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Foundations in change

The material preconditions of the state

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Abstract

The classic division of state formation literature often discuss the state in concepts of capital and coercion, stressing the dimension of coercion in true Weberian spirit. This essay however finds a different path and a somewhat alternative way of thinking about states. Through applying the hierarchy of needs in analyzing the period of 1100-1790, this essay defines a certain number of 'material preconditions of the state', meaning physical resources needed for a state to be able to come into being. The resources discussed, temperature, water, arable land, and food (energy) are then discussed in matters of climate change, and what effects climate change could have on them. I then outline social-ecological impacts of these resources, and how climate change may cause trouble for a state's foundation. I draw the conclusions that the coercion dimension of state literature is utterly dependent on the capital dimension, and that if imbalance or sudden change occurs in these material conditions, it can have terrible effects on society.

Key words: Materialism, State-building, Climate change, Conceptual research, Hierarchy of needs
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1 Introduction

There is a reason why there is no large political organisation that has traced its origins back to the Arctic. It is my belief that state formation is dependant on certain material conditions. These material conditions are in turn dependant on a certain type of climate. Given that we live in a time where the climate is likely to change dramatically, this will in turn have consequences for the likelihood of states to develop or emerge in the future. The IPCC report on climate change serve as a basis for this assumption, that climate change is in fact real. This essay aims to understand the material components of a state by looking at the history of the state, and from that attempt to understand how these material components may be affected by a changing climate. This means I put more emphasis on factors such as temperature and accessibility to water and arable land, than the development of warfare patterns in Europe between 1100 to 1790.

1.1 Background and research questions

The territorial state and state-building are well studied subjects in political science (for example Fukuyama, 2004. Hay, Lister & Marsch, 2006. Jessop, 2016). Research in the origins of the modern state mainly points to changes in war making patterns and military innovation for the formation of these states. However, as shown by Abramson (2016), empirical research has shown that instead of changes in war making patterns, economic patterns are more impactful in explaining the emergence of the political organizations we call states (Abramson, 2017). This begs the question that if the broad literature on state formation has underappreciated economic-material factors, how well outlined are these economic or material preconditions of the state, and furthermore, are they subject to change? In this essay, I attempt to outline the material preconditions for a stable state to take form, and how these are, in regards to climate change perhaps under threat in a coming future. Thus, I ask the following questions:

1. *What are the material preconditions of a (stable) state?*
2. *Under what conditions are these affected by climate change?*

2 Theory

In this chapter, I first go through a short review of state formation literature. Secondly I outline the perspective I assume for this essay. I then continue to summarize and discuss two articles that together build a theoretical basis for my analysis of the state. These are The Economic Origins of the Territorial State (2016) by Scott F Abramson and Energizing Historical Materialism (2008) by Matthew T Huber. I also discuss Maslow's hierarchy of needs, as it is an influential model for my analysis.

2.1 The classic division

State formation literature can be said to be divided into two main explanatory dimensions: Capital and coercion. capital means the variation in access to economic resources, whereas coercion means the capacity to produce violence. Capital is discussed in different terms. It can mean the accumulation of wealth, i.e. financial capital. It can also mean the actual resources (timber, iron etc.) which is the primary focus of this essay (Hay et al, 2006).

The dimension of coercion is a common explanation for state formation. It implies the production of collective physical violence and military prowess as the common denominator between state formations. the basis for the Weberian definition of state: a state is a political community that successfully claims a monopoly on the legitimate use physical force in a given territory. This definition is one of the more common definitions in state formation literature. And for a good reason: it manages to capture several dimensions of what we today perceive as the foundation of a state. It has the dimension of coercion and territory with the added dimension of legality through legitimacy, which in state formation literature and international relations is viewed as having a highly influential role in the formation of state and the modern state system (Hay et al, 2006).

2.2 Historical materialism and ecology

Historical materialism is the study of human interaction, specifically how these interactions are conditioned by our material surroundings. It dictates that the first premise of human history is the existence of living human individuals.

> Thus the first fact to be established is the physical organization of these individuals and their consequent relation to the rest of nature... The writing of history must always set out from these natural bases and their modification through the course of history (Marx & Engels, 1978 [1846]).

This is mainly done through understanding societies as modes of production and by studying the aforementioned natural base of society, and how this base influences our social relations and organization. Understanding different modes of production is thus key, and it gives marxists an analytic matrix that allows for analyzing the fundamental structures of societal relations.

The term 'mode of production' can be said to be one of the most important concepts of historical materialism, as it is through this analytical matrix that allows for systematic study of the fundamental structures of social relations and reproduction of material conditions of life (Huber, 2008). As the state is one of the principal structures of political organization, to study it from the historical materialist perspective means to study the interactions and foundations under which humans band together in this type of organization. I thus assume the historical materialist perspective to understand both the material and social foundations of the state, as it allows me to capture both the material base for state formation and the human interactions with this base.

Following the steps of Matthew T. Huber (2007) I also assume an ecological perspective of the state. This is key to understanding how climate change will affect the state-building process from a material point of view. The ecological perspective allows me to observe the state as an organism that is susceptible to changes in its environment and needs.

2.3 The Economic origins of the Territorial State

In *The Economic Origins of the Territorial State* (2016) Scott F Abramson makes the claim the in state formation literature, scholars have tended to overestimate the power of war-making theories and underestimated economic theories. He disproves the notion that war making and the so called military revolution favoured the development of geographically large territorial states in Europe from 1100 to 1790. Instead, he shows that variations in the patterns of economic development and urban growth favoured the development of geographically smaller states. Through large empirical work he shows that geographically large states are rather deviations in state formation history between 1100 and 1790, and that smaller but economically strong units were more likely to survive for longer periods of time, given the right conditions (Abramson, 2017). Abramson thus

defines a causal mechanism for the development of the smaller states in 1100-1790:

1. Agrarian productivity rises
2. Urbanization
3. Specialisation in cities
4. Commercial revolution
5. Rising social class of commercially oriented people
6. Smaller states (Abramson, 2017).

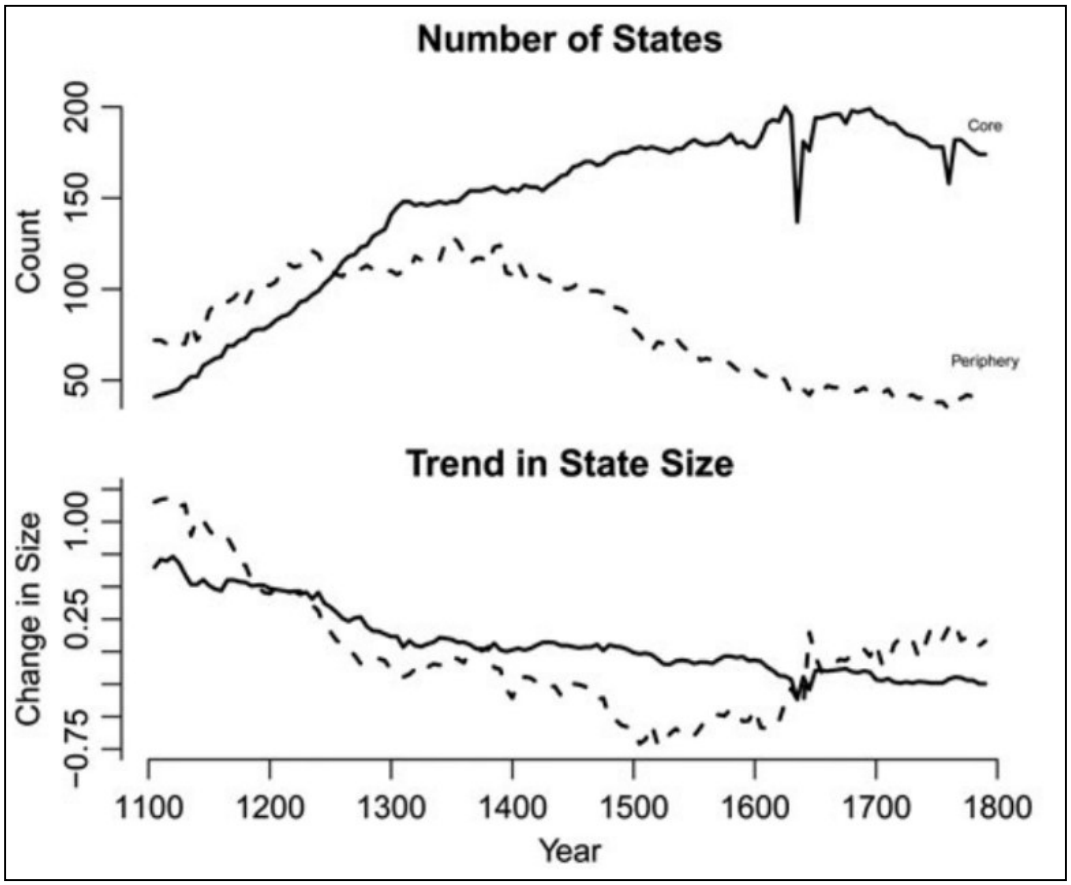

Figure 1. "The average size and number of states separating out the urban European from the rest of the continent" (Abramson, 2016, p. 116).

Figure 1, found above, can be found in the The Economic origins of the Territorial state (Abramson, 2017, p. 116) and shows this trend in state formation that Abramson points towards. The black lines represents the core of Europe and the dotted lines the peripheral parts of Europe. They displace the average size and number of states in Europe. It shows that in the peripheral parts of Europe, states became fewer in number, and larger in territory towards the end of the period, and in the core of Europe, the number of states increase but their average size decreases (Abramson, 2017).

Abramson identifies two main principles in state formation literature, that in combination determine the size and number of states. These are: “capital and coercion. Variation in access to economic resources, on the one hand, and the

ability to produce large-scale collective violence, on the other [...]" (Abramson, 2017, p. 97). Abramson then divides his own empirical work and analysis in accordance with these two factors. He divides them as:

1. War making and the European System of States: while Abramson argues that the domination of war making theories in the field of state formation literature is overemphasized, he does not discard them entirely (Abramson, 2017).
2. Commerce and the Origins of the modern State: Instead of focusing on the war making patterns of Europe, Abramson argues that the commercial revolution and development of new economic patterns offer a better explanation of the patterns of state formation in the period 1100-1790 (Abramson, 2017).

The definition of what a state is offered by Abramson is influenced by the Weberian definition that a state is a political community that successfully claims a monopoly on the legitimate use physical force in a given territory. Due to Abramson's empirical ambitions, he however offers a modified version to that of the Weberian ideal: "the organizations that maintain a quasi-monopoly of violence over a fixed territory" (Abramson, 2017, p. 101). This definition sacrifices the legitimacy dimension for a more practically observable definition as it allows for the inclusion of city-states, empires, theocracies and other forms of government to be measured, but excludes social organizations like tribes and families. He furthermore operationalizes this definition with the following criteria:

1. A state is not counted as a state if under direct military occupation of a foreign power.
2. A state has the capacity to tax.
3. A state has a common executive (Abramson, 2017).

For my own essay, the most valuable insight offered by The Economic origins of the territorial state (Abramson, 2017) is that of the relationship described between urban growth and agricultural productivity. Abramson identifies urban growth and the development of urban centers as one of the main driving forces of state formation between 1100 to 1790. These urban centers were also the hub of economic activity and specialisation. Cities as centers of economic specialisation can however only exist once its population can afford to offer its time to other activities than subsistence. Abramson argues that geographic places where certain foods, especially wheat, are 'naturally' predispositioned to feed larger groups of people and are thus instrumental in creating cities that are economically strong enough to resist the formation of a larger territorial state (Abramson, 2017). As a result of this argument, that states tended to form on the bases of strong economic hubs, i.e. urban centers, and that these centers were largely the result of high agricultural productivity, we can start to see how a material precondition for a

state can be argued for. The material conditions we can take from Abramson's work is that of the agricultural sector: temperature and arable land.

2.4 Energizing historical materialism

In Energizing Historical Materialism (2008) Matthew T Huber discusses historical materialism and the relation between fossil fuels and capital accumulation in industrial-capitalist societies. He draws from ecological economics a critique of classical economics that ignore the biophysical realities that societies and economies operate within, and offers a theoretical approach to the relation between fossil fuels and capitalism as a mode of production. He also offers some critique towards ecological economics, that while they have introduced the successful concept of energy return on investment (EROI) they tend to treat economies as isolated concept and thus neglect the "undeniable cultural and geopolitical factors that shape the use of energy in capitalist societies" (Huber, 2008, p. 106). Huber outlines a marxist concept of energy as these social relations in action, and focuses on the socioecological changes and power dynamics of energy in terms of these cultural and geopolitical factors. Huber's main focus is the transition between production modes from that of the preindustrial era to the industrial era (Huber, 2008).

The historical Materialist approach offers Huber the means to analyze energy use as a social relation and thus its impact on human society. Huber makes a distinction between two important shifts in energy use: the agricultural- and industrial revolutions. The agricultural revolution in the neolithic meaning, gave humans the ability to spatially concentrate and control food energy. Food energy, once again in particular wheat, was one of the most important resources, as it allowed for the muscle-driven organic economies to develop in the wake of the neolithic food revolution. The organic economy is the most dominant economic structure throughout human history. In organic economies the 'land' is the source of food, and all other materials needed for industrial production, as industry in these economies rely on vegetable or animal raw materials (Huber, 2008|Wrigley, 2010).

The industrial revolution is analyzed as a shift in energy use from the use of biological sources (i.e. food, water and air) to inanimate (fossil) sources. This shift in energy resource use is fundamental to the capitalist mode of production, as it allowed for the core energy sources to be independent of human power:

> Thus, a class monopoly over the means of production (machines, tools, raw materials, and land) apart from the propertyless worker provides the social basis for the development of the productive forces based on capital (Huber, 2008, p. 109).

With fossil fuel, the limitations of other energy sources are no longer present. Humans need to rest and eat, as do animals. Wind flows are uncontrollable sources of energy. As is water, which was an integral part of the british textile industry, which has been shown to be one of the main industries driving the English industrialization process. Water flows can in contrast to wind flows be increased at will, through dam building, but is essentially a local factor. However, coal and later oil, are geographically mobile sources of energy. This allows for the concentration of a society's productive forces, and thus the concentration of workers in factory towns, an essential part of the ascendance of capitalism in the 19th century (Huber, 2008).

Huber states that due the displacement of human muscle power as a basis for production when fossilized production emerged, this energy shift is also shown to play the part of hastening the generalization and extension of the wage labor relationship, which is a fundamental part of capitalism, on a scale hitherto unseen. In the organic economies that preceded the industrial revolution, control of human power itself allowed the reproduction of power relations. With capitalism however, these power relations are dependant on a versatile workforce, capable of moving between different spheres of the economy. Through wage labour, i.e. commodofication of labor power, this versatility is achieved (Huber, 2008).

From Energizing historical materialism (Huber, 2008) I draw the historical materialist approach and understandings of the organic economies as a mode of production. It is during the age of organic economies that the modern state system has its roots, and it is therefore a necessary part of my analysis of the material preconditions of the state. Furthermore, we often discuss the 'organic economy' as a thing of the past. This is an inherently western approach to the subject. In fact, to this day, much of human activity globally is still devoted to this type of production, and biological sources of energy, Thus still deriving their energy from human and animal muscle power (Huber, 2008). The preconditions I draw from Huber are those of water and food energy.

2.5 The hierarchy of needs

As previously stated, I assume the historical materialist perspective on history, dictating that to study history is to study humans and their interactions with both nature and each other. To find the material preconditions of the state, I thus need to examine the material preconditions of human life, so to speak. A largely influential theory of human needs is the Maslow Hierarchy of needs.

The hierarchy of needs is a conceptualization of human needs, arranged in a pyramid structure as shown by figure 2. To achieve the needs of the top, the needs of the bottom must first be fulfilled. This dictates that material needs such as the

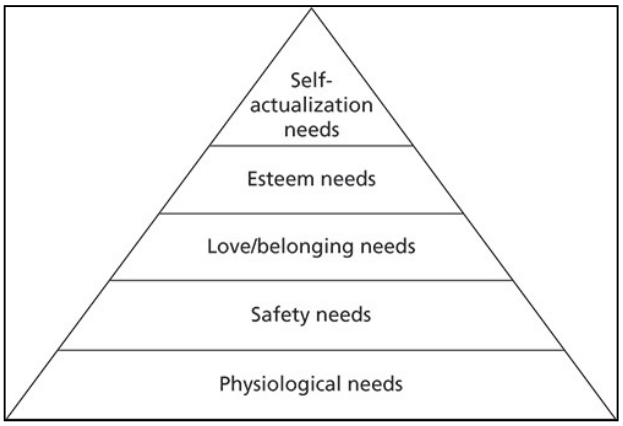

Figure 2. The Hierarchy of needs.

physiological needs (i.e. food, water, rest) and safety needs (i.e. security) are key to achieving the needs for love, esteem and self actualization. Maslow himself thus made the distinction between 'lower' and 'higher' needs. He argued that while the lower needs were necessary to maintain for the individual to focus on the higher needs, the lower needs did not have to be completely satisfied at all times (Harris & White, 2013).

In this essay I focus on the lower needs of the hierarchy for different reasons. Firstly, they are clearly material needs, in contrast to the higher needs. Secondly, it is a matter a time management. Whether or not it is possible to use the full hierarchy of needs to analyze the state, for the purposes of this essay, I only need the first two to achieve the goal of finding the material preconditions of the state. Thirdly, the physiological needs and safety needs. Thirdly, the use of the lower tier of needs in this work purposely serve the function of reflecting the commonly discussed factors capital and coercion in classical state formation literature. Lastly, I focus on the lower tier of needs due to criticism that the hierarchy of needs have been subjected to. It is after all a model, which in reality can be hard to study. Critics have shown that the pyramid-structure of Maslow's model may not always be applicable, as individuals can strive towards the needs for safety, belonging and esteem simultaneously, not only sequentially, and that some individuals who achieve to satisfy their lower needs do not continue to strive to achieve their higher needs. There is also a discussion on Maslow's highly individualistic approach and conception of self (Neher, 1991). However, this causes no issues for my use of the hierarchy of needs, as I only use it as a tool for construction my analytical framework. The problems related with the use of the hierarchy of needs as a model for human psychology and behavior.

3 Method

In this chapter, I first discuss the definitions of concepts that are recurring throughout this essay. I then outline my method of research and the source material, and construct the framework used for my analysis of the state.

3.1 Definitions

The goal of this essay then is to explore what the material preconditions of a stable state are, and if or how these conditions are threatened by climate change. This firstly makes it necessary to discuss what definitions of state and stability I assume.

When I talk about the state, I stick with the definition offered by Abramson in The Economic origins of the Territorial State "the organizations that maintain a quasi-monopoly of violence over a fixed territory" (Abramson, 2017, p. 101). This definition has the clear advantages already described by Abramson. It is a practically observable definition that allows for a broad definition of state, without including smaller political units such as tribes and families. It does however sacrifice the Weberian dimension of legality, which can be problematic for mainly two reasons. Firstly, removing the requirement for legitimacy also removes a component central to the critical study of international relations: the importance of the legal and constitutive dimensions of states. These are often viewed as having shaped statehood and the state system, due to the fact that it cements states as sovereign and thus equals in a system of states, in the juridical sense (Abramson, 2017). Secondly, as the aim of this study is to find the material preconditions for a stable state, how can the exclusion of legitimacy and legality be motivated? Some of the more common definitions and measurements of political stability is the level of corruption in society, the frequency of constitutional change, and the level of general violence and/or crime in society (IESS, 2018). These are arguably connected: with higher corruption, and a high frequency of violence and crime, legitimacy can be assumed to decrease, meaning that a monopoly on violence can be hard to sustain. Thus, the legal dimensions can be said to play an important role on the subject of stability.

However, I would argue that the exclusion of legitimacy for the purposes of this essay can be motivated. Firstly, with critique of our understanding of international relations. Stripping the state down to its bare fundamentals, means to

study a time in history before the Westphalian peace and thus before states were established as politically equal and sovereign. Furthermore, Abramson (2016) argues that the assumption of juridical sovereignty and as a fundamental part of statehood is wrong, and based on anachronistic readings of 19th century legal scholarship. He continues to explain that the contemporary concept of sovereignty did not exist at the time of the Westphalian peace and that it did not develop until the 19th century (Abramson, 2017). Thus, the second argument for excluding legitimacy from my definition of the state is the time period that this study focuses on. I aim to discover the material base that is necessary for building a state. To this I, as previously discussed, I focus on a time in history where the contemporary understanding of legitimacy did not exist.

3.2 Conceptual research

This essay is a work of conceptual research, which means that the source material and building blocks of my analysis is predominantly other works of research. In this case, I present a mix of statistical data analysis and theoretical work. Through reading and presenting these works in combination with an analytical framework, described in the framework section of this chapter, I attempt to trace the material preconditions of the state. In my analysis, I primarily use the following works:

1. *The Economic Origins of the territorial State* (2016) by Scott F. Abramson.
2. *Germs, Guns, and Steel* (1997) by Jared Diamond.
3. *Productive Forces and the Economic Logic of the Feudal Mode of Production* (2008) by Chris Wickham.

Perhaps most dominant of the literature listed above is the work of Scott F. Abramsson (2016). Following his causal mechanism, as an explanation of state formation from 1100-1790 in correlation with Maslow's hierarchy of needs and historical materialism, I construct a framework to define the material preconditions of the state and their propensity to be affected by climate change.

3.3 Analytical framework

I limit my analysis of state formation to the years 1100 to 1790 for several reasons. Firstly, the bulk of the chosen material for this essay utilize the same limits due to the issue of documentation. It is at the start of the 12th century that we can derive more secure data then from previous eras, due to the developing commercial sector, taxation registers etc. (Abramson, 2017).

The second reason has to do with the concept of the organic economy as previously discussed. It is the dominant economic system of the period 1100-1790 and even long before that. This has the advantage that the material preconditions of the state are likely largely unchanged, as the dominant economic system is more or less the same from the beginning of feudal times to the end of them. There is also the geographical limitation of Europe to this work, due to the fact that once again, the research i lean on in this work is focused on European states.

I analyze the importance of four different resources or conditions (temperature, water, arable land, and food energy). These are drawn from the works of Abramson (2017) and Huber (2008). I limit myself to these resources or conditions both for the sake of time and length for this essay, but also because they are affected by climate, which serves the purposes of answering my second research question. In summary, in this work I apply the lower tier of needs (physiological and safety) from Maslow's hierarchy of needs, to find material preconditions of the state. I thus metaphorically treat the state as an organism, needing food and safety to survive and grow.

4 Analysis

In this chapter, I delve into the material preconditions of the state. The analysis is divided into three parts. The first two, in accordance with the hierarchy of needs. The first part thus explains the physiological needs of the state, temperature, water, arable land and food energy. The second part continues to explain the safety needs of the state, displaying the double need for arable land and other materials. The third part of the analysis focuses on the material conditioning of the social-ecological development of the state.

4.1 Physiological needs of the state

In this part of the analysis I focus on the physiological needs of the state. The physiological needs of the state reflects the capital dimension of classical state formation literature.

4.1.1 Temperature

Temperature is shown to be an important factor for the formation of the type of economically strong state discussed by Abramson in The Economic origins of the Territorial State (2016). This is because before the industrial revolution, the ability to support a large amount of people in the same area, the geographical location of this area needs to be suitable for the job. Abramson qoutes the economic historian Henri Pirenne, saying that

> in a more advanced era, when better methods would permit man to conquer nature and to force his presence upon her despite handicaps of climate or soil, it would doubtless have been possible to build towns anywhere the spirit of enterprise and the quest of gain might suggest a site (Pirenne in Abramson, 2017, p. 119)

This is however not the case during the age of the organic economy. Natural predispositions are key to understanding the developments of state formation in Europe, and temperature is part of this. Abramson uses temperature as an instrumental variable, mainly focusing on the optimal growing temperature for wheat. This shows that in places closest to this optimal growing temperature, mainly central Europe, populations grew, forming city centers and thus creating economic hubs which lead to political fragmentation of larger states in the area.

This, because when the population of cities grew, it created a new social class, a class mainly focused on urban life and commerce. This then causes the development of smaller but economically strong political units, capable of standing up against the formation of a larger territorial state (Abramson, 2017, p. 124).

Perhaps even more important for the purposes of this essay however, is that in places further away from the optimal growing temperature of wheat, in the areas Abramson calls the periphery, the number of states instead decreased while they subsequentially became larger in territory (Abramson, 2015).

4.1.2 Water

Water was an integral part of the European organic economy in the period of 1100-1790. One of the reasons for this is the use of water wheels. Water wheels play a large part in the commercial revolution, one of Abramson's main explanatory variables. The water wheel was not a new invention of the medieval era, but by the 11th century the use of water wheels were commonplace in different parts of Europe. Shown in Terry S. Reynolds' work Stronger than a hundred man (1983) and Robert Friedel's A culture of improvement (2007) the water wheel was used in several ways. Firstly, it increased productivity in the agrarian sector as it smoothed the transportation of water to the fields. It also provided mechanical energy, enabling water energy to help the processes of grinding grains into flour, malt and meal for different uses. It was also used for the production of textiles, and to form metals into useful shapes (Reynolds, 1983 & Friedel, 2007).

Water thus became an integral part of the production of food and especially in creating the surplus of food necessary for the type of urban development described by Abramson. For the commercial aspect, water became important as it allowed for pre-industrial production to become more effective, serving to increase the amount of commerce by increasing the number of goods available. But it also served a different purpose for commerce, namely transportation. The use of waterways, both natural and constructed was a well used method for transportation during the period 1100-1790. Transportation was overall no cheap task, but water was perhaps the cheapest form of transportation, especially natural downstreams, as they required nothing else than letting nature take its literal course (Söderberg, 2015).

However, once again the issue of water is the inherently local supply of it. It can with technology be somewhat displaced and controlled, for example with aqueducts and canals, but they both need a source of water with a continuous flow to work.

But perhaps the main importance of water is the fact that it is the basis for all life. Without a source of water, anything from plant to animal ultimately dies. This is utterly important, as water thus can be defined as a physiological need of its own.

4.1.3 Arable land

In the previous part of this chapter, the importance of water is shown, both for its economic and biological value. But water wheels and other inventions also require material components, perhaps mainly wood, which in this case is a part of what I have chosen to call arable land. My definition of arable land is thus extensive to include land which is able to produce food energy and other biological materials.

The organic economy and, at least for a large part feudal society, in the period of 1100-1790 has agriculture as its central theme for production and subsistence. This means that in Europe, food production was based on the growing of crops and only to lesser extent animals as a source of food. Central to the European diet of this period, for aristocracy and peasantry alike, were different cereals: “in the form of bread, porridge, or mush, cereals were almost everywhere the basis of human alimentation” (Lopez [1976] in Abramson, 2017, p. 120).

It is furthermore no coincidence that cereals, in particular wheat, became a principal part of the European diet. It is easier to nourish a larger population with cereals than say fruits or nuts, due to the fact that cereal crops are very fast growing, they are high in calories, they have a higher yield per hectare of land, and the added benefit of being easily stored (Abramson, 2017).

So, arable land is the principal form under which food energy is produced between 1100-1790. The need for this type of energy was indeed great, as will be shown in the following part of this chapter.

4.1.4 Food (energy)

I have already somewhat stressed the importance of energy in discussing Energizing historical materialism (Huber, 2008). During the period of 1100-1790, mechanical energy, through muscles, was a main driver of the economy and bare subsistence.

Following Abramson’s causal mechanism, the use of animals was important for the development of commerce. Transportation of goods is essential for commerce to take place. This was done by water, as shown earlier, but also by land via the use of draft animals. Draft animals were up until the 19th century the

most important land transportation vehicle, and they of course needed to be fed (Diamond, 1997).

Mechanical energy, through human and animal muscles, was the main driver of the economy and bare subsistence. In the case of humans in Europe cereals were the main source of food, as shown above. In the case of animals we see a change in areals for grazing during the period of 1100-1790. Grazing was long the dominating way in which animals were kept fed. This however had its downsides. Grazing means that for a large part of the year, a part of the land which could be used for growing crops is not producing, which effectively means that land is being unused. Thus, agriculture developed towards the growing of animal fodder, which furthermore served to create an even larger surplus of energy and food in society, continuing the urbanization process (Söderberg, 2015).

Furthermore, The production of food energy is important due to the fact the fact that without food, we starve to death. This is the physiological need as defined by Maslow. The physiological needs are in terms of the hierarchy of needs regarded as "[b]asic requirements for physical survival" (Harris & White, 2013). As perhaps one of the central themes of a state formation can be said to be the presence of human life, this is important.

4.2 Safety needs of the state

In this part of the analysis, I focus on the safety needs of the state. The need for safety in Maslow's hierarchy of needs is described as the need for security of body, of property and of resources (Harris & White, 2013). These needs are also reflected in the traditional division of state formation literature, there known as 'coercion'.

I have already discussed arable land in the previous section of this analysis. There I focused on the production of food. I do this for particular reasons of meaning for both the first parts of my analysis, as will be shown later. However, arable land was also the source of more materials other than food. For example, biological materials like wool for clothes, as protection from one's environment was of the same importance as it is today.

There is however more connections to draw between the physiological needs of arable land to the safety needs of it. In Germs, Guns, and Steel (1997) Jared Diamond draws a compelling connection between the development of agriculture and the development of military technology. He argues that with the development of agricultural societies, and the growing populations it could support. The pure numerical superiority of agricultural societies thus becomes another driving force for military prowess. During the age of colonisation of the Americas, the agricultural societies of Europe had a significant advantage in this fact (Diamond, 1997). Although one could argue that the colonisation of north and south America

was not a project of mere safety from the European parties, this understanding of agricultural still offers us something.

Plant and animal domestication meant higher food productivity. The surplus of food could then be stored to feed a growing population. In this population there were people not providing themselves with food, such as the aristocracy and during the period of 1100-1790 the growing bureaucracy- and commercial classes. Food storing also meant that with an even larger surplus as agricultural productivity and with a system of taxation in place, one could even afford to feed soldiers. Diamond thus argues that the focus on agriculture is one of the main reasons for the developments of war making patterns in Europe and ultimately the rest of the world during the age of colonisation (Diamond, 1997).

4.3 The social-ecological state

In this part of the analysis I use the historical materialist perspective to understand the dynamics of the social- and ecological foundations of the state formation process between 1100-1790. I start with outlining the feudal mode of production and adding the dimensions of physiological- and safety needs that I have discussed in the previous parts of this chapter. I then continue to discuss important social changes of the period, to further develop Abramson's causal mechanism.

4.4 The feudal mode of production

The feudal mode of production is in essence centered around the peasant family. These families worked the land and under the threat of force, gave proportions of their surplus as a tax or tribute to external powers such as the state, although not always directly. Marx himself remarked that the external exploitative power could be a landlord in service to a sovereign ruler of a state (Wickham, 2008). "In most of human history since settled agriculture was developed, agricultural production […] was controlled by such families, and was first of all for their own subsistence" (Wickham, 2008, p. 7)

In a traditional historical materialist sense then, capital or means of production in feudal society was the muscle energy of the people and the biological materials of the land. Ceasing these through force, or coercion a class of landowners could control the food production process, store the surplus food supply and support other activities than that of subsistence. Returning again to the causal mechanism that Abramson describes, this food surplus motivated urban development and the rise of a commercial class (Abramson, 2017), and in the perspective of Jared

Diamond it builds societies that are economically advanced and technically innovative (Diamond, 1997).

It thus stands to say that feudal society and the feudal mode of production is, at its core, dependant on the fact that it was possible to grow a certain types of crops. Crops that could produce a surplus large enough to support both the families working with the land and the growing needs of the feudal state. Returning to the physiological needs of the state, we see how this poses a problem for the feudal mode of production. If dramatic variation occurs in the chain of temperature, water, arable land and food energy, the stability of the system becomes more likely to collapse. This is for instance seen during the period 1315-1317, also known as the great famine.

The great famine was caused by weather induced crop failures. In northern and central Europe, the excessive rains led to flooding and "during the summer of 1315 intemperate weather was the rule in most of Europe […] The constant rains implied two things, low temperature and cloudy, lowering skies" (Lucas, 1930, p. 350). This then lead to a more or less universal crop failure, in the entirety of Europe. In turn, widespread famine lead to an increase in crime, death, and even accounts of cannibalism (Lucas, 1930). The accounts of the great famine show that climate has always been a factor for the stability of society.

5 Results

In the beginning of this essay I asked the question:

1. *What are the material preconditions of a (stable) state?*
2. *Under what conditions are these affected by climate change?*

I set out to answer these through a conceptual research method, using historical research, and empirical- and theoretical works. I constructed a framework for analysis based on the hierarchy of needs and attempted to apply this framework on the chosen material. Below, you can see a table construction of this framework.

Table 1. The physiological and safety needs of the state, and what resource is required to fulfill it.

Hierarchy of needs	Resources
Physiological (capital)	1. Temperature 2. Water 3. Arable land 4. Food (energy)
Safety (coercion)	1. Temperature 2. Water 3. Arable land 4. **Surplus** food (energy)

The framework is divided into two columns, and structured to reflect the hierarchy of needs. The left column of the table represents the hierarchy of needs. the right column aims to display what resource (i.e. what material condition) is required to meet these needs. The dimensions of physiological needs and safety also reflects the larger division in classical state formation literature: capital and coercion. The physiological needs of humans can thus be said to reflect the capital needs of the state, in other words, the material preconditions of the state. In regards to this, the safety needs reflect the dimension of coercion. Although, the lines between what i regard as the physiological and safety needs of the state is more fluent than that of capital and coercion.

The order of the lists in the table is not coincidental. The hierarchy of needs column is simply constructed to show in reading order what need comes first in the hierarchy. Thus, physiological needs constitute the first row, followed by safety needs on the second row. The resource column is divided in accordance with this, and have an internal order of their own. This order reflects the order of

my analysis, and what could be called a chain. Temperature is the first, because it affects water supplies. Water is the second, as it is a necessity in itself, but also affects arable land and what that land can sustain through for example irrigation. Following as third, is arable land, as it is the basis for the organic economy of the time period, but also because it is able to produce food energy, which ends the list. Food energy is simply put means for subsistence. The internal order of the resource column thus represent a chain of material preconditions of the state.

In summary, I have found temperature, water, arable land and food (energy) to be capital material preconditions of the state. In regards to coercion needs of the state, these are found to be dependant on the capital needs, and specifically dependant on a surplus access to food energy. To answer the second question, under what conditions these are affected by climate change, I once again looked to history, specifically the great famine of Europe 1315-1317. This exemplified the fact that climate induced crop failure was the cause for the famine, and a destabilisation of society during that period.

6 Discussion

Firstly, I would like to shine a light on some issues of this essay. The analytical limitation I draw, looking only at temperature, water, arable land, and food energy is a practical yet perhaps too narrow perspective. This means that I may fall short of finding all of what I call material preconditions of the state in the scope of this essay.

Secondly, this is mainly theoretical work. I lean on The Economic origins of the State (Abramson, 2017) for some empirical support, but in essence, the lack of data in this essay may pose a problem for my claims. Thirdly, it goes without saying that the state is not as simple a system to study as I have done here. There are multiple dimensions i fail to capture with the focus on material conditions. For example, I largely focus on the state as a single unit, whereas it is also a part of a larger system of states.

I would however also point to some of the strengths of my work. Firstly, it explores a previously underinvestigated area of political science, especially state formation literature. To the best of my knowledge, this type of analysis has been the domain of economic history. But they often fail to capture the political implications of their work, which I have tried to do here. Secondly, in the line of Abramson's work, it tips the scales of state formation literature once again towards capital, rather than coercion. Granted, I analyze coercion as well, but as a secondary aspect of state formation. Only when the physiological needs of the state are met, can coercion become a goal and possibility.

Thirdly and perhaps most importantly, it shows a weakness of the state system. I focus on the period 1100-1790 in the purpose of illustrating the basic needs of the state. But I also do this to show that in an age where the human effect on climate was basically nonexistent, climate change still affected our societies. A further point of this thesis is this: with fossil fuel capitalism, we may very well have broken the limits that are inherent to the organic economy. However, the material preconditions I have listed in this work are not simply historical needs for states to emerge, they are still needed for the state to survive as one of the principal organizations of human political interaction. This means that in the fossil-fueled capitalist era the needs of the state have evolved. We still require these basic resources for the state to continue to function, but the overstructure, if you will, has changed. We still need food, we still need water. We can now supply these resources in before unthinkable ways, thanks to technology and fossil fuels. But this begs the question: does human ingenuity have a limit? Given the very basic list of needs I have illustrated above is correct, and they indeed change, how will states cope with a changing of their very foundations in the future? Future

research into this subject could possible answer these question, and should focus on the social and international aspects of them.

7 References

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