HOW DOES ECONOMIC INEQUALITY AFFECT THE ABILITY OF SOCIETIES TO COPE WITH HAZARDS AND SHOCKS?

EXPLORING THE HISTORICAL RECORD OF PRE-INDUSTRIAL WESTERN EUROPE TO REVEAL THE INDIRECT IMPACT OF INSTITUTIONS

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Abstract:

Despite generalizable correlations between material inequality and the vulnerability of societies encountering hazards or shocks, precise causal mechanisms are unclear. By examining the extant literature, we identified 3 main ways in which inequality is said to decrease coping capacity: (a) the absence of resource buffers, (b) settlement in precarious areas, and (c) exposure to the vicissitudes of the market. Scholars, however, have paid less attention to the 'indirect' effects of material inequality on vulnerability: that is through the functioning of institutions. We explore this role, focusing not only on institutions created to combat hazards or shocks, but on the whole of society's 'institutional toolkit'. We use the 'laboratory' of pre-industrial Western Europe to help explain how inequality shaped and molded institutions. Ultimately institutions failed to protect societies effectively after hazards or shocks, or allowed full recoveries after disasters, when conditions of economic inequality in which they were embedded skewed institutions to the interests of those with wealth and property rather than effective 'coping'. That is not to say that the 'inequality-institutions-vulnerability nexus' is a universal law. Economic inequality rendered some institutions as redundant in offering comprehensive protection, but people also circumvented restrictive institutional frameworks – relying on reciprocal informal relationships instead.

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1. DIRECT AND INDIRECT RELATIONSHIPS BETWEEN MATERIAL INEQUALITY AND VULNERABILITY

It is widely accepted now in the literature on disasters that environmental hazards and the disasters they can create are not simply 'natural events', but social, cultural and political processes that test the capacity of society to organise itself, limit destabilisation, and move onto a stage of recovery (Blaikie et al. 2004; Pelling 2012; Tierney 2007). Disasters are thus increasingly seen as social occurrences, in which the qualities of different societies are crucial in determining differential capacities in coping with hazards: either limiting the initial impact of the shock, or if not possible, helping achieve a rapid and full recovery. What is less clear is how societies exactly achieve these effective coping strategies: what are the precise conditions or mechanisms involved that make their implementation all the more likely?

Increasingly in recent years, it has been suggested that one of the characteristics of societies that fail to implement effective coping strategies or recoveries after hazards and shocks is high levels of economic inequality. Empirical tests have established a positive correlation between income inequality and increased susceptibility to disastrous outcomes from natural hazards in present-day countries (Castillo and Hillier 2013:16). When the number of natural disasters is held constant, and controlling for national wealth, countries with less income inequality (as well as more democratic nations) turn out to suffer fewer

deaths from disasters, as observed for a set of fifty-seven countries analyzed for the period 1980-2002, with the effect of income inequality found to be very large (Kahn 2005).

Yet although it may be accepted that at a general level this link between vulnerability and economic inequality exists, it is very difficult to identify the mechanisms for why this is the case. It is clear that disasters 'create both winners and losers' and 'this is not random' (Scanlon 1988:47), and it has been stated, furthermore, that 'vulnerability is the degree to which different social classes are differentially at risk' (O'Keefe, Susman, and Wisner 1983), but an explanation for this is still largely absent. Apart from a few general correlation tests, the results are unclear as far as causality is concerned – a frequent feature of a macro-approach based on the performance of a few regressions (Karim and Noy 2016). And the situation is further confused by the fact that scholars also point to the opposite relationship: hazards and shocks causing economic inequality rather than being caused or exacerbated by it (Yamamura 2015; Tuan Bui et al. 2014). Ultimately, many discussions and statements about the link between inequality and resilience in the face of hazards and shocks remain based on implicit assumptions or intuition, rather than empirical testing of hypotheses about the causal relations. What is it precisely about inequality that makes a society less able to cope?

To identify some possible causal relations, we started by surveying the works of sociologists, development economists and historians working on disasters. Here, we find many references to how material inequality directly impacts upon societal resilience to natural hazards: this is by way of the distribution of the means, capabilities and agency over people and the effect this has on their decisions and actions when confronted with a shock. This non-exhaustive survey allowed us to identify three ways in which development and disasters scholars tend to link economic inequality and failures in the coping capacity of societies when faced with shocks.

The first is political economy approach that often focuses on a lack of resource buffers. If we accept that more unequal societies have larger numbers of the poor, their lack of resources means that even a moderate shock can tip them over the edge (Blaikie et al. 2004:46-61). Often this works in a very simple way. Inequality means that there are more people below the poverty line than there would have been if inequality had been lower. With similar levels of income and wealth, those societies with higher inequality have more poor people. If we accept the notion that poorer people are less able to cope with hazards or offer a recovery from disaster, it means that with more material inequality, larger shares of the population are going to be affected negatively by the shock. The difference between an 'equally poor' society and an 'unequally poor' society is that in the unequal societies, those with more wealth in a society can absorb the shocks to a greater degree, and in turn take advantage of those poorer members of society unable to withstand the same shock, leading to a cycle of further wealth and property consolidation (Galloway 1988). Often this problem is exacerbated when poor peasants or laborers do not actually have the legal documents to prove ownership of their ruined lands, for example, with many unsure how to best prove their entitlement (Lundahl 2013).

The second way is in the likelihood that people in unequal societies are more likely to live in inherently more dangerous places; therefore, more likely to encounter a hazard, or be affected to a higher degree by a hazard – turning it into something of disastrous consequences, when others from the same society are spared. This could be presented as a 'vulnerability through exposure' view (Cutter, Boruff, and Shirley 2003), but more specifically 'a human ecology of endangerment' (Hewitt 1997). So recent literature has iterated the likelihood of 'poor people' living in essentially 'disaster-prone' areas of the world (Kim 2012:208), and it is clear that throughout history people have been forced to live in places susceptible to flooding – often directly after becoming 'poorer' in conditions of increased inequality. In the

British Punjab of the late eighteenth century, to use just one example characteristic for many colonial contexts, the British government aimed to consolidate power there by offering land grants to elite caste members, in the process keeping powerful interest groups onside. However, this also led inadvertently to an unregulated land reclamation process, not only entrenching social and economic polarization in the rural Punjab by enriching an already elite group of landowners, but created negative knock-on effects in areas settled by poorer peasants – heightening water pressures and the chances of flooding (Ali 1987:124). Reclamation of new territories, enforced upon societies by wealthier commercial interest groups, often has stimulated settlement into areas never inhabited before (being prone to floods), bringing more of the poorer segments of society into distress (Weil 2006:14). Recent research has suggested that throughout history in pre-industrial Europe, the social profile of those likely to have been killed by floods were poor landless agricultural laborers with their houses tucked precariously close to dikes. Scholars have also shown that one of the processes inextricable from contemporary patterns of increasing economic inequality is the expropriation of peasant land, leading former rural dwellers to migrate into ever crowded slum neighborhoods of massive cities (Pelling 2012). Such crowded and insalubrious conditions, the indirect products of sharpened inequality, leave whole areas of urban environments now greatly vulnerable to the spread of epidemics, often lacking access to basic public health provisions: particularly concerning given the recent emergence of 'new' infectious diseases such as dengue fever.

The third way in which inequality and vulnerability to hazards and shocks has been presented is in the increased exposure of a larger segment of society to the vicissitudes of the market. In times of harvest failure, it is clear some people do not have the means to buy food after sharp price spikes. A classic example of this line of thinking is the 'entitlements approach' associated most clearly with Amartya Sen. During the Bengal Famine of 1943, food was drained from those areas and people who needed it the most but were unable to

command it (Sen 1981). In general, those societies with an inequitable distribution of property such as those characterized by high numbers of landless agricultural laborers working on large farms ultimately have a much larger segment of the population that cannot control its own means and pattern of production, and are reliant and exposed to unpredictability of market provisioning: that is to say they have to buy their essential foodstuffs such as bread, rice or potatoes rather than produce them themselves. It goes without saying that after harvest or distributional failures, those reliant on the market were most at risk from any resulting price peaks: for laborers in some historical contexts, food and drink sometimes accounted for as much as eighty percent of household budgets even in normal times (De Zwart 2016: 92). Divorcement from the land and proletarianization, already a process occurring in some parts of Europe from the sixteenth- and seventeenth centuries, increased in intensity after the Industrial Revolution, and thus it is no surprise that the effects of the 1845-50 Potato Famine were unspeakably severe, and often more so for those areas that had experienced this transition to agricultural proletarianization to its greatest extent (see the essays in Ó Gráda, Paping, and Vanhaute 2007).

These three direct ways in which inequality can be linked to failures in the coping capacity of societies are obviously important. However, much of the reasoning behind it is more related to poverty than to inequality. Unsurprisingly, therefore, the concept of 'vulnerability' is often associated uncritically with inequality and poverty simultaneously (as noted by Blaikie et al. 2004). However, although poverty can play a role in increasing vulnerability, as has been stated and described in a wealth of literature too numerous to cite in full here, the empirical evidence from the micro-level remains scarce (Kim 2012:197, 209; some literature cited in Kahn 2005). Indeed, if this link largely remains implicit but largely untested, the problem is that poverty itself ultimately becomes almost a synonym of vulnerability, and this in turn helps feed into an uncritical conception, especially in 'Western

discourse' of a Global South, for example, as a disease ridden, inhospitable place – poverty stricken and disaster prone in equal measure (Bankoff 2001). Furthermore, it is unclear whether these links to failures in coping strategies after hazards relate to inequality-induced poverty or just to poverty per se.

Moreover, it must also be said that societies marked by similar levels of poverty, or inequality-induced poverty, still often produce quite divergent coping techniques and patterns of recovery if experiencing a disaster. What we suggest then in this article, as a way of getting closer to understanding the link between inequality and vulnerability, is that economic inequality especially affects societal responses to hazards and shocks in an indirect way; that is by impacting upon the development and use of institutions. These institutions (broadly defined as formal and informal rules and associated organizations and networks) can be specifically designed and implemented in the event of hazards: relief organizations, emergency legislation, or rescue systems, to name but a few. And these specifically-designed institutions, actually set up or formed as a result of interaction with a hazard or shock, have had more attention in the literature. However, it is becoming increasingly clear that less attention has been placed on the whole of the institutional infrastructure of society: those institutions that affect outcomes from hazards and shocks, or paths of recovery from disasters, but exist regardless of whether a hazard or shock occurs or not (Bankoff 2003). These include, for instance, the institutions which organize the exchange, allocation and use of resources more generally, such as the arrangement of property rights, household and familial organization, and forms of market and non-market (re)distribution. Indeed, even in those cases where a direct effect of inequality on vulnerability can be discerned, this still cannot be seen as divorced from the functioning of the institutional framework. In the aforementioned case of famine, for instance, we can point to the precise organization of the grain markets, legislation on hoarding and speculation in grain, rulings and assizes on bread prices, and the

organization of the systems for distribution through poor relief. In flood-prone areas, poorer segments of society may have been living in more precarious sites, but this was still dependent on institutional elements such as how water management was organized or the types of legislation restricting residence or the building of houses, for example.

Some scholars have maintained that institutions were the result of rational choices made in the face of challenges (such as shocks and hazards for example) and adapted when circumstances dictated. Such a view has given way, however, to an understanding that institutions are also the result of social bargaining or even conflict, and intimately linked up with the leverage and positions of social actors. That being so, they may be formed and dictated by the interests and preferences of certain individuals and social groups (Nee and Ingram 1998; Ogilvie 2007). And if that is the case, the link between inequality and vulnerability to hazards and shocks has another new 'indirect' dimension: in societies characterized by high inequality, the opportunities for poorer segments to influence institutional arrangements will be limited and therefore these very same institutions may not be set up to protect them in the event of hazards. The capacity of societies to cope with hazards through their institutions cannot be taken as a given, as they will not automatically be geared towards the goals of 'coping' or 'recovery', nor inevitably designed for conservation purposes per se (Fabinyi, Evans, and Foale 2014: 28). Instead they can be geared towards the interests of different actors and interest groups, and may persist even if they actually weaken a society's coping capacity. This mechanism may also be further enforced by the fact that the institutions devised to tackle one challenge will also likely have side-effects (positive or negative) in other domains, and often largely unforeseen. It is likely that in conditions of high economic inequality, those segments with more wealth and societal leverage will have disproportionate control over the formation and operation of these institutions, and therefore molding and shaping them for their own benefits rather than broader elements of protection

for society as a whole. Moreover, formulating whole 'new' institutions to replace existing ones is often costly, leading towards the continued maintenance of inefficient or unsuitable institutions, even if that exposes more of society to the consequences of hazards and shocks, and particularly if those costs will be born disproportionately by those with greater wealth. Those 'old' institutions sometimes even form a main foundation of wealthy segments position in society; the maintenance of the status quo.

Despite the fact that is clear that institutions are 'socially embedded', and the context in which they are employed matters for their development, use, and effectiveness (with economic inequality forming an important component of this 'social context'), there has been relatively little recognition in the literature that inequality's impact on vulnerability to hazards and shocks may lie just as much in this 'indirect' domain than in the direct ways elucidated upon above. The aim and approach of this paper is to explore this 'indirect' aspect of the link between inequality and coping capacities and recovery potential by bringing together a set of studies, many of which have only recently been produced, which up to now remain disparate and unconnected, perhaps addressing the issue only implicitly. The value-added of our approach is to make systematic and explicit use of the historical record of pre-industrial Western Europe. There are many reasons for doing this. First of all, it naturally allows us to discuss the temporal dimensions, including those in the very long run (van Bavel and Curtis 2016). The relationships between inequality, institutions, and vulnerability discussed here develop over time, are not necessarily unilineal, and the time spans for assessing societal 'recoveries' are often lengthy – necessitating the use of the historical record. Second, the paper is limited to studies from pre-industrial Western Europe, because this offers a wide variety in experiences, in institutional arrangements, levels of inequality, and social characteristics, which were often importantly found at a regional level – sometimes even regions close together that were subject to the same kinds of exogenous shock and hazard

(van Bavel, Curtis, and Soens 2016). This variety presents us with a suitable 'laboratory' for examining the links (van Bavel 2015); a variety which is more present in the pre-industrial world than the modern one with its homogenizing forces of global capitalism, nation state formation, and technological and infrastructural developments. This also allows us to better control for the differences in the nature and severity of hazards and shocks (van Bavel and Curtis 2016). That is to say some disasters led to the loss of lives, leaving physical structures untouched, while others had a reduced mortality effect but destroyed large amounts of capital goods - their effects, therefore, may be very different. We rule this out as much as possible by looking at research that compares similar hazards and shocks, attempting to hold the force and nature of the impact constant as much as possible, in order to better isolate the inequality variable.

2. THE INSTITUTIONAL LINKS BETWEEN MATERIAL INEQUALITY AND VULNERABILITY: THE MESO- AND MACRO LEVELS

What we come to show in this section is that inequality in the pre-industrial period affected the coping capacity and recovery of societies indirectly, through the 'prism' or 'filter' of institutions, and these institutions operated at a number of different scales or levels. Indeed, it has been well iterated that vulnerability itself is manifest at multiple scales (Turner et al. 2003; Adger 2006: 277). The first level we discuss are the institutions at a meso-level – that is at the level of communities and organizations themselves directly afflicted by hazards and shocks.

One area amply discussed where the effect of inequality on the capacity of institutions to negate or limit the impact of hazards and shocks is that of water management. In many coastal and riverine areas water management was organized by specific organizations or

decision-making bodies, which set the rules of water management and decided on the extent and nature of investments. The decisions taken could have divergent effects on specific social groups. For example, it has been persuasively argued that the damage and deaths caused by storm surges of the North Sea in the late-medieval period were the result of the declining 'entitlements' specific groups had to flood protection (Soens 2013a). The approach of Soens is special since he employs a method whereby the institutions remain fairly constant (and act as an independent variable) while material inequality changes, and thus this allows us to see clearly the impact growing inequality had on the functioning and quality of the institutional arrangements. This, for instance, applies to occasions where the organization of water management became dysfunctional as the decision-making process became concentrated into the hands of the wealthy. A prominent case is Coastal Flanders, in the Southern Low Countries, where in the course of the late Middle Ages, land was accumulated by urban investors who were interested in economic gains, and not necessarily in sustaining an expensive water management infrastructure, while at the same time the land users and local inhabitants became excluded from the decision-making processes (Soens 2009; 2013b). This was not because the rules for election in the water-management boards and participation in the decision-making were changed, but the concentration of landownership meant that decreasing proportions of people from the area had sufficient property to reach the threshold for participation and allowed into the decision-making process. Without changing of the rules, rising inequality shifted investment decisions from a broad layer of people living in the area itself to landowners living elsewhere, who were less inclined to make investments in protective measures. As a result, this coastal society was regularly hit by floods and loss of land, despite the wide availability of wealth and technology. Campopiano and Curtis (2014:108; also Campopiano 2013) have shown similar developments in the sixteenth-century Po Valley of Northern Italy: expropriation and consolidation of peasant property not only led

to outward migration of those made landless, but it had knock-on effects for the functioning of local institutions: former peasant assistance in the maintenance of complex hydraulic works completely unraveled. Those former peasants who remained as inhabitants in the area but had become landless agricultural laborers in effect, no longer had any incentive to contribute to the water management systems.

That is not to say that this association between inequality and institutional dysfunction, leading to the increased vulnerability of communities, has not been challenged. Other scholars have made strong arguments to suggest that inequality was not always a prerequisite condition for the failure of similar water management institutions: high levels of polarization in wealth and property did not necessary lead to 'disastrous outcomes' with regard to flooding in seventeenth-century Holland, for example, despite strong exogenous pressures from storm surges (van Cruyningen 2014; 2013). Here, the functioning of the institutions was more robust, because of the presence and influence of a third party, the princely overlord or state, which directly counterbalanced the influence of large landholders. However, it could also be countered that the flooding that van Cruyningen describes in certain North Sea coastal areas in the seventeenth century was never going to be as precarious for human lives as those described by Soens for a much earlier period in Coastal Flanders, because rising inequality also went hand-in-hand with a conversion to more labor-extensive, capital intensive pastoral modes of farming, and thus had already led to mass depopulation from these areas (Soens 2015a). The degree of 'exposure' in much of rural Holland by the seventeenth century then is already much lower, and this also instructs us that the indicators for societal 'resilience' and 'vulnerability' are not always the same in every historical context (Brown, Burn, and Doherty 2015:13-14; also Curtis 2014).

At the meso-level, material inequality has also been shown to affect resilience through its impact on the functioning of communal associations. A main example from the pre-

industrial period is the ways in which the commons and other systems of communal farming coped with hazards and shocks, including soil exhaustion, erosion, sand drifts or floods. The general view of this role of the commons at present is a positive one; a switch from a 'negative' Malthusian story of the 'Tragedy of the Commons' (Hardin 1966) to a more 'positive' narrative over the commons has been established (Ostrom 1990). And a wealth of recent literature highlights the role of the commons throughout history and today as an effective institutional arrangement for establishing a sustainable balance between human economic activity, resource exploitation, and the sustainability of the natural environment (Beltrán Tapia 2015; Jansen, Ostrom, and Poteete 2010; Pieraccini et al. 2011). However, what scholars are now beginning to say in a more nuanced middle-ground is that the quality of the commons was and is never intrinsic or inevitable, but dependent on functioning within very historically specific social contexts (Curtis 2013b; Congost 2003:90). The commons were malleable institutions that could be adapted to suit changing circumstances. And one of those changing circumstances was the commons' embedded position within sharpening degrees of material inequality. Indeed, what scholars now say is that the commons by no means made pre-industrial societies 'more equitable', but in fact the distribution of benefits, rights and access often mirrored general inequalities seen in society at large (Curtis 2015; De Keyzer 2013; Lana 2008; Shaw-Taylor 2001). What could be said at most is that the commons fulfilled dual outcomes at the same time (Iriarte-Goñi 2002): giving the poor a small package of rights as a contribution to meager subsistence (as in the right to hunt, fish or take wood), yet at the same time was vehicle through which wealthier segments of society could consolidate and entrench their dominant position with 'better' communal rights (especially with regard to grazing). As economic inequalities stretched further, especially in the seventeenth- and eighteenth centuries, many of the commons in pre-industrial Europe were forced into dysfunction and unraveled: a number of cases have been presented where the

aftermath is environmental degradation in the form of assarting, soil erosion and sand drifts (van Zanden 1999; De Keyzer 2016; Pichard 2001). One of the crucial components in the effectiveness of the commons, as shown in sixteenth- and seventeenth-century England, was the principle of 'good neighborhood', meaning the maintenance of friendly relations between the neighbors involved in the use and management of the commons. This precept was taken from the recognition that, in order to make things work in a situation where the actions of one person would immediately impinge on others, one had to accept the mutual obligations and the restrictions on one's individual freedom this entailed. As noted by Angus Winchester (2013:324) this precept was likely maintained where all people felt treated just and equitably, and where all in principle had more equitable access to the resources. This precept inevitably came under stress in the eighteenth century as sharpened social differentiation eroded the previous equity of the system, and in turn providing detrimental to the functioning of the commons as a whole.

Elsewhere, scholars have shown that other institutions developed to increase resilience to shocks, such as the poor table or poor relief, were not monolithic entities but functioned differently by their embedded position within societies offering very particular characteristics. In fact, mirroring strong divergences at a regional level with regard to social structures and tenure, poor relief systems also had very regionally divergent levels of effectiveness (Lambrecht and Winter 2013; van Bavel and Rijpma 2015). The same poor table that helped combat harvest failures in one region, was less effective in another region not so far away. In the sixteenth-century Southern Low Countries, it was shown that poor relief systems in regions such as Inland Flanders and the Campine were much abler to offer relief against 'structural poverty' than Coastal Flanders (Masure and Van Onacker 2015). The reason being was that more people had the propensity to invest in the system in the first two mentioned areas, since the broader foundation of (more equitable) smallholding peasants also realized

that they at any moment could benefit from the system. The same phenomenon was seen in the Groningen province of the Northern Netherlands in the eighteenth century: smallholders and medium-sized farmers would each invest in the poor relief system as part of a 'collective insurance' system, and this system would only collapse in the nineteenth century under the weight of rapid increases in inequality and proletarianization (Paping 2013). This led in turn to the disintegration of an important source of institutional protection when faced with severe shocks such as the failure of the potato harvest in 1845-50 (Paping and Tassenaar 2007), something made worse by general trends from the early nineteenth century onwards in Northwest Europe toward declining real wages for agricultural laborers and a general inability to build financial reserves to combat unexpected shortfalls (French 2015).

The above-mentioned cases are illuminating because the institutional arrangements stay as a constant, and become shaped by changes in distribution of wealth and property. However, institutions can also change or be adapted over time as result of new developments in material inequality, in turn creating new effects on societal coping capacities and recoveries. The clearest examples of this are found in the period in which communal forms of property rights, and extensive commons, were completely broken up and privatized, especially in the eighteenth- and nineteenth centuries, often under stimuli from outside the region in question, for instance through the adoption of 'enlightenment' policies at the national government level. This privatization of rights to land can be found in the Campine area of the Southern Low Countries, where the abolishment of the commons was followed by a subsequent rise of destructive sand-drifts (De Keyzer 2016:21). In this case, it was not so much the distribution of rights between landowners that was changing as the actual institutional formulation of these rights. Yet another example of this can be given for seventeenth- and eighteenth-century Provence in France. Here the privatization of the commons due to huge debts of the local communities caused an intensive activity of land

reclamation in the commons, which had disruptive effects on the sustainability of the local ecosystems (Pichard 2001). In the Alentejo region of Southern Portugal, a similar process took place, with first the centralization and next the privatization of the commons, within a situation of sharply polarized distribution of property rights to land. What occurred was an accumulation of now private property rights, land clearance and environmental degradation and soil erosion (Rozo and Santos 2013).

Political pressure and material inequality often reinforced each other, in changing or eroding institutional arrangements. This can clearly be seen in the plains of the Tavoliere in Apulia in Southern Italy. From the fourteenth- to the eighteenth century, a system of commercialized pastoral farming and long-distance transhumance was perfectly aligned with a sustainable system maintaining what were some of the most fertile soils in the whole of Southern Europe, which was crystallized through a collective institution known as Royal Customhouse (*Reggia Dogana*). Such a system did not fit well with liberal and 'enlightened' thinkers of the late eighteenth century, however, and was deemed antithetical to new visions of 'modernity'. The dismantlement of the old collective institutions came at a price though: already wealthy feudal lords and barons, urban entrepreneurs, and property speculators bought up the land at private auction and installed new production strategies including the famous grain monoculture *latifundia*, making use of pools of agricultural laborers inhabiting what became almost 'company towns' (Snowden 1984). What followed was exhaustion of the environment, and ruination of the lands through nutrient deficiency and soil erosion (Colclough 2010; Curtis 2013a), and today agricultural yields are so low that there is a concomitant reliance on state subsidies. In these cases, then, institutions important for sustainable land use and resilient ecosystems were dismantled under broader pressures of sharpening economic and political inequalities.

The macro component of inequality and its impact on the coping strategies and recovery of pre-industrial societies often can be seen in the actions and decisions made at the supra state level, not always by actors and interest groups directly afflicted or affected by the hazard or shock in question. One good example is how the wealthy elites of Italian city-states strengthened their non-economic grip over markets after the Black Death, the epidemic outbreak of plague in the mid-fourteenth century. They could do so by building on their economic and political dominance within the towns, but even more so over the rural hinterlands; a dominance that was already established by the time plague struck. Such a demographic catastrophe, together with the simultaneous economic downturn, exacerbated the desire or even necessity for urban elites to use all their political and legal powers at their disposal to distort the operation of land, lease, labor and credit markets to their own interests. This was because these elites had built their position largely through the operation of these same factor markets. The decline of agriculture and industry, in particular the urban industries focused on the labor-intensive production of luxury textiles, which were hit hard by higher wages after the population decline of the Black Death, induced the Italian elites to apply coercion within the market to an even greater degree. Agricultural wage laborers in Tuscany were equally subjected to very tight restrictions, as the Florentine city council after the Black Death passed what probably were the most oppressive labor laws in Europe (Cohn 2007:468-73). Accordingly, Tuscan social and economic recovery after the shock of the Black Death was not particularly strong nor quick: leading to what some have described as the 'undevelopment of capitalism' (Emigh 2009) – a retardation of economic development from a previously strong starting position. And yet it must be made clear that the crucial factor was not the disastrous mortality rates of the Black Death itself, since such legislative responses were never inevitable (Cohn 2007). Strict labor laws in Italy, for example, contrasted with the increased labor mobility and freedoms invoked in the Low Countries in the wake of similar

population decline (van Bavel 2011; Lis and Soly 2012). This was because here the shock impacted upon a more economically and politically equitable society, at both the local and the state level, where ordinary people tended to benefit from the more favorable relationship of people to land and capital that was now created through the massive population losses, and thus saw their freedoms and wages grow.

The other main system at the macro level through which inequality may have operated, is the market. Sometimes the market has been presented as a panacea to cure society's ills, the premise of the more market the better (see the historiographical introduction to van Bavel 2016 for criticisms). In some literature, for example on famines in seventeenth-century France, the poor suffered terribly from harvest failures and price peaks, but this is not the authors' main concern since they focus on the basic fact that the market operated no less effectively in times of crisis as it did in 'normal' times (Chevet & Ó Gráda 2002). The market did not aggravate the poor's suffering, in other words, work which probably has resonance with another view that the market's reallocation of resources from wider areas ultimately allowed investment in protection for the vulnerable (Persson 1999).

We do not dispute that the market can operate as a network offering access to food, and sometimes in a very efficient way, but it is clear that the market was never a homogenous institution but operated more or less effectively when embedded within certain social contexts. A good example is the concept of the 'commercial-survival' economy developed by Erik Thoen for Inland Flanders in the Southern Low Countries from the late Middle Ages onwards. Here, the labor-intensive cultivation of tiny plots of cash crops, which were sold at urban markets, was an effective way of dealing with land fragmentation, population pressure and exogenous crises such as harvest failures (Thoen 2001). Rural producers were not 'coerced' into the market as Robert Brenner once suggested (1982), but used it as a survival strategy. Rural producers could do this because their relationships with commodity markets

were not skewed in an unequal fashion through extreme polarities in power and property, while the fact that they held their own mini-farms in free property gave them some independence. This situation sharply contrasted with that described above for late-medieval Central Italy, where rural producers generally had minimal economic independence.

The effect of this also depended on the organization of the markets themselves. While some markets were supported by an equitable framework and not dominated by powerful interest groups imposing institutional barriers and exclusive privileges (van Bavel et al. 2012; Dijkman 2011), and thus allowed widespread freedom and accessibility to the marketing structure, other markets were less attractive avenues for basing one's survival strategy upon: those markets with heavy monopolies, price controls, taxes, for example (Epstein 1991; 1993; Hoppenbrouwers & van Zanden 2001:22-6). Similar arguments have also been made regarding the effective use of capital markets in sixteenth-century Holland, with a recognition that their open institutional organization and favorable social context allowed capital markets to be employed by ordinary households to limit their exposure to exogenous shocks (hail, warfare, floods) and to take the place of having scattered plots of land or hoarding as coping strategies seen commonly elsewhere (De Moor and Zuijderduijn 2013). Again, peasants here were able to do so since they possessed the landownership that could be mortgaged or used as a security for their dealings in the capital market, while the mainly landless countrymen in Central Italy could not (van Bavel 2016; Emigh 2009). The protection of the market and state in combination could also be differential according to social groups of the same society: for example, urban governments in times of harvest failures sometimes looked to impose monopolies and staples to ensure the supply of food for cities, deemed more important, to the detriment of 'non-citizens' in the countryside (Alfani 2011; Curtis 2012). State and market-based solutions to sharp shocks were never inevitably 'the best way forward', but had their

effectiveness determined by their embedded position within conditions of prior existing material and political inequalities.

3. DEALING WITH INEQUALITY AND FAILING INSTITUTIONS AT THE MICRO LEVEL

The above section employed a disparate array of studies to show that material inequality often helped shape and mold pre-industrial institutions, which had knock-on effects for how societies could cope with hazards and shocks. These 'indirect' institutional elements of the relationship between inequality and vulnerability were perhaps as, or even more, important than the direct links between the concepts. Although inequality perhaps reduced the capacity of pre-industrial institutions to help and protect those afflicted by environmental hazards, however, that does not mean that people were not able to use their own agency to establish way around this problem, often through informal relationships and negotiations with other individuals at the micro level.

Generally speaking, scholars have hypothesized that material inequality has a detrimental impact on societal coping capacities by way of its effect on trust. Certainly there are indications from laboratory games and natural experiments that there is a connection between the two. Theoretical models for societal vulnerability tend to emphasize social networks or social capital and trust (Aldrich 2012), with empirical research suggesting that households in communities with more social capital and effective support networks were better able to negotiate shocks (Carter & Maluccio 2003:1147; Klinenberg 2006:689), though this is difficult to investigate in historical settings because of the limitations of our sources. That which has been produced tends to suggest that inequality often in turn leads to a lack of trust, which then undermines successful cooperation (Bankoff 2007; Balard et al. 2006; the

opposite originally stated in Olson 1985 [1965]: 43-52). For example, it has recently been suggested that the lack of trust said to be characteristic of social and economic relations in Southern Italy may stem from endemic and sharp inequalities perpetuated historically over the long term (Gucciardo 2014). Such economic inequalities need not even be 'real' to impact on cooperation either: even 'perceived' inequalities or perceived lack of 'fairness' have been shown to have reduced effective operation of collective institutions (Anderies et al. 2013; DeCaro, Janssen, and Lee 2015). What was perceived to be unfair, of course, was not always inequitable (Levi 2003).

Much of this association between inequality, trust and resilience then is connected at the micro level to individual relationships between people. However, evidence has also been provided by a number of scholars in recent years, which show that even in conditions of sharp economic inequalities, where the institutional arrangements were not necessarily favorable for the poorer segments of society to escape or avoid the harshest effects of the crises, people instead looked to secure their position through informal arrangements – effectively bypassing the compromised institutions. During harvest failures such as those seen in 1315-22 in Northwest Europe, land markets often became volatile, and skewed, temporarily at least, to the advantage of a minority of rich tenants (Davies and Kissock 2004; Jordan 1996:91). Given that the famine occurred in conditions of extreme social polarization in landholding and population pressure, scholars have tended to offer the view that factor markets consolidated and entrenched the position of the wealthy (Bekar and Reed 2013; Campbell 2009; Galloway 1988), and provoked 'tenant on tenant' extortion (Campbell 2005). And yet trust has been, more generally, invoked as an important factor in understanding regional differences in coping capacity at this time. During the Great Famine of 1315-22, 'generalized trust' that was characteristic of trade in 'normal' years between strangers was broken, and accordingly, buyers and sellers had to switch to alternative, reliable 'particularized trust', limited to small

groups of local communities based on personal networks of reputation – thus serving to heighten communal sociability, even though it came at the expense of discrimination to perceived 'outsiders' (Slavin 2014; more generally on this phenomenon; Ogilvie 2011). During some of the most severe crises such as harvest failures, scholars are beginning to show that ordinary people such as rural peasants could rely on a combination of reciprocal networks and relationships at the local level – being offered credit, insurance, and capital to ease the burden, despite the fact these were not 'equal' relationships but 'vertical' connections ascending and descending the social hierarchy (Lambrecht and Vanhaute 2011). Just like commodity markets, factor markets took their essential importance and characteristics from very particular social conditions at regional and local levels (Van Onacker 2013). Work on credit, in particular, has now begun to show that even in these times of terrible stress, where wealthier creditors could take advantage of less prosperous peers, not all creditor-debtor relations within rural communities were aggressively uni-directional (Briggs 2009:151-5, 190-3; Schofield 2008:46-8; Soens and Thoen 2009).

So although intuitively we might think that greater material equality brought with it more secure kinds of reciprocal relationships within communities, scholars have shown that even in regions with sharp polarities, arrangements could be made between members of different social groups as an internal hierarchical logic to withstand periods of stress (Vermoesen 2010). Although operating in conditions of sharp economic inequality, some lease arrangements even gave tenant farmers a more privileged advantage over 'owner-occupier' farmers in risk-prone areas, depending on the propensity for intervention by the landlords – offering rent concessions or assuming tax or water management burdens (Soens 2015b:15). In the far north of the Low Countries, in the Oldambt region of Groningen, smallholding peasants lost their property in the wake of the terrible flooding of the Dollard Sea in 1509, often to acquisitive urban investors, and yet this masked basic continuities in

local agriculture and economy – the same peasants were to be found only a number of years later holding similar amounts of land in long-term hereditary lease contracts (Curtis 2016). Recent research has emphasized that even in conditions of sharp economic polarity, tenants were allowed to fall into rent arrears after severe shocks, but this did not necessarily equate to 'structural debt' nor 'debt dependence' (Ogilvie 2014:272-4; Küpker, Maegraith, and Ogilvie 2012). And in a similar way, work on incessant warfare and subsistence crises in the Basse-Meuse region of the Spanish Netherlands have disputed the inevitable association with peasant indebtedness and expropriation (Gutmann 1980:108-9).

Economic inequality thus often shaped institutions detrimentally in their function as protective devices for societies often hazards and shocks, but we have to also acknowledge that this was not an unescapable universal law: individuals and actors could operate around the restrictive institutional options – but most likely in cases where wealthier and more powerful actors were 'willing' or had an 'incentive' to develop reciprocal networks. In one case described for the plains of early modern Lombardy this much was clear: although control over the commons was dependent on landownership, these wealthier families 'did not seek to further their own interests [directly], but rather the preservation of the community, as this was their greatest asset', keeping in place the people needed to pay rents and making sure people did not have to resort to taking loans from outsiders, maintaining the effective functioning of the collective institution and keeping municipal assets intact (Di Tullio 2014:152). Prestige and status could simply come from protecting the community's integrity and resilience, and great efforts were made to prevent communal assets being lost to outsiders. In other instances, the incentive for wealthier people to help out their poorer neighbors was connected to an anticipated scarcity of labor. This economic logic did not work in places such as the aforementioned Coastal Flanders in the late-medieval period, where labor was abundant and

agriculture less labor intensive. Accordingly, both formal and informal relief systems here were scarce and redundant labor was forced to migrate elsewhere in search of a living.

Inequality then often led to a compromised set of institutions, less able to protect members of a community or offer paths of recovery, and yet people still were able to negotiate this 'problem' by conducting their own arrangements, often at a reciprocal and individual level. However, the question why certain people in inequitable societies were able and willing to conduct negotiation and reciprocal behavior on a more informal level after shocks and hazards, while other people in similarly inequitable societies were much less inclined to do so, brings us back round once again to the issue of inequality, and the precise social context and ways in which this is manifested. If we refer to the cases above, we can see clearly that the wealth and power of the elite groups in these societies was based on the maintenance and continued perpetuation of the community as a status quo: satisfying the principles of conservation, defense and reproduction (Ogilvie 2011). Proximity and a direct interest in the sustainability of the society in question played a significant role. The logic behind informal negotiations to protect people from shocks was that the elite segments of society were embedded within the communities they sought to protect; even often physically resident within these communities. In a way, it is the same logic which maintained the power of manorial lords in the high and late Middle Ages: their power and wealth dependent on securing a consistent base of extra-economic benefits from stable and persistent communities. Inequitable distributions of wealth and power in pre-industrial societies was not always manifested and demonstrated in these ways, however; and the capacity or rather incentives for wealthier and more powerful segments of society to engage in reciprocal agreements after shocks was dependent on whether the source of their wealth and power was held at a local level, which they were physically and socially a part of, or based on economic exploitation

from a distance with all kinds of divorcement from the productive process and the internal hierarchical logic of the actual communities themselves.

4. CONCLUSION

It is now well established that both coping with hazards and shocks and recovery from disasters have a social dimension: different societies are better equipped to deal with certain environmental shocks. Recent literature has begun to assess the extent to which economic inequality has made some societies less able to cope when compared to more equitable ones. However, despite broad and generalizable correlations between inequality and vulnerability, little has been achieved on discerning the precise causal mechanisms involved. Frequently it has been difficult to assess whether vulnerability is exacerbated by inequality, or is just simply a function of poverty – and in turn has led to poverty and vulnerability being used almost interchangeably as synonyms. When surveying the vast body of literature on disasters, we identified three main ways in which inequality is often seen to have increased the likelihood of failures in coping with severe shocks and hazards: (a) the absence of resource buffers, (b), settlement in precarious areas, and (c) exposure to the vicissitudes of the market. These 3 main ways have some inconsistencies, however, and do not by themselves offer an explanation, as is evidenced by the fact that similarly poor or inequitable societies still often display divergent levels of vulnerability when faced with environmental shocks. We suggest that part of the reason may be that scholars have paid less attention to the 'indirect' effects of material inequality: that is on the functioning of institutions. By this we have tried to move away from those institutions specifically formulated on account of a hazard or shock occurring, but on the whole of the 'institutional toolkit' of a society: institutions that are

important for hazard and disaster outcomes, but exist regardless of whether a shock or disaster occurs or not.

Overall we have used the 'laboratory' of the pre-industrial period in Western Europe, to help explore and explain more clearly, with regard for long-run effects, how inequality has helped shape and mold the essential characteristics of institutions. In that sense, institutions are not 'blank slates' or 'homogenous', but receive their characteristics via their embedded position within differential social contexts. Differing levels of economic inequality, therefore, make up an important component of that social context in which institutions operate. Most of the recent studies we cite, whether the authors are conscious of this or not, tend to show how various institutions end up failing to protect societies effectively in the face of hazards or shocks, or allow effective or full recoveries in the event of disasters, because the economic inequality in which they are embedded means the institutions become skewed to the interests of those with wealth, resources and property. That is not to say that the inequality-institutions-vulnerability 'nexus' is, or has ever been, a universal law or principle. Economic inequality rendered some institutions as redundant in offering comprehensive protection functions in the pre-industrial period, when faced with hazards and shocks, but there is evidence that people also tried to circumvent these restrictive institutional frameworks – relying on building relationships with specific people, often based on reciprocity. The incentive and likelihood in which people engaged in these informal networks, however, still often depended on the precise social context in which inequality was established and how wealth and power was able actually able to manifest itself.

Another significant insight from the preceding is that the inequality-institutions nexus has a particularly negative effect on vulnerability when cause and effects are found at different scale levels that are no longer connected. For example, we could point to the interaction of political institutional changes at the state level interacting with economic

inequality at the local level (observed with the commons in the eighteenth century), or the growing economic inequality at the regional level eroding the functioning of institutions at the meso level (observed with the water management boards). Another example is growing economic inequality at the meso level acting detrimentally upon the necessary trust and cooperation to deal with hazards at the micro level. It appears that only when inequality, institutions, cause and effect are all connected within the exact same scale level, it may then be more feasible to counteract the possible negative effects on societal resilience.

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