

1. Introduction

Technological innovation has played a relevant role in the political and social upheavals of the past centuries. Social developments and political action have been influenced by inventions and their scaling, for example, regarding industrial production methods. The interactions between politics, industry and society continue to increase. Particularly in the new millennium, information and communication technology (ICT) is of growing and outstanding social, economic and political importance, which can be observed in, for instance, the power-politically motivated efforts of autocratic states such as China and Russia (Kukkola, et al., 2019). This has given rise to a new, interdisciplinary field of research that examines the interactions between politics, society and technology: Science and Technology Studies (STS) (DeNardis, et al., 2020, 87ff). ICT technologies interact with various areas of industry, civil society and politics. Dependency on ICT has become so great that any restriction leads to significant limitations in these areas. In this respect, industry, civil society and politics have a high interest in ensuring that commonly used ICT technologies are available. The actors want to have sovereign control over these technologies regarding freedom of choice and decision-making.

The National Security Agency (NSA) scandal, centered around Edward Snowden, along with the rise of platform capitalism that sees US companies increasingly encroaching upon state or sovereign domains, and the escalating reliance on ICT, have collectively highlighted the concept of digital sovereignty for political entities within the EU in recent times. In contrast to the technopositivist capitalist model of the US and the regulated, non-liberal system in China, the search for a value-based digital policy has broadened in the EU states, requiring a digital sovereignty model in the context of European values.

Despite intensive and increasingly relevant discourse, understanding of digital sovereignty is highly differentiated, and there is no uniform model that describes or measures it. In the political sphere, such questions are particularly relevant, as insufficient digital sovereignty could have an impact on state sovereignty, thus calling into question the concept of state that emerged in

Europe in the Middle Ages. State sovereignty is limited to a state's territory; does this apply to digital sovereignty influencing state sovereignty? In addition to approaches already realised by autocratic states that digitally colonise themselves and strive for autarky, are there ways for a state to remain sovereign from other states with the use of foreign technology? How much digital sovereignty is required to maintain diplomatic negotiating capacity? Is the geopolitical order affected by changes in digital sovereignty?

These questions apply to all countries. However, the answers are particularly relevant for Europe. Europe's industrial supremacy in the manufacturing sector has thus far been maintained, but in the ICT sector, Europe has fallen behind. In the 1980s, the use of digital technologies increased so rapidly that critical infrastructure industries, government organisations, ministries and authorities in Europe began to use technologies from non-European countries in such a way that dependent relationships developed. Today, hardware and chip components are mainly procured from Asia, while software technology is, with a few exceptions, innovated in the USA. In Europe, with notable exceptions such as Software AG, SAP, Ericsson, Nokia and smaller niche suppliers, there are hardly any relevant manufacturers from whom hardware and software can be procured. The Covid-19 pandemic has made it clear how important digital technologies are for the maintenance of state actions. With a few exceptions, however, technologies from non-European suppliers are used. What would happen if these companies used their power to influence government action by corrupting their systems? What does this mean for the independence of a state and its ability to resist or defend itself?

The dependence of the Western world on Russia's gas supplies, triggered by the war of aggression against Ukraine, has clearly shown how a lack of independence can influence economic and political action. In this respect, the influence of technological dependence on state sovereignty is a highly topical issue.

This dissertation aims to make the term *digital sovereignty* more accessible from the perspective of the European value system, as well as to concretise the term, to indicate how states can be classified, and to create room for

improvement. To this end, an etymological derivation of the terms *sovereignty* and *digitalisation*, as well as their classification within a historical context, is first provided. The industrial revolutionary stages and social, technological, industrial, and political parallels are analysed. Through synthesis, a composite conceptual definition of *digital sovereignty* is proposed. The definition is then structured with a qualitative component model and quantified with secondary data. With the development of a composite comparative index of digital sovereignty, states are quantitatively assessed, and recommendations are given to strengthen the digital sovereignty of states, with a focus on the EU.

2. Literature research

2.1. Sovereign digitalisation, or digital sovereignty of the state

Since the concept of sovereignty and digital sovereignty is interpreted very differently in certain countries, a literature review will be carried out first. This is necessary in order to classify the concept of digital sovereignty in various political and economic concepts.

In the state-context, the term *digital* has only been spoken of for around 15 years, before which information was considered a 'means to an end'; this changed with the introduction of the internet. Information became the 'end', and the focus shifted to how information secrecy and the sovereignty of internet users could be preserved. The link between digitalisation and sovereignty was established in an analysis by Brinkerhoff in 2009, the focus of which was the use of ICT by ethnic minority groups to organise themselves into a diaspora¹. Using Tibet as an example, the author discussed how a state that is not considered sovereign can nevertheless make use of the national identity of its citizens in the government-in-exile and create a sovereign state through digitalisation (Brinkerhoff, 2009, 26ff). Therefore, the term *digital sovereignty*, which is used in the EU at the political level, will be used in the present dissertation (Madiega, 2020b).

2.1.1. Sovereignty as the basis of state action

In order to be able to conceptually analyse the digital sovereignty of states, the concept of state sovereignty must be considered. It is important in this dissertation, as a normative, conceptual definition of digital sovereignty will be one of the results and the concept of sovereignty in the digital context is critically discussed in literature.

¹ 'Modern diasporas are ethnic minority groups of migrant origins residing and acting in host countries but maintaining strong sentimental and material links with their countries of origin - their homelands—their homelands.' (Sheffer (1986, p. 3)

Etymologically, the term *sovereignty* derives from the Latin *supremus*², the Middle Latin *superanus*³ and the Middle French *souveraineté*⁴ (Quaritsch, 1986, p. 14) (Kurz, 1970). In antiquity, concepts of state sovereignty were considered without their explicit conceptual use (Carlsnaes, et al., 2013, pp. 246–247). The term *sovereignty* was mentioned for the first time in the year 1120 (Quaritsch, 1996, p. 14) and was used until the late Middle Ages, mainly in a confessional context or regarding the highest-ranking ruler of the fief pyramid, whose rule was limited to a certain area—a territorial partial sovereignty (Mayer-Tasch, 2007, p. 58). The prevailing state systems of the Middle Ages were characterised by Machiavellian *raison d'état*—the absolute priority of state interests and the legitimisation of all instruments of power to achieve these interests.

The idea of a modern state first found mention in 1576 in Bodin's⁵ *Les Six Livres de la République*⁶ (Nicholls, 2019, pp. 47–66). Bodin is thus considered the founder of the concept of sovereignty from which the modern European state developed. Man as an individual came to the fore, and a social contract emerged as the foundation of the state system. This created an essential prerequisite for the emergence of economic progress. Bodin added to the existing theories that a community should be governed '*summa potestate ac ratione moderata*'—by a supreme power. This power should be undivided. The term *sovereignty* thus stands for absoluteness that cannot be derived from a higher power and was also associated with a direct encroachment on citizens and their 'households' (Mayer-Tasch, 2009, p. 23). Thomas Mun's and Jean-Baptiste Colbert's economic theories on mercantilism focused on strengthening the state through trade for the state's own benefit fell into this era (cf. 2.2.1).

The weaknesses of Bodin's views on sovereignty can be seen in the absence of the 'legitimation of absolute rule', the exclusive linking of 'sovereignty and monarchy' and the blurred separation of sovereignty from the concept of right

² 'the highest, supreme'

³ 'above', also 'superior'

⁴ 'supreme', 'most' or 'excellent'

⁵ Jean Bodin (1530–1596)

⁶ *The Six Books of the Republic*, here in the sense of a state.

(Heintzen, 2005, pp. 3–4). In the following centuries, this led to monarchical absolutism through Hobbes’⁷ state-theoretical explanations regarding ‘sovereignty under state law and the sovereignty of a sovereign’ becoming one (Kriele, 2003, 56ff).

Bodin’s teachings marked Europe’s transition from the Middle Ages to modernity⁸ and are still influential today. The so-called Westphalian model⁹ was primarily characterised by a territorial principle, in addition to the sovereignty and legal principles. State borders delineated the political, legislative and executive boundaries of the sovereign (Zimmer, 2008, p. 55). Territorially delineated, autonomous and functionally similar states are essential characteristics of a modern state system (Ruggie, 1993, p. 151). The territorialisation of the concept of the state went hand-in-hand with Smith’s¹⁰ and Say’s¹¹ economic theories of classicism, in which state regulation ceded to liberal, self-regulating mechanisms (cf. 2.2.1).

2.1.2. Sovereignty in the modern constitutional state

Although the principles have essentially remained the same, the model of one sovereign is a counter-model to today’s understanding of the state in democratic states, which is characterised by the separation of powers (i.e. shared state sovereignty), valid law for all and popular sovereignty. In the course of democratisation, the monarchical sovereign developed into a popular sovereignty, which is anchored in many European constitutions today. For example, Article 20 of the German Basic Law states, ‘All state power shall emanate from the people’¹². The current interpretation of state sovereignty is

⁷ Thomas Hobbes (1588–1679), in whose major work *Leviathan* (1651) the foundation of the state is discussed as a social contract of citizens in favour of a sovereign monarch (the sovereign).

⁸ The existence of states before the use of a concept of sovereignty (Werner, Wilde (2001, p. 289)).

⁹ After the Peace of Westphalia (1648)

¹⁰ Adam Smith (1723–1790)

¹¹ Jean-Baptiste Say (1767–1832)

¹² Similar formulations can be found in other constitutions of European states, e.g. the Czech Republic, Austria and Latvia.

found in Zandonella, whose formulation is also used by the Federal Agency for Civic Education¹³: 'Sovereign states can freely and independently determine the type of government, legal system and social order within their territory (internal sovereignty). International law postulates the independence and equality of all states in international relations (external sovereignty)' (Zandonella, Oktober 2007).

In this context, it is particularly worthwhile to classify state sovereignty in an intranational context and to consider it in terms of international law. The United Nations, an association of 193 states, aims at maintaining world peace and international security and promoting interstate relations while respecting peoples' self-determination. The objective was derived from the fundamental principle of equal sovereignty among all members, and it was incorporated into the United Nations Charter in 1945 (United Nations, 1971). A single sovereign does not exist in a system with separation of powers (Hillgruber, 2002, 1073ff); it is a system of 'checks and balances', meaning that tasks, functions and spheres of power are distributed and control one another in the best possible ways. Sovereignty is understood through states' relationships with one another as defined by international law. External sovereignty corresponds to 'independence of command from other states' with simultaneous 'binding to existing rules of international law' (Doehring, 2004, p. 70). States are thus externally independent and sovereign when no other state can directly or indirectly interfere with or challenge their internal sovereignty.

Acts of sovereignty regarding internal affairs remain reserved to the states themselves provided no other states are affected. The maintenance of internal sovereignty requires full and ultimate decision-making power over the persons and things within a state's territory, as well as their recognition under international law. This includes the choice of economic, political and social systems. In addition, the states remain self-determining regarding the implementation of their own concerns or of decisions of the United Nations or international organisations on their territory. In this context, independence

¹³ A German authority affiliated with the Ministry of the Interior working at the interface between society, politics and science (www.bpb.de).

from the instructions of third parties applies. Internal sovereignty thus represents the highest decision-making power, which must be free from the influence of other states. Legal withdrawal from the United Nations Charter of international law is not possible, which is why states cannot be independent of this international legal order but are legally independent of the will of other states (Doehring, 2004, p. 197). This means that freedom of choice applies within the limits of international law. This elementary value also applied to Bodin's considerations of the binding of the sovereign to the principle of justice. It was only in the following centuries that a concept of absolute, unrestrained and unrestricted sovereignty developed in Europe, which led to the cruel systems of the early 20th century. With regard to an overriding world sovereignty alongside the retention of individual state sovereignty, the Charter of the United Nations led to a new degree of maturity of state expression and international coexistence.

In a modern constitutional state, however, state sovereignty must be interpreted in a special way to be classified in the digital era.

2.1.3. Modern government thinking and action

The works of Bodin and Hobbes were and are foundations of European thought, and they are stable and absolute in their definitions of power. Especially recently, the literature has been advocating the teachings of Michel Foucault regarding international relations and their impact on political analysis. Foucault changed the focus from the state system and the associated principles of sovereignty and introduced the concept of *governmentality* (Vasilache, 2014, pp. 4–7). He further rejected the principle of state sovereignty and the unambiguous definition of power, instead formulating a sovereign administrative action with diverse power influences, which is paradoxically a reference to sovereignty and law (Biebricher, 2014, p. 21).

Foucault was an advocate of 'cybernetic network thinking' and structuralism, focusing on the interplay of individuals and institutions rather than their individual natures (Moebius, Peter, 2014, p. 20) (August, 2021, pp. 222–226). His approaches to nation–state sovereignty have been described as

biopolitics, meaning a productive, nurturing ecosystem (Biebricher, 2014, p. 27).

Foucault considered power to be the self-regulation of individual objects: 'directed against the claim of universal truths, power is conceived as a historical form of multiple power relations and as a complex strategic situation' (Bublitz, 2014, p. 273). He manifested this in his works 'Analytics of Power' and 'Microphysics of Power', and in his reflections on 'governmentality' he proposed the following categories: 'The form of power is government; the object of government is the population; and the means of government is the political economy' (Mohabbat Kar, et al., 2018, p. 187). Essential in Foucault's network thinking was that the individual—the citizen—is also part of the exercise of power and part of governing. He spoke of the 'change of speech from power as possession to power as a general structuring element of the social' (Saar, 2007, p. 32). For him, the emergence of today's (neo-)liberal state was the result of science and historical developments. As a result, he clarified that the state governs the population and directs its actions to influence independent, free individuals in such a way that an ideal situation is created for the people of a state. Foucault thus sought 'power as enabler' rather than 'power as limitation'. Boyle described how Foucault's ideas, while not explicitly referring to the internet or 20th century digital technologies, nevertheless influence the discourse of territorial state power and sovereignty on the internet and in cyberspace (Boyle, 2017). Therefore, in this dissertation, Foucault's approach to state sovereignty is applied. His investigations and argumentations mostly revolved around European ways of thinking and the associated value orientations (Vasilache, 2014, p. 171). He built on the values of Europe and diversified the concept of sovereign power to include administrative action and the people as integral to the exercise of power and governance. States that are sovereign but do not align with the approaches of Bodin, Hobbes and Foucault, such as Russia and China (i.e. autocratic great powers), may not correspond to this understanding of sovereignty in the digital context.