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The scare behind energy security: four conceptualisations of scarcity and a never-ending search for abundance

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Abstract

While the number of definitions and metrics of energy security have expanded rapidly (Ang et al. 2015; Sovacool and Mukherjee 2011), surprisingly little attention has been paid to its core concern: the fear of doing without. Shortages and scarcities are the problem to be solved, hardly ever the object of study itself. Inspired by critical energy security studies and the scarcity, abundance and sufficiency literature, this paper problematises the fears behind energy security through a theoretical review that discloses not one but four conceptualisations of scarcity: shortages, absolute scarcity, relative scarcity and scarcification. Subsequently, this paper makes two arguments. First, that goal-oriented definitions of energy security tend to defend the demand and supply of existing energy systems and hence reperform its exclusions, injustices, inequality and exploitations. Second, that in order to break this cycle it is necessary to re-imagine energy security from a goal into a set of security practices that fall within larger practices of scarcification, paying special attention to the unlimited desire behind relative scarcity that drives most of these practices. The paper concludes with a call for energy security scholars to take up the politics of energy security and recognize their role in reproducing and naturalising particular scarcities.

Keywords Critical security studies · Energy security · Performativity · Scarcification · Security of supply

Introduction

Energy security definitions and metrics have expanded rapidly (Ang et al. 2015; Sovacool and Mukherjee 2011) but share a core fear, namely that of not owning, having access to or losing energy resources, supplies, income and services. For

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example, the International Energy Agency points directly to both short-term shortages and long-term scarcity when it defines energy security as 'the uninterrupted availability of energy sources at an affordable price' (IEA 2015). Similarly, albeit less explicitly, scarce resources play a key role in Cherp and Jewell's (2014: 418) increasingly popular definition of energy security as 'low vulnerability of vital energy systems' where the authors look at both the causes of and ability to respond to shortages. In other words, the energy security literature[1] seems primarily focused on the various problematisations and expressions of scarce energy supplies, but hardly engages with the notions of shortages and scarcity themselves (with exceptions: Bridge and Wood 2010; Bridge 2015; Kama 2016). To be fair, the energy security literature is not alone in this: the dominant understanding of scarcity as a mismatch between insufficient supplies in proportion to demand, 'has a stranglehold grip on much of the discourse of polite society' (Hildyard 2019: 294).

Still, it is remarkable, if not problematic, for the energy security literature to accept scarcity unquestionably. This is so, firstly, because of theoretical developments within the energy security literature itself, in particular the implications of what it means that energy security is an empty signifier, a powerful concept empty of content to be 'filled' contextually with referent objects via an assortment of security logics (Chester 2010; Hildyard et al. 2012; Bridge 2015; Kester 2018; Szulecki 2018a). Given this emptiness, it should not come as a surprise that a single-minded focus on solutions and counters to disruptions, shortages and conflicts (Klare 2012; Le Billon 2005; Smith 2012) or an inductive listing of definitions and expressions (Ang et al. 2015; Kisel et al. 2016; Kruyt et al. 2009; Sovacool and Mukherjee 2011; Cox 2016) often only scratch the surface of energy security. Even within the more reflexive and abstract work on energy security, scarcity seems to hide behind various other identified logics of 'sovereignty', 'war', 'sufficiency' and so on (Cherp and Jewell 2011; Ciută 2010). Admittedly, this is in part deliberate to differentiate energy security from other potentially competing energy 'goals', like energy poverty and energy transitions (Cherp and Jewell 2014; Cherp et al. 2011; Bridge 2015). However, Bridge (2015: 330) and others working on critical energy security (Szulecki 2018a, 2020; Kama 2016; Kester 2018) simultaneously point out that energy securitisation returns in each of these energy goals, and can either facilitate or hinder them. In other words, some energy security scholars approach energy security as a policy goal to be achieved, while others see it as a practice that deploys specific energy security discourses, logics, and practices in broader political arenas.

[1] The energy security literature, in my reading, can roughly be divided into five strands. The first category includes the wide variety of explicit (geopolitical) realist and liberal policy reflections (Klare 2012; Peters 2004; Correljé and van der Linde 2006). A second line of work includes the frequent attempts to describe, identify, categorise and quantify a multitude of threats (Ang et al. 2015; Kisel et al. 2016; Kruyt et al. 2009; Sovacool and Mukherjee 2011; Cox 2016). The third strand encompasses the increasing attention to how particular threats are securitised as an energy security concern (Christou and Adamides 2013; Nyman 2014; Szulecki 2018a). A fourth stream of research bundles the few studies that try to understand the deeper underlying logics that structure how policymakers and scholars think, talk and practice energy security (Cherp and Jewell 2011; Ciută 2010). And lastly, a small but growing number of studies focus on the performativity of energy security: the (knowledge) practices and grammar-based politics that constitute (competing) energy security understandings and the socio-political and material effects that enable and result from them (Bridge 2015; Kester 2017, 2018; Nyman 2018b)

It is this tension between energy security as a goal and energy security as a practice that might explain the second reason why the absence of scarcity is remarkable within energy security discussions. Namely, the disconnect between the increasingly specialised energy security literature and a growing body of work within geography and anthropology on the ontological politics around resource-making (Bridge 2001; Kama 2019; Elden 2013; Huber 2019; Labban 2010; Ferry and Limbert 2008; Richardson and Weszkalnys 2014) as well as insights from the wider energy social sciences literature, especially work on practices of energy demand (Shove 2010; Shove and Walker 2014) which also reframes energy supply and demand as produced concurrently, both materially and socially. Interestingly, not all of these studies engage with security logics and practices, something that warrants discussion at the end of this paper (but see Elden 2013; Kama 2019).[2]

This paper draws on the critical energy security literature (Bridge 2015; Kama 2016; Kester 2018; Szulecki 2018a), some of the above mentioned literature on resource-making and energy demand as well as the Scarcity, Abundance and Sufficiency (SAS) literature (Daoud 2010: 1207, 2018; Matthaei 1984; Mehta 2010a; Mullainathan and Shafir 2013; Panayotakis 2013; Princen 2005; Yapa 1996a) to unpack scarcity and problematise its naturalisation in the energy security literature. Briefly, and crossing ecology, development studies, philosophy and (economic) sociology, the SAS literature discusses and theorises scarcity in its wider social context and in its relationship to abundance.[3] Importantly, an increasing number of SAS studies argue that scarcity is not a natural state of affairs, but a *naturalised* state of affairs – something that is performed and in turn performs people's behaviour and thought (Achterhuis 1988, 1993; Claassen 2004; Dumouchel 2014; Foucault 2007; Hirsch 1976; Luhmann 1988, 1993; Xenos 1987, 1989; Mehta 2010a).

Based on a thorough discussion of the notion of scarcity, off-set against the critical energy security literature, this paper puts forward the argument that an unreflective understanding of energy security ignores the 'taken for granted' (Hildyard 2019), even 'dangerous' (Rayner 2010), performative effects that energy security has as it reiterates particular articulations of scarcity which reproduce an unequal and harmful capitalist economic system (Mehta et al. 2019; cf. Bridge 2015: 333). In doing so it follows a similar ethical wake-up call to Ahmed (2011), who argues that International Relations scholars and policymakers, by studying modern conflicts in isolation through a focus on 'security', ignore the underlying global political economic and environmental conditions that link most of today's conflicts, and thus end up naturalising and reifying the inherent security conditions, militarisation and otherness of these conflicts. Similarly, but within the energy security literature, Nyman (2018b) argues against the way that reductive energy security conceptualisations and policies reproduce an energy system that is effectively insecure as it fails to acknowledge for human security and systemic consequences of climate change.

[2] My heartfelt thanks to an anonymous reviewer for pointing this out.

[3] Just as security inherently relates to insecurity, so too is it impossible to think about scarcity without thinking abundance, and vice versa. A powerful definition of abundance can be found in Mullainathan and Shafir (2013), who describe abundance as the ability 'not to care'. People who experience abundance have the option to make mistakes or skip corners, in contrast to those living under the constant strain of having to choose between necessary alternatives and the stress of making costly mistakes.

Elsewhere, Kester (2017) highlights the performativity of energy security by contrasting the energy security and incomplete risk analyses from the Dutch government with the safety and security concerns of local citizens in the slowly changing debate on the earthquakes caused by Dutch natural gas extraction.

In order to make this argument, the following three sections introduce and unpack the literature on scarcity. The second section moves beyond the notion of shortages to conceptualisations of absolute and relative scarcity that permeate the scarcity literature. The third section continues on the distinction between absolute and relative scarcity while discussing the role of limits and the promise of abundance. The fourth section then introduces scarcification—a practice-based understanding of scarcity – as the fourth understanding of scarcity. The fifth section subsequently offers an in-depth discussion of the various social processes that support relative scarcity, with a particular focus on unlimited desire. The sixth section reflects on the governance of scarcity beyond supply and demand, and the role that energy security could play in this. Lastly, the conclusion summarises and reflects.

From shortages to relative scarcity

It is almost impossible to start an analysis on scarcity from a field other than economics, especially given the dominant interpretation of scarcity as the supply and demand conditions that result from limited resources against unlimited desires. It was not until 1935, however, that the economist Robbins defined economics explicitly in terms of scarcity when he argued that '[e]conomics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses' (1935: 16). While heavily contested and refuted as being too narrow and deterministic, even by Robbins himself, the definition quickly gained in popularity (Fine 2010: 77). These days, most studies into natural resources, from both economic and (geo)political perspectives, seem to take this mismatch between supply and demand as a naturally given starting point in their analyses (Luks 2010; Daoud 2011a).

This supply and demand definition of scarcity, however, obscures an important move away from actual shortages to a more general idea of scarcity. The main difference between these two typologies of scarcity is one of acuteness and level of abstraction. What is frequently described and feared as scarcity, are the acute hiccups in supply or demand due to a range of technical, natural and human factors that lead to 'a shortage of supply in relation to the normal state of affairs' (Claassen 2004: 39 [trans]; cf. Klein 2011). Or to paraphrase Nye (2010: 35), disruptions 'reverse [the relation people have with the world], thrusting people into contact with one-another and with the "resistance" of the world'. Interestingly, shortages within the electricity sector seem mainly to be studied with notions of blame and accountability (Nye 2010; Bennett 2005) or maintenance and resilience (Graham and Thrift 2007; Lundborg and Vaughan-Williams 2011) in mind, while disruptions in oil and gas flows, because of their cross-border nature, are more often studied in terms of threat logics and geopolitical notions of conflict

guided by traditional IR and energy security literature. In both cases, however, responses are not predetermined (Nye 2010; Friedrichs 2010).

The SAS literature shows that such a focus on shortages pushes an even more substantial understanding of scarcity to the background. One of the better analyses of this shift from shortages to scarcity can be found in the work from the French philosopher Michel Foucault. While the neoclassical economic literature builds on Ricardo (see below), Foucault identifies this shift in the work of the French physiocrats in the 17th and 18th century when they shifted the governance of food shortages away from 'the obsessive fear of scarcity' to 'the reality of grain' (Foucault 2007: 36). Against the then prevalent mercantilist policies to prevent hoarding and price hikes through heavy disciplinary interventions and other 'anti-scarcity measures', these physiocrats argued for an acceptance of scarcity (e.g. high prices, hoarding and starvation) and open markets under the assumption that these would create a favourable environment for a quick restoration of the production and trade of grain (ibid.). As Foucault paraphrases the physiocrat Abeille:

> [Scarcity] is never the pure and simple total absence of the means of subsistence necessary for a population, because if that were the case the population would quite simply die. It would die in days or weeks, he says, and we have never seen a population disappear due to the absence of food. (Ibid.: 38)

Where scarcity in relation to shortages thus describes the acute absence of some means of subsistence, scarcity from then on out also described a necessary economic condition centred on 'open' markets.

Even though this notion of scarcity is central to the economic literature, the SAS literature highlights how this notion of scarcity not only hides behind shortages but also behind other applications of economic theory (Daoud 2011a; Fine 2010; Matthaei 1984; Menger 2007; Neumayer 2002). This includes among others the development of marginal utility theory with its 'simple and deterministic logic of choice' (Fine 2010: 75) that has resulted in an increasing role for technical assumptions like rational choice and utility maximisation, in addition to a focus on *homo oeconomicus*, imperfect information and market policy failures. Together such theoretical and technical considerations have made the concept of scarcity dwindle even further to the background as these latter models no longer problematise scarcity but instead focus on functioning markets (Fine 2010: 74; Matthaei 1984: 88; Xenos 1989: 68; Luhmann 1988). Consequently, scarcity is put on hold in economic considerations, even though it remains to act 'as a legitimizing device for the general application

of the technical apparatus and formal deductive methods of mainstream economics' (Fine 2010: 81).

Of course, neoclassical economists do discuss scarcity, but differently. They are quick to point out that there is a difference between absolute forms of scarcity and shortages that problematise the physical limits of resources and relative forms of scarcity whereby these limits are not problematised (Raiklin and Uyar 1996: 49; Daoud 2010; Barbier 1989; De Gregori 1987a; Solow 1974; Stiglitz 1979). In their classic work, economist Barnett and Morse (1963: 6–7), for example, are well-known for differentiating between a Malthusian (absolute) and a Ricardian (relative) form of scarcity, claiming that 'the possibility of technological progress clearly cuts the ground under the concept of Malthusian scarcity, [as] resources can only be defined in terms of known technology'.[4] Simplistically put, Ricardians put their trust in substitution, recycling, efficiency, technological creativity and the institutions that are necessary for these solutions to thrive (Neumayer 2002; Matthaei 1986: 106). In this perspective, any shortages that occur are primarily the result of failing institutions, which implies a shift in focus from the problem of scarcity to the institutions that further economic growth.

In securing against disruptions of the status quo and by defending (future) neoliberal energy markets, energy security does precisely this (cf. Trombetta 2012, and IEA 2020 as an example). Ironically, these two goals can only be achieved if the necessary pre-requisite of scarcity is met first (Xenos 1989: 75; Fine 2010). Foucault's analysis exemplifies this irony: the acceptance of scarcity transforms a Mercantilist interventionist market with anti-scarcity measures into a market that relies on relative scarcity to disperse shortages both geographically and temporally. A logical consequence of relative scarcity is therefore that instead of a clear (sub)population suffering from food shortages, such an acceptance results in 'some scarcity, some dearness, some difficulty […] and consequently some hunger' (Foucault 2007: 42) for some individuals. Or as Nally (2011: 40) argues in relation to food security: 'the old problem of "hunger amidst scarcity" will give way to the distinctly modern crisis of "hunger amidst abundance" (Araghi 2000: 155)'. In a modern energy economy, some individuals will need to experience shortages so that the population as a whole can continue to consume.

This clearly is a conclusion that contrasts with the energy justice literature and the objectives behind distributive justice and fuel poverty debates (Walker and Day 2012; Jenkins et al. 2016). While not preferable, a 'hunger amidst abundance' is precisely what can be observed in fuel poverty debates. Fuel poverty's distributed and recurrent nature across a population in combination with energy security's specific

[4] Central here is the idea of (economic) resources. While there are many types of natural resources and things that can become scarce (time, air, etc.), only that what is in demand or desired is actually part of a scarcity discourse. Something becomes scarce only when it is 'needed' or 'wanted' by society in the first place. The key term here is the verb 'to become', in line with De Gregori who argues that 'resources are not; they become' (De Gregori 1987b: 1241), by which he implies that 'resources' are nothing but the 'property of things – a property that is a result of human capability' (ibid.: 1243). Resources derive from human knowledge (e.g. technological prowess) and are in fact an ascription of function to a material object.

historic roots in international relations means that goal-oriented energy security does not place fuel poverty on a similar 'threat' level, thereby ignoring and reproducing its conditions.

Absolute scarcity and the limits of abundance

As already hinted at, the Ricardian understanding of scarcity is not the only one. Many debates on energy, climate change and economic growth fundamentally deal with the clash between relative Ricardian scarcity and absolute (neo-)Malthusian scarcity. Where relative scarcity focusses on adaptation, subsitution, unlimited desire and economic growth, (neo-)Malthusian arguments focus on environmental, planetary and geological limits (Meadows et al. 1972; Daly 1997; Sachs 1993; Smith 2012) and principally follow a security politics of pre-emption (D'Souza 2019).

The idea of limits is principally associated with the writings of Thomas Malthus. In his *Essay* (1798), Malthus argues that geometric population growth is halted by the limits of subsistence, which in his case entails the total amount of acreage available for the arithmetic production of food. Malthus refers here to what nowadays is described as a diminishing marginal return on the production of food when population growth exceeds the fixed available acreage and each additional person is able to grow less food. Hunger, sickness, and conflict would be the result, for when '[h]umans struggle to subordinate the environment and when "finally the limits to growth are reached, they have only to subjugate one another" ' (Pirages 1983: 252 quoting Ashley 1980: 287). These days, (neo-)Malthusian ideas are still widely available (Scoones et al. 2019) and gained a strong impulse in the early 1960s with, amongst others, the publication of *Limits to Growth* (Meadows et al. 1972), but have extended from the consequences of population growth (for a recent critique see Hendrixson and Hartmann 2019) to the limits of economic growth, peak resource debates (Bridge and Wood 2010; Labban 2010), and environmental degradation and ecological thresholds and tipping points.

Ricardian relative scarcity rejects neo-Malthusian ideas on two accounts. Firstly, this position argues that it does not matter in economic terms whether absolute limits of natural resource reserves and physical geography exist. As Barnet and Morse conclude:

> A limit may exist, but it can be neither defined nor specified in economic terms. Flexibility, not rigidity, characterizes the relationship of modern man to the physical universe in which he lives. Nature imposes particular scarcities, not an inescapable general scarcity. Man is therefore able, and free, to choose among an indefinitely large number of alternatives. (Barnet and Morse 1963: 11)

The added 'in economic terms' and 'modern man' are important, as Ricardians do not deny that there are physical limits to natural resources in the absolute long run. However, they focus on the short to medium term and reject the importance of these in order to address shortages or 'particular scarcities' that can be overcome (Stiglitz

1979: 37; Simpson et al. 2004: 16). And secondly, empirically, Ricardian inspired responses were quick to point out the fallacy of extracting past trends from static data in a dynamic (economic) systems, arguing that the only proven historical trend is one of successful substitution and technological innovation (Stiglitz 1979; Solow 1974; Simpson et al. 2004; Hirsch 1976: 19).

A range of ethical, social and environmental arguments can and has been made against this position. Core among them, ironically, is that the Ricardian position ignores that current markets fail to include all external costs and thus effectively discount the price for resources like energy, up to the point of overshoot (e.g. socially produced absolute limits, Ross 1996). A more fundamental critique however is made by Mitchell (2013: 231–55; see also Urry 2014; Sheller 2016) who argues that the shift in thought towards relative scarcity itself would not have been as successful without the development of fossil fuels. While not disputing the historic trends of falling prices and substitution, Mitchell argues that the discovery and utilisation of a seemingly unending supply of carbon fuels at a price not worth counting, in particularly oil, not only had an impact on living standards but also enabled the substitutability mind-set of Ricardians and thus enabled this form of economic government. Substitution sees resources as limited but energy in general as unlimited, and thereby overlooks the intimate connection between this mode of reasoning and a particular group of energy sources that is characterised by an exceptionally high energy return on investment (and a wide range of externalities).

The discussion so far has two consequences. Firstly, we have arrived at the theoretical limits of abundance. Mitchell's insight that cheap energy enables substitution as an ideology extends to modern-day promises which position, for example, renewable electricity and asteroid mining in space as two infinite sources of abundance. In both cases this promise of abundance reproduces this substitution ideology, ignoring the actual underlying resources (metals, minerals, etc.), the political economy of investment and (intellectual) property, and the tendency for centralisation if not outright monopolies of communication and data (Kester 2016). In other words, the promise of abundance is a false one as the substitution only works through the reproduction of relative scarcity (which requires shortages) by claiming to counter absolute scarcity – and often does so with the help of energy security logics and practices. A similar argument goes for energy efficiency, where 'it is important to recognize that policies that are designed to deliver similar services but with less energy are anything but "neutral". Like it or not, they play an important part in reproducing the status quo and in sustaining and legitimizing contemporary material arrangements and practices' (Shove and Walker 2014: 53).

Secondly, this ontological political debate is not about the existence of absolute limits, thresholds or tipping points, but their importance. Such a debate highlights that Ricardians are actually afraid of one limit: the limit of economic stagnation. As De Gregori argues, in proper securitisation language: 'Rarely, if ever, can a people abandon a technology and its resources and return to an older pattern without loss of life […] and living standard' (De Gregori 1987b: 1245). While this might be phrased too strongly, Friedrichs (2010) for instance highlights the difference between the North Korean and Cuban living standard after experiencing chronic oil supply shocks, Simpson et al. summarise the neoclassic position as 'halting

economic development is simply not an option' (Simpson et al. 2004: 31). This creed is so strong that the political ecologist Sachs (1993) concluded that sustainable development policies like the construction of CO_2 markets effectively are not conserving nature but further economic development (cf. Escobar 1996; Matthaei 1984: 90, 91). Given the ontological power of security arguments, energy security discourses focused on disruptions are part of this narrative and offer an unreflective reproduction of current energy systems that (re)perform relative scarcity with its substitution ideology, especially when one defines energy security as different from climate security (Cherp and Jewell 2014: 416; Jewell and Brutschin 2019; Nyman 2018a; cf. Heffron and McCauley 2017).

Scarcification and social inequality

Missing from discussions about acute shortages and abstract absolute or relative scarcity are more medium-term discussions about the politics of producing, distributing and consuming resources. This is a fourth understanding of scarcity, something the architect Klein (2011: 12) has dubbed *scarcification* (recently also called *political scarcity* Scoones et al. 2019). This understanding draws on a long critical Marxist tradition and more recent Foucauldian reflections (Huber 2011; Mitchell 2013; Yapa 1996a) as well as the so-called Distributionists and their call for more awareness to the politics of allocation (Devereux 2001; Mehta 2010a; Robeyns 2005; Sen 1983).

Marxism sees scarcity as part of the 'mode of production, i.e. to the historically specific set of relations and forces of production, distribution, consumption, and so forth' (Perelman 1979: 84). Marxism thus rejects Malthus' population law, on the basis that overpopulation is not a threat but actually a necessity for capitalist accumulation. As Perelman observes, Marxism accepts absolute limits but contrasts the early development stage of a natural resource with later stages where the supply becomes more difficult to organise, resulting in a need for both labour and capital to fulfil the rising demand for an ever harder to acquire resource (ibid.: 83). It is the inability or unwillingness to use labour or capital to increase the efficient usage of a natural resource that subsequently leads to scarcity (ibid.: 84). Simultaneously, Marxism argues against Ricardian economic growth and the promise of abundance, because of the underlying social inequalities between capital and labour within current economic systems. For Marxism, any solution to scarcity would favour capital and thereby reinforce the capitalist form of domination with its inherent inequalities and shortages (Stillman 1983: 304–306; Panayotakis 2011). In short, this view blurs absolute and relative scarcity in a process of scarcification that accepts planetary limits and human ingenuity, but observes scarcity to derive from historically formed social power relations.

Distributionist similarly argue that scarcity, including its causes and effects, primarily results from unequal social relationships that allocate resources between haves and have-nots. They move away from (neo-)Malthusian notions of absolute scarcity and Ricardian notions of relative scarcity to social, cultural, material and technical contexts as they observe how shortages are aggravated through legal

claims of ownership and economic, religious, military or physical means of control (Devereux 2001; Mehta 2010a; Robeyns 2005; Sen 1983). They also see these institutions, discourses and practices as constantly reproduced, and, therefore, with work, open to change.

In other words, scarcification builds on the insight that scarcity is created in markets that are imperfect and constantly employed for the betterment of some. In his work *Economics of Abundance*, Hoeschele (2010: 10) analyses a range of 'scarcity-creating institutions' that are present in modern economic systems and society in general. These institutions can reduce supplies, they can block people from accessing supplies, and they can generate additional demand. An example would be when companies acquire resources and exclude locals from using them or when they buy innovations from start-ups without developing them (Huber 2011; Yapa 1996a). More generally this relates to the direct legal and political entitlements that people have on goods (Sen 1983), but also to ideology and religion as more indirect, and thus potentially more powerful, ways of organising social life (Hoeschele 2010). Importantly, this affects not just supplies, but demand as well. Within the SAS literature, Xenos' (1989) classic discussion of the artificial creation of demand through marketing and advertisement is a case in point. Within the energy literature, Shove has shown demand for energy to be inseparable from supply as both presuppose each other (Shove 2010; Shove and Walker 2014). Of course, fear and other affects also influence both demand and supply (Stole 2012; Weszkalnys 2016; Galbraith 2001: 31–39), which relates directly to energy security practices and the ability of security generally to guide behaviour through norms, referent objects and authority (cf. Leander 2005; Krahmann 2017).

At this point, it should be noted that scarcity, like (energy) security, is highly normative but neither positive nor negative of its own. A good example can, again, be found in Mitchell's *Carbon Democracy* (2013) and his analysis of how the distance between oil production facilities and refineries, often across international borders, was a deliberate act by the companies and countries involved to minimise the political power of labourers in response to the strikes by miners and rail and canal shipping staff at the heyday of the coal industry. Simultaneously he notes how these initial coal strikes contributed strongly to an elite acceptance of the initial democratisation moves that came with these strikes. In other words, Mitchell describes how scarcity and the threat of it have been used as a political instrument for the spread of democracy, but also how they have been countered through the introduction of new organisational structures that redistribute them across space.

The relativity of unlimited desire

In addition to their normativity, scarcity and (energy) security have something else in common: both are empty, constantly (re)preformed notions. In case of security, this is ascribed to the iterative nature of security as constantly moving from one (in) security to the next (Dillon 1996: 33; Buzan et al. 1998: 32; Anderson 2010). Relative scarcity is similarly expansionary, but in contrast to security it is not a desire for more security that drives it (for who wants more scarcity?). To understand the social

mechanisms that reproduce relative scarcity requires this paper to further unpack the meaning of demand and especially the naturalised notion of unlimited desire (Hildyard 2019). This section thus briefly touches on the intricate distinction between basic needs and luxury products as a way to question the acceptance of demand in shortages and of unlimited desire in both absolute and relative scarcity logics (Matthaei 1984: 90; Panayotakis 2013). It will then draw on the SAS literature (Achterhuis 1988; Claassen 2004; Dumouchel 2014; Hirsch 1976) to explore the social origins of relative desire, and discusses private property, money, mimetic contagion and the political economy behind social hierarchies as the four mechanisms that continuously reperform conditions of shortages and scarcity.[5]

Economic theory and popular language make a distinction between needs and desires, which the former theorises by ascribing a lower elasticity to resources like water, energy and shelter compared to the higher elasticity of luxurious products like perfume and sports cars (Pimentel and Pimentel 2008: 1). The question of basic needs, however, is difficult to settle as they are context dependent and shift over time with technology and their use, meanings and conventions (Shove and Walker 2010). For example, while cars constituted a luxury product for a long time, particular groups in society have worked hard (Hildyard 2019: 295) to make sure that nowadays societies are organised around automobility (Urry 2004), which means that those without a car are disadvantaged in finding and working a job, and thus less able to care for themselves (Campbell 2005). Needs and demand change. They shift, increase and decrease, so why does the discussion about shortages and scarcity, both relative and absolute, primarily focus on the status quo and output growth – even up to the point of problematising declining demand?

This is not a new discussion. Raworth (2017) goes as far as to call the focus on ever more GDP growth 'a cuckoo's egg'; an unwarranted assumption that snug its way into mainstream economic theory. The scarcity literature goes further, with Yapa (1996b: 715) calling the unrelenting desire of modern societies an ontological given. Perhaps not in terms of GDP, but growth certainly is a theoretical necessity to understand scarcity so far. It is necessary for an understanding of shortages, where demand is accepted as is and presented as a right to supplies. It is also a necessity for an understanding of absolute scarcity where demand acts as the starting point for extrapolation (with negative conclusions).[6] And it is a necessity for an understanding of relative scarcity where there is always a new resource or product. To be clear, growth here is understood as unlimited desire – something that is not limited to GDP or wealth but can take many forms like comfort, health, speed, knowledge and so on.

[5] I am limiting this to the scarcity literature, thus bypassing the extensive literature on the sociology of consumption; which in relation to energy has been translated to include 6 mechanisms: social comparison (here called relative desire), consumption as a way to create and express self-identity, mental stimulation through novelty; the Diderot effect (that when people change one item, they want to match others); specialisation (increasing number of products within subcategories: not shoes, but tennis shoes, hiking shoes, running shoes, etc.); and sociotechnical systems that 'lock' people in (Shove and Warde 2002).

[6] Even in absolute scarcity, desire initially is taken as a given and acts as the basis for the extrapolation. It is only later that it is questioned, quite extremely in the case of Malthus's suggestions for population control.

To explain unlimited desire the scarcity literature draws attention to the relative nature that underpins human desires. Well-known scarcity authors like Xenos (1987, 1989), inspired by Hirsch (1976), but also understudied authors like Achterhuis (1988, 1993) and Claassen (2004), inspired by Girard and Dumouchel (1988) share that scarcity is not an objective fact of our world but instead should be seen as a product of modernity that naturalises this unrelenting relative desire. Claassen (2004) and Achterhuis (1993) for example argue that somewhere between the 17th and 18th century liberal authors like Locke, Rawls and Hume naturalised relative scarcity by recounting it as a natural law that falls outside of social relations. Locke in particular is highlighted as the author who hid the relative nature of scarcity in full view by blaming nature for not providing enough resources—presenting it as shortages and absolute scarcity—and subsequently tasking humankind to manage and improve it with labour (Achterhuis 1993). In modern day language as well, Claassen (2004: 40–41) observes that relative scarcity is often discussed in terms of shortages and absolute scarcity, and comes with calls for technological fixes that according to him are inherently unsuited to solve the social reproduction of relative desire but instead continuously reproduce it. In other words, these authors argue that relative scarcity hides both itself and the unlimited relativity of desire behind conceptualisations of shortages, absolute scarcity and scarcification.[7]

The naturalisation of relative desire is supported by at least four social constructions, including private ownership, money, mimetic contagion and the political economy behind social hierarchies. The first two of these constructions are rather self-evident. The shift from common forms of ownership to private ownership (Achterhuis 1988: 185–212; see also Hoeschele 2010; Luhmann 1988) and subsequent legal, military and other enforcement practices enabled the exclusion of rivals from natural resources in both the present and future, even without actual physical control of the good. In turn, money strengthened ideas of accumulation by enabling people to gain wealth independent of the storage life of natural products. Money makes it possible to produce more than what people consume themselves; it enables production for profit. Money also offers a standardised way to compare people and strengthens ideas of equality (Achterhuis 1988: 58, 131–36, 256–59).

The third mechanism is mimetic contagion, which builds on these ideas of equality as it rejects fixed social classes. The moment people see themselves as equal and can compare themselves through money, Girard's concept of mimetic contagion describes the drive of people to mimic their peers; to want what other people want so that they are not left behind. As Dumouchel, a student of Girard,

[7] A similar argument is made by Luhmann (1988, 1993) who argues that the normalisation of relative scarcity rests heavily on a self-referential system of increasing complexity. A system that starts with access to resources (access/no access), but then moves to similar scarcity references in property, trade, money, savings and capital. Within this process, Luhmann sees the identification of scarcity as both a temporal closure of a long political and systemic processes and as the start of others. Rephrased: when people define something as scarce (a reading of scarcification closer to securitisation theory [Buzan et al. 1998]), they close off a situation, and in doing so exclude others based on this observation. This observation allows scarcity to manifest, which allows it to present itself as the main motif for excluding those others in the first place.

states: 'An agent's preferences are always under the influence of other agents' preferences' (Dumouchel 2014: 137). However, by mimicking others—either by following those they admire or by rejecting anything remotely connected to the persons that they do not like—individuals strive for the same goods. A process which, unfortunately, can result in a situation where particular resources or goods become scarce for all, including for people not directly involved in the initial mimeses between two agents (Achterhuis 1988: 59).[8] In their mimetic and social strive for goods (Achterhuis 1988: 217; Claassen 2004: 77–80; Dumouchel 2014; Mehta 2010b: 16), (rich) agents can either privatise previously common resources, completely exhaust certain goods, or, by their increasing and changing demand, make previously 'luxurious' goods a necessity for others to partake in society (cars, internet). 'This represents a loss of freedom for those people who either do not want to buy these things, or cannot afford them' (Hoeschele 2010: 10). And it is not just in the Global South that one can find victims of this struggle, they are readily present in Western societies as well (Gibbons 1991; Mullainathan and Shafir 2013).

Mimetic contagion in turn is strengthened by the social hierarchy that Hirsch (1976) analyses when he distinguishes between a material and positional economy. In a material economy of consumer goods, like energy, an increase in the number of goods or the number of people with access to that good does not downgrade the product in question. In a positional economy, however, this is not the case. In such an economy of 'social scarcity' (Hirsch 1976: 1, 21), the perceived quality of a good or social position is negatively correlated to the number of products or people having access to them. An education at Harvard, a private jet or a public road all decrease in value with more people enjoying them, just as the position of a general or president becomes useless if shared with multiple persons. Hirsch points here to the social limits to growth, as more economic growth only increases the size of the positional economy compared to the material economy and thus the competition for these positional goods (ibid.: 6; Claassen 2004: 110–11). Xenos (1989) builds on this when providing the example of clothing and fashion to conclude that even when material goods are available in abundance (clothing), scarcity will remain present because humans have an inherent drive to seek recognition and prestige (fashion). While oil, gas, electricity and heat are a material economy, the energy demand generated by mimetic contagion in a positional economy is only going up – from cars in the

[8] This turns relative scarcity into a saviour and a structural source of violence at the same time. A saviour, because it reduces actual conflict through practices of trade and innovation that lead to better living standards. But also a structural source of violence, one that could very well lead to conflicts yet often is simply accepted as inevitable and the responsibility of the individual in question (e.g. when being poor is attributed to a lack of work ethic). Dumouchel calls this the 'ambivalence of scarcity' (Dumouchel 2014) and argues that '[s]carcity does not seek to protect agents from violence or hardship by making them reciprocally responsible, but to prevent the spread of violence by removing each person's incentive to participate in the conflicts of others' (Dumouchel 2013: 4). In other words, even though violent conflict is not an automatic consequence of scarcity, on the contrary, the relative desire behind relative scarcity is a form of violence itself.

1890s, to private jets today and space tourism tomorrow, in each case 'ever-increasing throughput of material and energy' (Princen 2005: 5).

Importantly, once these practices are accepted and normalized energy security comes into play to defend or (re)acquire the necessary elements for these energy practices: to gain access to or claim ownership of resources, to justify investments in supplies and storage, to problematise alternative political ideas and systems that might affect the existing supply chains and energy practices, etc. Of course, ever increasing energy intensive practices are not the only outcome of relative unlimited desire; energy security can just as easily work for efficiency gains, like electric drivetrains, or be used to promote a shift to telecommunication and other less energy intensive practices. However, it is only in extreme cases, like war or the 1970s oil crises, that security is put to work to limit consumption, and then often temporary (Kester and Sovacool 2017). Either way, goal-oriented understandings of energy security hardly question the level of demand itself and certainly not the underlying desires. Still it is the latter and the systems that accommodate such desires, not just the resources, that need governing.

Re-imagining energy security

That is not to say that relative desire is not governed already. The analysis above from Foucault (2007) clearly highlighted how the normalisation of relative scarcity has led to new forms of governance. Of course, these new socioeconomic forms of governance enabled relative desire as they dispersed shortages over a population both geographically and temporally. In doing so, these forms theoretically temper shortages, but also enforce a system of relative scarcity and relative desire upon those who, individually, still struggle with those shortages. These forms of governance not only enable, but need relative desire in order to work – problematising not just shortages, ecological limits, halting economic growth or social inequality but abundance as well, as true abundance destroys the need for markets. This represents the paradox of scarcity: a never-ending search for abundance that can never be reached.

That said, there have been and are numerous attempts to govern relative desire, not to mention the excesses of relative scarcity (for successful examples see Princen 2005). The long and marginalised history of (religious) asceticism and its call for an extreme form of material abstinence, however, displays the difficulty of limiting the desires of 'modern' consumers (Claassen 2004). Other more recent studies confirm the difficulty of attempting to govern unlimited desire, like those that highlight equalising scarcity-mechanisms (Daoud 2011b; Panayotakis 2011; Hoeschele 2010), the politics of allocation (Mehta 2010a; Scoones et al. 2019; Sen 1983) or more just energy distributions (Jenkins et al. 2016; Heffron and McCauley 2017). And that is excluding those who propose alternative economic rationalities all-together, whether based on sufficiency (Princen 2005) or non-growth, steady state or doughnut models of economics (Daly 1972; Van den Bergh 2001; Raworth 2017).

Just as the energy security literature hardly engages with these literatures, few of them touch explicitly on security logics and practices, let alone energy security. There is a way to link them however, following Foucault (2007, 2008) who used his discussion of scarcity as input for an alternative reading of security, not as a goal, but as governing of circulations of goods, people and ideas through a variety of security discourses, practices and technologies (like insurance, risk management, safety standards and surveillance). Such a reading would highlight that security practices, broadly defined, often define and regulate the limits of acceptability; they define referent objects, actors and the boundaries of an event; they also set a level of urgency that pre-empts more reflective contemplation. In other words, security practices, discourses and technologies offer a way for agents to conduct ontological politics. It is at the crossing between these two – the general ontological politics behind resources and the specific way that security practices and logics are used to conduct ontological politics – that these fields can find common ground. Examples of such insights can be found in studies that discuss how (energy) security practices mediate how definitions, metrics and policies are set around (shale) oil and gas; definitions which then in turn help shape energy security goals, policies, extraction systems and ultimately consumption (Elden 2013; Kama 2019; Kester 2017).

This is not to say that energy security cannot be a goal. Nobody wants to suffer shortages. However, once re-imagined as a practice, it is clear that energy security does things and does so beyond the immediate visibility of the "threat" and daily energy politics. In this case, that it helps to naturalise and (re)perform particular expressions of scarcity and relative desire with their inherent inequalities, environmental impact and exclusions (cf. Bridge 2015; Hildyard et al. 2012). The literature on water scarcity and food security (above) have multiple examples, including the hydro dams in Nepal, where security logics are used by elites to securitise a particular expression of scarcity in order to defend far stretching expensive solutions that further exploit and exclude local resources and people (Mehta 2003; Bharucha 2019; Sen 1983; Nally 2011; Shannon 2014). The increasing tensions around the recently discovered natural gas fields near Cyprus exhume a similar traditional International Relations and goal-oriented reading of scarcity, one that has nothing to do with shortages and everything with profit. The promise of 'energy security' (primarily for the European Union, not the countries themselves, see: Ruble 2017; Smith 2019b) here leads directly to insecurity in an already tense region (Smith 2019a; Rubin and Eiran 2019). How is that (human) security?

On the other hand, an energy security practice approach would also acknowledge that security can be utilised for transformative change. A practice approach would highlight the political malleable nature of scarcification and point to the iterative performances of energy systems and relations; iterations that are never complete (Butler 2010: 153). Energy security has a role to play within these scarcification practices, as (energy) security practices are not static either (Szulecki 2018a; Kester 2018). In fact, even if energy security policymakers and scholars attempt to preserve a system, theoretically 'the act of securing both invents and changes whatever is so secured' (Dillon 1996: 122). What is more, this iterability of practices can be coupled with a stream of research within the critical security literature that actively promotes the transformative use of security to benefit societal change (Booth 2007;

Nyman 2018b). The call on energy security thus offers an opportunity for agents to reperform scarcity from 'the explanation' into something that 'needs to be explained' (Hildyard 2019: 294).

To achieve this, future work could draw more explicitly on the broader critical security studies literature that offers more normative definitions of security (Booth 2007) and explanations of how security works performatively (Buzan et al. 1998; Dillon 1996; Salter and Mutlu 2013; Aradau et al. 2015), especially if read together with work from critical political ecology and geography. Such a reading will challenge the energy security literature. It will challenge us to not just engage with energy security and its internal logics, but to engage with the external politics of energy security. To study how actors at various scales and levels utilise (or reject) a specific combination of security logics based on particular values around energy related referent objects – and do so without pre-set limits on what energy security constitutes (exceptionality, the system preservation, etc.). Such a performative position will further challenge us, as academics, to take responsibility for our own knowledge politics (Bridge 2015; Foucault 2007) and start reflecting critically on the extent that our presentation of what energy security constitutes and promises (through metrics, definitions of exceptionality, etc.) reproduces the potential for (mis)use of energy security at various levels, contexts and abstraction levels. Not just for energy security's sake, but for the sake of those excluded.

Conclusion

In short, energy security rests on the paradoxical acceptance and fear of scarcity. Inspired by the post structural approaches in critical energy security analysis, this paper problematised energy security's unreflective promotion of practices that defend the demand and supply 'energy equilibrium' (Szulecki 2018b: 5) of the existing energy systems as effectively reperforming particular scarcities with their social, political and economic exclusions, injustices, inequality and exploitations. With the help of the literature on scarcity, political-ecology and resource-making, scarcity was found to be a social construct, a product of modernity that acts performatively across economics, ecology and politics based on several underlying social mechanisms including private ownership, money, mimetic contagion and a constant search for status behind relative desire. The systematic analysis of the four different understandings of scarcity—shortages, absolute scarcity, relative scarcity and scarcification—not only indicates that all of them actively perform people's thought and behaviour as they facilitate or obscure alternatives, but also highlights how relative scarcity hides behind the other scarcity logics while actively producing the underlying conditions that it signposts (e.g. shortages, anthropocentric absolute limits, conflict). And while the desire behind relative scarcity might have a biological start, the discussion shows that it is driven by social interactions and therefore theoretically without end.

The subsequent need to govern relative scarcity with unlimited desire led this paper to re-imagine energy security as a set of practices and a form of governance that takes place within processes of scarcification: processes that attempt to limit shortages and prevent absolute scarcities but at a fundamental level still reproduce relative scarcity (and unlimited desires). Such a reading of energy security implies that it, firstly, has to move beyond

narrow goal-oriented definitions of energy security to an understanding of how security works in an energy context and how it affects human security. And secondly it needs to accept shortages and the limits of absolute scarcity but realise too that relative scarcity drives markets and as such questions not only the threats of scarcity, but the promises of abundance and the short term hypes that come with it. Abundance, like scarcity or security, is a performative act. In this case not based on a threat but on a promise to gain support and investments for particular technologies that can benefit many, but some more than others (Borup et al. 2006).

A critical reader might wonder whether this discussion, which links security governance via scarcity with resource-making, is truly relevant for energy security? At some level it is not: shortages are undesirable and most of the argument goes for security of natural resources in general, as exemplified by the use of food and water security illustrations. Simultaneously, those examples highlight why it is relevant: this type of practices inspired security analysis is not yet common for energy. Moreover, the re-imagining of energy security here goes far beyond a need to update energy security to include recent sociotechnical developments so that policymakers and companies can build programmes based on their work (Proskuryakova 2018), yet another call to the traditional IR literature that their understanding of energy security is severely limited (Wilson 2019) or the realisation that the constant search for definitions within the energy security literature ignores that the ambiguity of energy security definitions actually serves a political function (Kovacic and Di Felice 2019). Each of these insights is self-evident in a performative reading of security, if only scholars would be willing to take the step and let go of goal-oriented energy security and study the politics of energy security. For as long as we hold on to energy security as a goal, the real goal of energy, supporting human security, is ignored.

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