act of nature and it grows itself through our collective actions. [...] Cyberspace consists of transactions, relationships, and thought itself, arrayed like a standing wave in the web of our communications. Ours is a world that is both everywhere and nowhere, but it is not where bodies live. [...] there is no matter here.

Our identities have no bodies, so, unlike you, we cannot obtain order by physical coercion [2].

The idea of the immateriality of information technology, in particular the Internet, here once again in the version by John Perry Barlow, has often been emphatically represented, especially in art, and is one of the pillars of the phantasm of cyberspace as a domination-free area. Jean Francois Lyotard spread this idea in the legendary exhibition “Les Immaterieux“ at the Centre Pompidou in 1985, which he supervised, and later said something about it:

The term 'immaterial' is now a somewhat daring neologism. This merely expresses the fact that today - and this has prevailed in all areas - the material can no longer be regarded as something that opposes a subject like an object. Scientific analyses of matter show that it is nothing more than a state of energy, i.e. a connection of elements which themselves are not tangible and are determined by structures which each have only a locally limited validity [...] The increasing mutual penetration of matter and spirit – equally clearly through the use of word processing systems – now causes the classical problem of the unity of body and soul to shift. [10].

This did not remain without contradiction. Horst Bredekamp, the famous art historian for example, commented on ideas of immateriality like this:

It is an abstruse thought that a picture on a screen would be material-free. Video artists, especially those of the first generation, have pointed this out by using the television as a sculpture. The moving or non-moving images of the screens are afflicted with a logistics that exceeds the Florentine Pietà of Michelangelo many times over in material gravity. ([6], pp. 39).

And so it seems at least doubtful how Barlow [2] situated the role of the digital media in the political field: “In China, Germany, France, Russia, Singapore, Italy and the United States, you are trying to ward off the virus of liberty by erecting guard posts at

the frontiers of Cyberspace. These may keep out the contagion for a small time, but they will not work in a world that will soon be blanketed in bit-bearing media.”

Was this utopian or naïve?

#### **4 The Cloud and Technical Gravity: Protocols, Networks and Territories**

In the debate about the Internet, the structure and logic of the Internet has been the subject of public debate, and this may have led to the false impression that it is somehow immaterial. And indeed: although computers and their functionality can be described physically within the framework of solid-state physics, they gain their epochal significance above all through the fact that they perform symbol processing. The computer deprived humankind of its special position of being solely responsible for the symbolic. Computers operate in the symbolic and exist in the real!

It is no exaggeration to say that the “protocol” is the central type of document that constitutes not only the technology but also the social and political aspects of the Internet. The term was originally coined in diplomacy, protocols describe the rules that must be observed to ensure the smooth functioning of a process. And what applies to the facilitation of diplomatic encounters even among opponents of war also applies to technical components and their competing operators: as long as one adheres to the protocol, the exchange can be continued, if one violates it, the communication breaks down, and everything stops. It is a hardly noticeable, non-violent form of domination, but it is without mercy. No complaints or appeals help: disregarding the Internet protocol, for example, is immediately punished by an error message and the termination of the data exchange.

Alexander Galloway wrote an important book about protocols. He describes how our society has reached its current state of development, and its title is: protocol [5].

How would control exist after decentralization? In former times control was a little easier to explain. In what Michel Foucault called the sovereign societies of the classical era, characterized by centralized power and sovereign fiat, control existed as an extension of the word and deed of the master, assisted by violence and other coercive factors. Later, the disciplinary societies of the modern era took hold, replacing violence with more bureaucratic forms of command and control.

Deleuze has extended this periodization into the present day by suggesting that after the disciplinary societies come the societies of control. ([5], p. 3).

“[P]rotocol is how technological control exists after decentralization.” ([5], p. 8). Control and thus power are maintained by protocols.

What is special about the technical protocols of connectivity, which, according to Galloway, has so strongly shaped our society today? The Internet Protocol IP, for example, regulates how the data packets that are sent across the Internet must be structured. It does not matter to the IP which technical infrastructure is used, as long as it

adheres to the protocol rules. There is also no explicit coding of the geographical location of the sender. And it doesn't matter what the content of the data stream actually is, the protocol levels above regulate it, like the ones for email, for the web, or for the social media. The downward indifference subsequently made possible innovative network technologies, such as the Internet via mobile telephony, which is now used in every smartphone and was not yet conceivable in 1983; the upward indifference finally made possible content and functions that are dominant today but still unthinkable in 1983: social media, television on the net, surveillance of the entire population.

So, do we live basically in a virtual disciplinary society with voluntary discipline through smart self-monitoring techniques – in other words, an incorporation of the panoptic principle into the individual? Probably not, since the differences between control and discipline are too great, as are the differences between voluntariness and coercion. The observance of protocols expands possibilities, violence limits them. Protocols appeal to desire, coercion to the mind. The techniques of self-optimization seduce, laws force us. Protocols disappear from our attention – also a typical characteristic of a medium –, against orders one can rebel. In Frieder Nake's categorization, protocols act on the “subface”, which, unlike the surface, remains invisible:

“The surface is visible. It is for us. The subface is invisible. It is for the computers. The computer can change the subface, it can manipulate it. The surface does not have this property” ([11], p. 3).

The crucial point for the relationship between the Internet and the state seems to me to be precisely the quality that is at stake here: the complete indifference of Internet technology towards its political environment. This has nourished the idea that the Internet is somewhere, nowhere: in The Cloud, not on the earth. On the one hand, this has led so many founding mothers and fathers of the Internet to egalitarian grassroots fantasies, but on the other hand it has also led to the current situation in which the Internet appears both as a driving force of social change and as a means of repression for authoritarian regimes. The Internet simply doesn't care whom it serves. And it doesn't matter to it that it promotes all communication processes and the concentration of power as rapidly as no media technology before it ([17]). As a communications infrastructure, the Internet does not favor any form of society or state; its connectivity acts more like a catalyst or accelerator of social development, supporting and empowering those who design and operate it.

The fact that there is at all a connection between state power and Internet technology is not due to the rules of protocol, but to the operation of the network itself, which we are now coming to.

All those who still believe in the immateriality of the Internet are recommended to visit a data centre. These are highly secured industrial plants that consume an enormous amount of electrical energy and therefore have an enormous need for cooling, which not only operate the central servers that store and organize the content, but also mediate and regulate data traffic, all nodes of the network. Every node on the Internet that governs the data flow for a subnet marks the relationship between inside and outside for this subnet. When the Internet was built, the protocols did not regulate national responsibilities, nobody even thought that a data packet should take a different route than the fastest one from sender to recipient. In every switch or router, there are address and



connection directories, routing tables for this purpose, on the basis of which the routing in the Internet happens automatically, unaffected by the borders of a territory.

But the world did not remain libertarian and hippy-like as imagined by the nerds who invented the Internet in the first place. The active network components, the switches and routers, are located somewhere and are operated by someone, and the indifferent protocols do not care whether the routing tables follow political rules of geographical restrictions at borders or whether there are economic goals of companies or whether simply the original efficiency of data traffic should be the main idea. If you request a website in a country with Internet external border control that is inadmissible in this state, then there is no technical connection to the associated network components in the accessible routers, and the query runs into the void. If right now memories of your last visit to China come to your mind then this is significant. Even circumvention practices, tunneling mechanisms such as VPN or proxy servers could be blocked by the routers. This is how the Internet is earthed. And this grounding characterizes the respective variety of the local Internet: state-regulated vs. neo-liberally economically oriented or net-neutral indifferent according to its founding idea.

The Internet has its head in The Cloud and its feet firmly on the ground.

John Perry Barlow observed the Internet as a cloud in contrast to the background of the territory ([13]):

$$\text{internet} = \overbrace{\text{cloud}} \Big| \text{territory}$$

From the point of view of the operators of terrestrial networks it rather looks like this:

$$\text{internet} = \overbrace{\text{territory}} \Big| \text{cloud}$$

I use Spencer Brown's forms in the metaphorical way as Dirk Baecker does. It is well a matter of dispute whether I should do so, but this very condensed, almost poetic form has a certain appeal to me.

## 5 The many borders of the Internet: The Case of China's Social Credit System

Because of the functional differentiation of a modern society, state borders and the borders of the functional subsystems of society no longer fall into one. While in the disciplinary societies with strictly hierarchical organization all spheres of power were united under the absolute ruler, the king or emperor, and the borders of the empire were also those of trade, political power and law. But the control societies built their own subsystems with their own borders: languages marked nations, trade is getting global by complex regulatory institutions at the state borders: customs, immigration, international telecommunications organisations, capital flow seems to have almost no limits at all.

Niklas Luhmann writes:

The distinction [...] between the environment as a whole and the systems in a system's environment, explains how boundaries are put under pressure to improve their performance, that is, explains how a more exacting determination and preservation of boundaries becomes necessary. System boundaries always separate out an environment, but the requirements for this vary if the system must distinguish other systems (and their environments) within its own environment and adjust its boundaries to this distinction. In the simplest case, the system treats its environment as another system. Thus national boundaries are frequently conceived as boundaries with another nation. But this becomes increasingly illusory when relations with an economic, political, scientific, or educational 'abroad' no longer correspond to these same national boundaries. Under such circumstances, the boundary definition moves inside; this is confirmed in self-referentially closed systems, which determine their boundaries by their mode of operation and mediate all contact with the environment through other levels of reality. ([8], p. 30).

The tension that we can observe between statehood and technical communication infrastructure is that between conflicting boundaries between systems and their environments. Boundaries make themselves felt very concretely where, for example, commercial enterprises need an Internet that functions globally and is only committed to economic needs in order to coordinate their global research and development and marketing activities, but where they come up against state boundaries that prevent a libertine exchange of data, for example because they open a dependency in the People's Republic of China. This creates boundaries within the subsystems: management must be staffed with party functionaries, for example, and communication must be interrupted because of state censorship, which runs counter to the autonomy of the economic system. The idea of the cloud where information is meant to live hits the reality of a state territory quite roughly.

In a decentralised world society, whose technical constitution is regulated by protocols, it can be speculated, however, whether the idea of protocol might not bring the solution here. In any case, a digital data optimism of Barlowian coinage is no longer a rational position that can be maintained.

Now to our small case study. It deals with the Chinese "Social Credit System", planned for 2020, that works with precisely the same digital media that were supposed to be the absolute contrary to any state power in the Declaration of Independence of Cyberspace 1996. Interestingly enough, the term "credit" is central here, as it also used by Luhmann when pointing out that central control could not work for a differentiated society:

Finally, there was and remained world society, in which all this was expected to take place within territorial boundaries, a functionally differentiated system that owed its own effectiveness to the autonomy of functional systems and was not to be combined with any sort of central control. This applied above all to the credit system of international finance, which could guarantee a certain flexibility in the timing of investment and consumption, which was crucial for growing regional

development. Naturally, it also applied to international affairs, to scientific research, and not least to everything that interested intellectuals. Any insistence on organizationally controlled, regional autonomies is quite simply not compatible with this. The attempt to introduce this sort of modernization in modern society had to be at the cost of stagnation, a drain on last power resources, diminishing acceptance, and finally the collapse of the ‘system’. ([9], p. 307).

So, we could wonder: how could a modernization of the Chinese society work out without central control for which it acquired some fame from its communist history? My impression is: by a protocol.

The whole thing, the Social Credit System, is based on the implementation of a protocol that is absolutely not socially indifferent because it regulates social issues precisely and absolutely rationally. As you might know, it intends to implement the massive collection of very personal data from all sources, its valuation into social credit points from which, in the end, positive or negative feedback is generated by the power of the state. All this is technically based on the connectivity of the internet. It is a social protocol, one that works on the basis of all the politically blind technical Internet protocols invented by the nerds and hippies in the 1980s, grounded by sovereign control over the network infrastructure on state territory.

The fact that the Chinese Social Credit System is a phenomenon of the involvement of political and economic boundaries is stated explicitly:

Our country is in a period of expansion in which the openness levels of the economy are rising on an even greater scale, across even broader fields, and at even deeper levels. Economic globalization has enabled an incessant increase of our country’s openness towards the world, and economic and social interaction with other countries and regions is becoming ever closer. Perfecting the social credit system is a necessary condition to deepen international cooperation and exchange, establishing international brands and reputations, reducing foreign-related transaction costs, and improving the country's soft power and international influence, and is an urgent requirement to promote the establishment of an objective, fair, reasonable and balanced international credit rating system, to adapt to the new circumstances of globalization, and master new globalized structures. [14].

The social credit system is called a “necessary condition”, i.e. the indispensable prerequisite for the territorial borders of the Chinese state being able to cross the system environment boundary of the global market in The Cloud without dissolving both interpenetrating systems through lethal boundary damage.

The claim of the planning is truly comprehensive, here it is not only about financial creditworthiness, as we know it from the German Schufa, here the etymology of the word “credit” of credo, the credibility in the others, again comes to honor. The beginning of the declaration of the Council of State of the People’s Republic of China reads:

A social credit system is an important component part of the Socialist market economy system and the social governance system. It is founded on laws, regulations, standards and charters, it is based on a complete network covering the credit records of members of society and credit infrastructure, it is supported by the lawful application of credit information and a credit services system, its inherent requirements are establishing the idea of an sincerity culture, and carrying forward sincerity and traditional virtues, it uses encouragement to keep trust and constraints against breaking trust as incentive mechanisms, and its objective is raising the honest mentality and credit levels of the entire society.“ And „Completely moving the construction of a social credit system forward is an effective method to strengthen social sincerity, stimulate mutual trust in society, and reducing social contradictions, and is an urgent requirement for strengthening and innovating social governance, and building a Socialist harmonious society. [14].

*Sincerity* is pretty much the most commonly used word in this text. It is the positive side of a code to be enforced through the social credit system. It is not only about finances, but also about morality, about the values of a desirable state, and this in all conceivable fields of society. The list is long and tiring, ranging from the allocation of credit lines to the correct behavior of civil servants, care of the elderly, science, education and tourism. Incentives should be given, and violations should be punished. For road traffic there is the passage: “Enter citizens’ traffic safety and law-breaking situation into sincerity files, stimulate all members of society to raise their consciousness about traffic security”, and to this end we imagine the massive surveillance of the Chinese public space with video cameras that support individual facial recognition.

The decisive question is probably whether it can actually come to the co-evolution of socialism and the market, a development that no classical theory of society or economy thought possible and which can perhaps only be realized through a hierarchy of technical and social protocols. The technical medium of the interpenetration emerging here seems to be the Internet and its global connectivity by protocols, which allows a coupling both to politics and to the economy, precisely because of its blindness to both spheres.

The market capitalization of Internet companies alone shows that the Internet is perfectly linked to the economy. But that it also offers perfect connectivity to (police) state methods of surveillance is now becoming obvious through the profiling by the social media, the omnipresence of geo localization and the voluntary body searches by self-optimizers, all three notions stemming from a typical Police Recognition Department but also part of our digital lives. We thus have a classic case of the interpenetration of two functional subsystems of society, and the medium that couples both to the state and to the economy is the Internet: grounded to the territory, global like The Cloud. Here issues of theory once again emerge. How could we name this? Is this a matter of language as in the case of other system interpenetrations?

The SCS is supposed to appear impersonal and silent and invisible like Kafka’s Schloss bureaucracy. People and faces appear when you look at the members of the Chinese State Council, and even then, you can’t get rid of the impression of watching masks.

China is also technically exactly the right nation for such interpenetration: the state is autocratic, and the IT infrastructure is a monoculture. Almost everything is paid with one of the very few online payment systems, mostly in WeChat, the monopolistic social medium, where all photos, all chats, all financial transactions, all geodata are assembled and state monitored. The design and use of the Internet are becoming a state goal, and the State Council of the Communist Party of China has adopted such a goal in 2014 in the form of the social credit system, as already mentioned. Its reign shall be silent and unshakable. Violations are punished non-violently by the fact that social participation becomes impossible in a relentless binary manner. Anyone who can no longer get a loan from a bank because of insufficient social credit, can no longer buy train or plane tickets, can no longer rent an apartment and can no longer get a job, has got himself a social error message and the termination of the social process, impersonal, merciless, inescapable. The parallelism in the functioning of the social credit system with the technical protocols of the Internet is obvious. On the other hand, it differs from Bentham's Panoptikon, as Foucault described it in his "Surveillance and Punishment", in that it takes place invisibly and without physical coercion, on the subface. Once the social credit system planned for 2020 has been implemented, participation in social life will be tied to submission to it. It works piquantly with the very digital media that Barlow's declaration of independence in 1996 was supposed to guarantee: separation from the state and individual freedom.

China's view on the internet could be characterized as the unity of the difference between territory and cloud, a re-entry in the terminology by Spencer Brown:

$$\text{internet} = \text{territory} \left| \text{cloud} \right.$$

## 6 The Internet as a State Signature

If we try a comparison of systems, if we distinguish Far Eastern socialist state capitalism from the liberal parliamentary democracies of Europe with functioning informational self-determination and, finally, from the unbounded neoliberal USA, which permits an unbridled land seizure by Internet corporations, the central importance of state regulation or non-regulation of the Internet for a state constitution becomes obvious. Due to the fundamental significance of the Internet with its protocols, its grounding in the territory and its mobility in The Cloud, its function as a coupling medium between autonomous social subsystems, it is almost the signature of a state whether and how it regulates its Internet infrastructure. For, according to Dirk Baecker: "And [...] the next society? Since the introduction of the computer, their problem is no longer the surplus of criticism, but the surplus of control." ([3], p. 169. Transl. MW) And truly: functional subsystems can be connected to each other via the Internet and controlled via cross system databases. Machine learning and artificial intelligence play the role of automatic omnipresent guards at the data interfaces. The Internet is the completion of the decentralized control society. It also marks the unity of the contradiction between centrality

and decentrality, between seduction and control. And this is precisely why societies and their states differ fundamentally in the way they deal with control. The achievement of informational self determination then becomes the antithesis of a market liberal data liberation as well as a total control and sanctioning of state capitalism.

The platforms, the surfaces of the Big Data subfaces, on which functions of the sub-systems meet, play a special role here: Google, Facebook, Twitter, Amazon and the People's Republic of China's platforms like Baidu, Renren, WeChat and Alibaba. Whoever controls them, who have grown so boisterously on the Internet, controls a crucial infrastructure of society. But that also means: if, e. g., we Germans really want to enforce our German constitution, the Grundgesetz, and thus preserve the article on freedom of the press, Article 5 GG, or the article on postal and telecommunications secrecy, Article 10 GG, then we have to deal with the social media platforms! The Network Enforcement Act, *Netzwerkdurchsetzungsgesetz*, of 2017 has thus made a start, and the outcry from parts of the network industry has confirmed that the legislator has made a decisive point. But this will probably not be enough, as the example of the Social Credit System of the People's Republic of China shows, which can only function because a platform supported vertically consistent and monopolistic collection of the data up to the provision of the services with the right of access of the state power enables the control of all social subsystems equally. The separation of powers will also have to be called: platform splitting!

The inter-, counter- and superimposition of globally and territorially operating platforms on the basis of Internet based data flows creates new border relationships that differentiate themselves, crossing each other autonomously. State borders have become tremendously complex, they can no longer be drawn on political maps, they not only end at border fences, but also at access possibilities to data infrastructures, right up to the chips that are built into network components. State hacking is an act of territorial border violation that is becoming increasingly apparent. A citizen remains under the control of their state platforms even abroad when using them. And how should they not!

And so Perry Barlow was right in a way, despite all the failure of hopes: so that cyberspace could have remained a place of mind and freedom, the state and the weary giants of flesh and steel, and to add: of data, should have kept away.

But they didn't.

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**Sample Heading (Third Level).** Only two levels of headings should be numbered. Lower level headings remain unnumbered; they are formatted as run-in headings.

*Sample Heading (Forth Level).* The contribution should contain no more than four levels of headings. The following Table 1 gives a summary of all heading levels.

**Table 1.** Table captions should be placed above the tables.

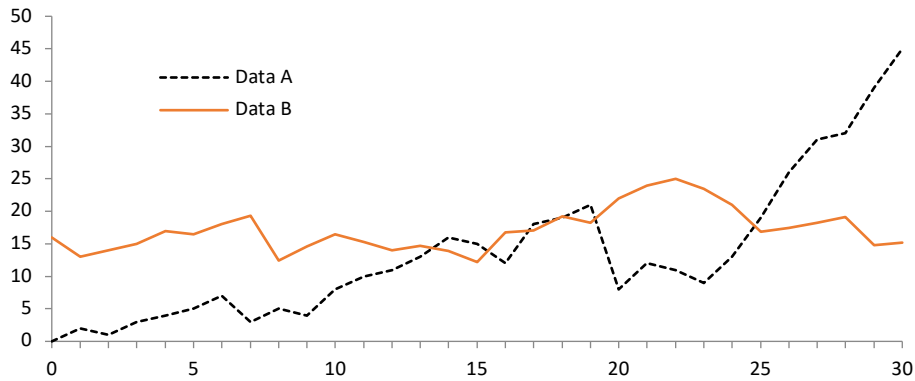
Heading level	Example	Font size and style
Title (centered)	<b>Lecture Notes</b>	14 point, bold
1 <sup>st</sup> -level heading	<b>1 Introduction</b>	12 point, bold
2 <sup>nd</sup> -level heading	<b>2.1 Printing Area</b>	10 point, bold
3 <sup>rd</sup> -level heading	<b>Run-in Heading in Bold.</b> Text follows	10 point, bold
4 <sup>th</sup> -level heading	<i>Lowest Level Heading.</i> Text follows	10 point, italic

Displayed equations are centered and set on a separate line.

$$x + y = z \tag{1}$$

Please try to avoid rasterized images for line-art diagrams and schemas. Whenever possible, use vector graphics instead (see Fig. 2).





**Fig. 2.** A figure caption is always placed below the illustration. Short captions are centered, while long ones are justified. The macro button chooses the correct format automatically.

For citations of references, we prefer the use of square brackets and consecutive numbers. Citations using labels or the author/year convention are also acceptable. The following bibliography provides a sample reference list with entries for journal articles [1], an LNCS chapter [2], a book [3], proceedings without editors [4], as well as a URL [5].

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