Information Sphere and International Relations in the Era of Big Data*

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Published in 2019, Amaël Cattaruzza's book analyses the geopolitical and power-related implications of the mass production and use of digital data. In his work, Cattaruzza, a member of the Saint-Cyr Military Academy in Paris and the research group on connections between geopolitics and the information sphere, examines the place of networking and new technologies (big data, artificial intelligence) in the system of international relations and their role in its alteration and change. Special thanks are due to Pallas Athéné Könyvkiadó, which – by publishing Cattaruzza's work almost 'the day after' its publication in French – made it possible for Hungarian readers to become acquainted with this thought-provoking volume that explores new connections.

Amaël Cattaruzza's work is divided into three chapters. Chapter 1: "What is exactly "data"?"; Chapter 2: "Towards the territorialisation of data"; and Chapter 3: "Can geopolitics stand the test of data?" The questions and findings in all three chapters touch on the foundations of the science and nature of geopolitics. The combination of the information sphere and geopolitical thinking, and Cattaruzza's linking of them, means outlining of a new paradigm, as a new framework for thought. The basis and defining content of this is to answer the question of what we mean by the concept of geopolitics.

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"*Geopolitics* is first and foremost concerned with the study of the interactive power struggles and network of relationships between actors of different types, levels and degrees of organisation in a geographic space with changing content, which play a role in and shape the system of international relations. In geopolitical analysis, the changing interpretation of space, location, situation, actors, boundaries, identities, civilisations, geopolitical patterns and codes, world system models, globalisation processes and the geopolitical scale is particularly important. *Geopolitics, as a multidisciplinary social science studying the spatial and partly geographical aspects of the international relations theory, is a part of political science.* It is closely related to political geography, historical geography, social geography, cultural geography, regional science, history, economics and other social sciences of a political nature.

A characteristic feature of geopolitical doctrines is *their linkage to (great) power interests and their historical nature.* Geopolitics, like other sciences, is a product of its own time. Thus, its definition and content, while retaining its basic essence, *varies from historical period to historical period,* in line with changes in the system of international relations and in the world economy. The category system and conceptual domain of *classical geopolitics* is therefore nowadays reinterpreted not only by *critical* but also by *post-modern geopolitical thinking.*"[1] Classical geopolitical analysis examined international political relations in terms of an interactive power network and in the context of a three-dimensional spatial structure that consisted of *land, sea and air.* From the last third of the 20th century onwards, however, the dominant view in geopolitical thinking has used as its analytical framework the coordinates of the concept of five-dimensional space.

The traditional three-pronged approach *has been expanded to include the phenomenon of outer space, or aerospace,* as well as *cyberspace belonging to the* broadly defined *information sphere* based on data volumes that have grown to vast proportions.

The existence, use and utilisation of data has always been an integral part of the life of society and had a significant impact on the system of international relations. Over the past two decades, however, digital data production has seen unprecedented growth. 'This growth occurs in accordance with three laws,' as Cattaruzza writes. These are: 1) Moore's Law, which says that the complexity of integrated circuits doubles every 18 months or so; 2) Kryder's Law, according to which the storage capacity of magnetic disks doubles every 13 months; and 3) Nielsen's Law, which states that the capacity of public networks doubles every 21 years. However, the constant expansion of data processing and storage capabilities is hardly enough to keep up with data explosion: In 2015, around 10^{22} bytes of new data were generated, and this number will in all likelihood increase fivefold by 2020. Terminology also

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[1] István Szilágyi: *Geopolitika* (*Geopolitics*)*.* Second, expanded edition. PAIGEO, Budapest, 2018, p. 28.

needs to catch up to describe these new quantities. "In the last decade," the author says, "we have moved from the era of exabytes (10^{18} bytes) to the era of zettabytes (10^{21} bytes), not to mention the era of yottabytes, which means 10^{24} bytes... The total amount of data on the planet in 2018 is estimated at 33 zettabytes, and it is expected that by 2025 this number will jump to 175."[2]

All these quantified data and facts have had a profound impact on the life of societies and the characteristics of power conflicts. In the world of geopolitics, the information sphere with its three-layered cyberspace (material infrastructure, software network, cognitive-semantic elements) has become increasingly important. The impact of this on power relations, military strategy and warfare was seen, for example, in the 1991 *Desert Storm* operation to defend Kuwait and in the war launched against Iraq in 2003.[3]

As for the actors shaping and structuring the international system, their composition and ability to exert influence have also changed. In addition to the great powers and states, intergovernmental and supranational organisations, transnational forces (NGOs, multinational companies, international media and the general public) and subnational actors (regions, local authorities, non-governmental civil organisations and individuals), the five largest US technology and IT giants, Google, Apple, Facebook, Amazon and Microsoft, collectively known as GAFAM, have also emerged, as well as their Russian, Chinese and German rivals, which have monopolised and continue to monopolise digital data storage and information flows. In many cases, they are not only the victims but also the influencers and organisers of piracy attacks on international data networks. In addition to hard power based on economic and military force, these representatives of soft power, which mediate cultural and political models, value systems and worlds of life, are playing an increasingly important role.

Due to the territorial connectivity and territorialisation of data, there is a worldwide struggle between states and powers to gain control over the flow of data and data storage centres and systems. Data centres are data storage and processing centres consisting of thousands of servers and data transfer switches connected in a hierarchical order. These are at the heart of big-data systems and service types such as cloud computing services that have spread very rapidly. Control over the system of routers connecting different networks on surface, terrestrial and submarine data cables is a key issue for the states that provide them with territory. As Cattaruzza writes" "At international level, governments seeking to break free from the imperialist domination of the digital great powers (the United States, Russia, China) are increasingly talking about the concept of *"digital sovereignty",*

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[2] Cattaruzza*: Op. cit., p. 7.
[3] See details: István Szilágyi: Op. cit., pp. 174–188.

which refers to the sovereign control of data (keeping it on national territory), but more generally also to cyberspace, to its physical (national infrastructures), logical (national digital sector) and semantic (national content) layers. More and more states are sharing this view with the result that the real geopolitics of data centres is emerging."[4]

However, bringing the information sphere under national influence is not just about fighting against the dominance of digital great powers and GAFAM companies. It is also manifested in the relationship between the great powers. Under a law adopted in June 2014 which entered into force in 2016, Russia obliges Internet sites, regardless of their nationality, to store all data relating to Russian citizens on Russian territory. At the same time, the centralised Internet infrastructure of Russia allows the government to disconnect its own system from the World Wide Web and to obtain information by monitoring cable systems across Siberia and 'tapping' the track of the Transit Europe–Asia (TEA) backbone very close to Siberia.

The security of data flows requires international action and agreement, as laws blocking the free flow of data have proliferated around the world in recent years. Territorialisation through law is also being implemented by the United States, and other countries are taking similar steps.

In the final part of his book, Cattaruzza deals with personal codes representing digital identity, which can be considered a specific data area, and its further developed and extended version, the organisation of control technologies into a smart border.

The book analyses the issue of cyberwar and cybercrime, their different manifestations and variants, the digitalisation of the battlefield and the issue of new territory, new actors and new threats. However, in the context of a review with a limited scope, it is not possible to elaborate on the many important points made in the book and the thoughts and comments that emerged from reading it.

In conclusion, we can say that Cattaruzza's book deals with issues of great theoretical and practical importance, which may be of interest to all our compatriots using the Internet, computers and smartphones, and it affects us directly and personally.

The structure, language and style of the work are excellent. Its quality and content are greatly enhanced, supported and strengthened by the three tables in the text, the two charts and the rich bibliography.

The book provides new insights for readers, historians and economists interested in big data issues in the era of *geopolitics* and *mass production of digital data,* and is

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[4] Cattaruzza: Op. cit., p. 60.

useful for university education. Cattaruzza's work refutes conventional approaches often found in the academic literature. The book 'The geopolitics of digital data' is an important contribution to a better understanding of contemporary developments and conflicts of power in the international arena. Therefore, I sincerely recommend it to all readers interested in the topic.