

Into the frontier: medieval land reclamation and the creation of new societies. Comparing Holland and the Po Valley, 800-1500

Daniel R. Curtis & Michele Campopiano

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Summary

One problem with scholarly research into land reclamation has been the tendency to overly focus on two questions - how and why did it happen? It has led to an over-emphasis on technological innovation and demographic and commercial pressures. Furthermore, it has obscured a far more fascinating and significant question – what were the social consequences of pre-industrial land reclamation? What kinds of societies emerged as a result of land reclamation? These questions are addressed through a comparative historical analysis of two cases of land reclamation in the medieval period: the peat lands of Holland (the Netherlands) and the Po Valley plains (Northern Italy). In the paper it is shown that medieval land reclamation led to the emergence of two very divergent societies, characterised by a number of different configurations; (a) power and property structure, (b) modes of exploitation, (c) economic portfolios, and (d) commodity markets. In the final section, a further question is considered. To what extent was either of these societies inherently better configured to negate the potentially disastrous effects of land reclamation on the natural environment?

Contact

Daniel R. Curtis, Utrecht University, Research Institute for History and Culture
d.r.curtis@uu.nl

Land reclamation or colonisation is the process by which people bring ‘unused’ or ‘waste’ land into ‘productive’ use.¹ In the pre-industrial era, this meant the assarting of woodlands, the clearing of bushes, the development of irrigation systems, or the drainage of wetlands, in order to create new land for cultivation and settlement. Pre-industrial land reclamation now has a long historiography (particularly for Europe), but the research agenda is somewhat problematic. Scholars have focused on two questions – how and why did it happen, which has meant that research has often approached reclamation through the frameworks of technological innovation,² demographic pressure,³ or market integration.⁴

It is not in the objectives of this paper to discuss any potential flaws in these frameworks. Instead it shall simply be said that this focus on the ‘hows’ and ‘whys’ of colonisation has obscured research on an equally fascinating question: what were the consequences of pre-industrial land reclamation? To what extent did the colonisation of new lands and territories create structural changes to the social order in the pre-industrial period? Put simply, what kinds of societies emerged as a result of land reclamation? Furthermore, can we begin to assess which of these new societies were configured for success (able to give the greatest amount of prosperity and well-being to the largest section of its inhabitants), and which were ones were bound for stagnation or failure? These questions are addressed by recourse to comparative historical analysis of two cases of land reclamation across a large part of the medieval period (c. 800- c.1500): the peat lands of Holland (the Netherlands) and the plains of the Po Valley (Northern Italy). Through the course of the paper it is shown that in both of these areas, medieval land reclamation led to the emergence of two very divergent societies, characterised by a number of different constellations in (a) power

¹ Inverted commas are used because it is well-known that even ‘waste’ lands had productive use for pre-industrial societies, as explained in the excellent R. Hoffman, ‘Economic development and aquatic ecosystems in medieval Europe’, *American Historical Review*, 101.3 (1996), 631-69.

² See the essays contained in P. Squatriti (ed.), *Working with water in medieval Europe. Technology and resource-use* (Leiden, 2000). Also R. Magnusson, *Water technology in the Middle Ages: cities, monasteries, and waterworks after the Roman Empire* (Baltimore, 2001); T. Glick, ‘Hydraulic technology in Al-Andalus’, in S. Jayyusi (ed.), *The legacy of Muslim Spain* (Leiden, 1992), 974-86; *Irrigation and society in medieval Valencia* (Cambridge MA, 1970); P. van Dam, ‘Ecological challenges, technological innovations. The modernization of sluice building in Holland, 1300-1600’, *Technology & Culture*, 43.3 (2002), 32-45.

³ V. Fumagalli, ‘Colonizzazione e insediamenti agricoli nell’Occidente altomedioevale: la Valle Padana’, *Quaderni Storici*, 14 (1970), 319-38; P. Squatriti, *Water and society in early medieval Italy, AD 400-1000* (New York, 1998); H. Hallam, ‘Population density in medieval Fenland’, *Economic History Review*, 14.1 (1961), 78-9; J. Zhang, ‘Environment, market, and peasant choice: the ecological relationships in the Jiangnan plain in the Qing and the Republic’, *Modern China*, 32.1 (2006), 34-5; E. Millar & J. Hatcher, *Medieval England: rural society and economic change, 1086-1348* (London, 1978), 53-63.

⁴ M. Wagstaff & E. Frangakis-Syrett, ‘The port of Patras in the second Ottoman period. Economy, demography and settlements, c. 1700-1830’, *Revue de Monde Musulman et de la Méditerranée*, 66 (1992), 89-91; J. Richards, *The unending frontier: an environmental history of the early modern World* (Berkeley, 2003), 129. Also in development economics literature; L. Pendleton & L. Howe, ‘Market integration, development, and smallholder forest clearance’, *Land Economics*, 78.1 (2002), 1-19; A. Angelsen ‘Agricultural expansion and deforestation: modeling the impact of population, market forces, and property rights’, *Journal of Development Economics*, 58.1 (1999), 185-218.

and property structure, (b) modes of exploitation, (c) economic portfolios, and (d) commodity markets. In the final section, a further question is considered: to what extent was either of these societies better set up to negate the potentially disastrous effects of land reclamation on the natural environment? A wealth of recent literature has made the point that actually ‘natural disasters’ have their roots in human decision-making.⁵ Following that strand of thinking, this paper considers to what extent environmental degradation can be avoided through the arrangement of societal constellations, rather than the mere application of technology or finance.

I: The context prior to reclamation in the Po Valley and Holland

Medieval reclamation of the Po Valley began earlier than in the marshes of Holland; written and archaeological sources suggest forest clearance had already begun in the eighth century in the plains of Northern Italy, while the reclamation of the Holland peat lands only took off after 900.⁶ Prior to this reclamation, there were also slight differences in the extent to which the two areas had been exploited previously. Up until the tenth century, the Holland marshes were almost entirely an inhospitable wasteland, where barely any cultivation or settlement was attempted or desirable.⁷ Roman and early-medieval settlement and cultivation had remained further inland, for example in the Central River Area, where the soil was more conducive to the emergence of arable farming and manors.⁸ There was a level of early-medieval Frisian settlement in areas now comprising parts of North Holland (West Frisia), but this paper only focuses on the later settlement of the marsh lands in South Holland.⁹

⁵ T. Steinberg, *Acts of God: the unnatural history of natural disaster in America* (Oxford, 2006); J. Diamond, *Collapse: how societies choose to fail or succeed* (New York, 2005); P. Blaikie, T. Canon, I. Davis & B. Winser, *At risk: people's vulnerability and disasters* (London, 1994); C. Pfister & C. Mauch, *Natural disasters, cultural responses: case studies towards a global environmental history* (Lexington, 2009); T. Cannon, ‘Vulnerability analysis and the explanation of ‘natural’ disasters’, in A. Varley (ed.), *Disasters, development and environment* (Chichester, 1994), 13-31; G. Bankoff, G. Frerks & D. Hilhorst (eds.), *Mapping vulnerability: disasters, development and people* (London, 2004); G. Bankoff, ‘Constructing vulnerability: the historical, natural and social generation of flooding in metropolitan Manila’, *Disasters*, 27 (2003), 224-38; C. Ballard, ‘Drought and economic distress’, *Journal of Interdisciplinary History*, 17 (1986), 359-78. Also the classic, A. Sen, *Poverty and Famines. An Essay on Entitlement and Deprivation* (Oxford, 1988).

⁶ A chronology outlined in W. TeBrake, *Medieval frontier: culture and ecology in Rijnland* (College Station, 1985).

⁷ B. van Bavel, *Manors and markets: economy and society in the Low Countries, 500-1600* (Oxford, 2010), 40.

⁸ P. Henderikx, *De beneden-delta van Rijn en Maas: landschap en bewoning van de Romeinse tijd tot ca. 1000* (Hilversum, 1987), 81-114.

⁹ On the different settlement and colonisation trajectory of the areas of North Holland, see W. TeBrake, ‘Ecology and economy in early medieval Frisia’, *Viator*, 9 (1978), 1-30; J. Besteman, ‘North Holland AD 400-1200: turning tide or tide turned?’, in J. Besteman, J. Bos & H. Heidinga (eds.), *Medieval archaeology in the Netherlands. Studies presented to H.H. van Regeteren Altena* (Assen, 1990), 91-120; J. Bos, ‘The bog area of North Holland after AD 1000: crises and opportunities’, in Besteman et al (eds.), *Medieval archaeology in the Netherlands*, 121-32; M. Tump, ‘Boerenhuizen in het veen. Een onderzoek naar agrarische woningen in het veengebied van de provincies Noord- en Zuid-Holland en Friesland ten

The only habitation in South Holland in the Carolingian period likely limited itself to the peat lands behind the sandy ridges and the clay-soils formed along the river mouths.¹⁰ Thus, the Holland peat reclamations which began from the tenth century were made **almost** entirely on a 'blank canvas'. The Po Valley, however, had known more intensive exploitation, including arable farming during the Roman period.¹¹ Indeed, investments were made into major hydraulic works needed to control the flow of water in the Po Valley and to protect the arable lands.¹² The State had a vested interest in this because it looked to maintain and widen its tax base; therefore employing coercive measures on the peasantry in order to use their labour for water management tasks.¹³ Even after the fall of Western Roman Empire, Gothic Kings still pursued a policy of extending the arable land - probably linked with the continuity of some late Roman social structures in the Gothic Kingdom.¹⁴

Nonetheless, eventually the transition from the Roman into the early medieval period brought with it a collapse of the hydrological systems in the Po Valley, and consequently a retraction in the cultivable and settled area.¹⁵ The Fosse Augusta, a canal which had been dug to transport water from the Po River into the lagoon of Ravenna, ceased to be navigable by the fifth or sixth century.¹⁶ The Po Valley experienced widespread reforestation and the re-establishment of marshes,¹⁷ which created an economy reliant on the pasture of pigs and communities based around hunting and fishing in the marshes – often exploited through systems of common rights.¹⁸ All major attempts to introduce land clearance policies or dike

tijde van de Middeleeuwse 'Grote Ontginning' in de 10de tot 13de eeuw' (unpublished PhD thesis, University of Amsterdam, 2004).

¹⁰ W. van Es, H. Sarfatij & P. Woltering (red.), *Archeologie in Nederland. De rijkdom van het bodemarchief* (Amersfoort, 1988), 95.

¹¹ A. Zarpellon, *Verona e l'agro veronese in età romana* (Verona, 1954), 98-9; F. Sartori, 'Verona romana. Storia politica, economica, amministrativa', in *Verona e il suo territorio*, i (Verona, 1960), 223.

¹² Squatriti, *Water*, 68-9.

¹³ P. Leveau, 'Mentalité économique et grands travaux hydrauliques: le drainage du lac Fucin. Aux origines d'un modèle', *Annales ESC*, 48 (1993), 3.

¹⁴ Squatriti, *Water*, 6.

¹⁵ V. Fumagalli, 'L'agricoltura durante il medioevo. La conquista del suolo', in A. Berselli (ed.), *Storia dell'Emilia Romagna*, i (Imola, 1976), 465-6. Although some caution in simply linking decline in Roman political structures with hydrological collapse is demanded in P. Squatriti, 'The floods of 589 and climate change at the beginning of the Middle Ages: an Italian microhistory', *Speculum*, 85 (2010), 799-826.

¹⁶ P. Fabbri, *Il Padenna: l'uomo e le acque nel ravennate dall'antichità al medioevo* (Ravenna, 1975), 16.

¹⁷ Geological and archaeological evidence is found in M. Marchetti, 'Environmental changes in the central Po Plain (Northern Italy) due to fluvial modifications and anthropogenic activities', *Geomorphology*, 44 (2002), 367; D. Castaldini, 'Evoluzione della rete idrografica centropadana in epoca protostorica e storica', in *Insedimenti e viabilità nell'alto ferrarese dall'Età Romana al Medioevo* (Ferrara, 1989), 115-34; C. Ravazzi, 'Analisi polliniche del riempimento del fossato. Dati paleoecologici sulle variazioni ambientali', in M. Bernabó Brea & M. Cremaschi (eds.), *La terramara di Poviglio* (Reggio Emilia, 1989), 31-6; A. Veggiani, 'Degrado ambientale e dissesti idrogeologici indotti dal deterioramento climatico nell'Alto medioevo in Italia. I casi riminesi', *Studi Romagnoli*, 34 (1983), 123-46.

¹⁸ M. Montanari, *L'alimentazione Contadina nell'alto Medioevo* (Naples, 1979), 34-5, 48-9, 267-70. Also P. Racine, 'Poteri medievali e percorsi fluviali nell'Italia padana', *Quaderni Storici*, 61 (1986), 9-32.

building came to an end,¹⁹ and the maintenance of water management systems was made all the more difficult with the severe population decline that accompanied the breakdown of the Roman political and economic structures.²⁰ Many settled sites were abandoned.²¹ Thus, although the Po Valley had known a previous history of more intensive exploitation than the Holland marshes, the retraction in cultivation in the early Middle Ages meant that both areas c. 800 were characterised by large quantities of wasteland – allowing for a ‘full transformation’ of the landscape through reclamation. Nonetheless, we must at least acknowledge the fact that there were some structural differences between the Po Valley and Holland before the great reclamation phase starting in the ninth and tenth centuries: it is simply argued in this paper that the differences were strengthened, enhanced and made more significant as a result of the reclamation process.

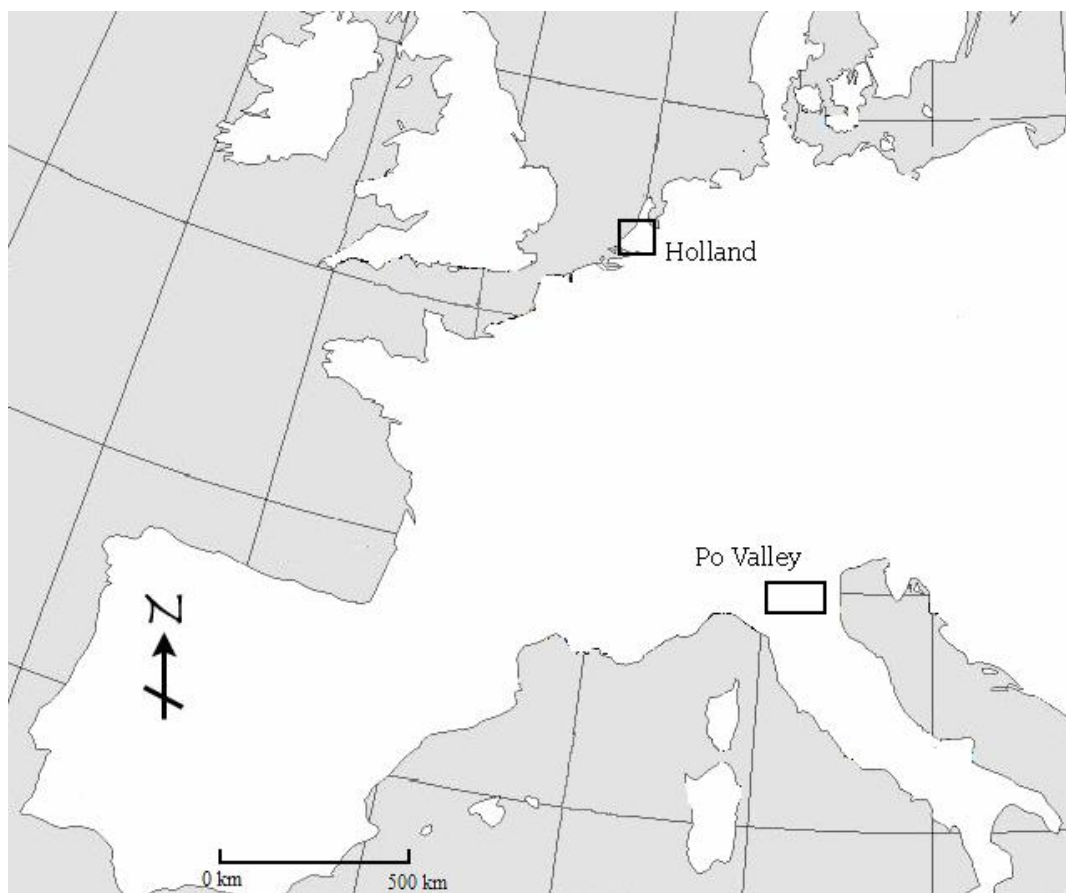


Figure 1. Western Europe with locations of Po Valley and Holland

¹⁹ R. Magnusson & P. Squatriti, ‘The technologies of water in medieval Italy’, in Squatriti (ed.), *Working with water*, 217-66.

²⁰ G. Pinto, ‘Dalla tarda antichità alla metà del XVI secolo’, in L. Del Pantà, M. Livi Bacci, G. Pinto & E. Sonnino (eds.), *La popolazione italiana dal Medioevo a oggi* (Rome, 1996), 27. Although there is some dispute over the extent of population decline in the early Middle Ages. See E. Lo Cascio & P. Malanima, ‘Cycles and stability. Italian population before the demographic transition (225 B.C. – A.D. 1900)’, *Rivista di Storia Economica*, 21 (2005), 12-6.

²¹ F. Saggioro, ‘Late antique settlement on the plain of Verona’, in W. Bowden, L. Lavan & C. Machado (eds.), *Recent research on the late antique countryside* (Leiden, 2004), 509-25.

II: Medieval reclamation and the emergence of two divergent societies, c.800-1500

A: Power and property structure

The reclamation of the peat lands of Holland from c. 900 onwards led to the emergence of a highly free and relatively equitable society; especially when placed against the medieval Po Valley. In fact, the reclamation context led Holland to become one of the most egalitarian societies within medieval Western Europe. One of the realities of land colonisation was that it was a difficult and arduous process that required a substantial amount of labour. In order to organise that labour, elite interest groups interested in land reclamation granted favourable concessions and freedoms to colonising farmers and peasants. In the Low Countries, territorial lords such as the Bishop of Utrecht or the Count of Flanders managed to usurp complete regalian rights over vast expanses of wasteland after the collapse of the Carolingian Empire in the tenth century.²² Rather than reclaiming these waste lands to economically exploit them directly, territorial lords looked to colonise these new lands in order to broaden their territorial area, thereby expanding their tax base.²³

The consequences of this process were significant for large parts of Holland from the tenth century onwards. Both the Bishop of Utrecht and the Count of Holland lured colonists to the scarcely-inhabited marshes by offering concessions such as personal freedoms from serfdom and full peasant property rights to the land.²⁴ The rural people that reclaimed the Holland peat lands between the tenth and fourteenth centuries never knew of the manor or signorial dues.²⁵ In fact, many of the colonists in the Holland peat-lands originated from heavily manorialised societies and were looking to escape the constrictions of serfdom, further inland (for example in the Dutch river area).²⁶ Each colonist received a standardised strip of land of his own but they also enjoyed favourable jurisdictions over the waste (known as '*recht*

²² B. Lyon, 'Medieval real estate developments and freedom', *American Historical Review*, 63.1 (1957), 51; E. Thoen, 'The Count, the countryside and the economic development of the towns in Flanders from the eleventh to the thirteenth century. Some provisional remarks', in E. Aerts et al. (eds.), *Studia historica oeconomica: liber amicorum Herman van der Wee* (Louvain, 1993), 260-4.

²³ The proliferation of castles on the borders of South Holland are testament to territorial concern; see R. de Graaf, 'De kastelen van Floris V als instrumenten van zijn machtspolitiek', in J. Besteman, J. Bos & H. Heidinga (eds.), *Wi Florens. De Hollandse graaf Floris V in de samenleving van de dertiende eeuw* (Utrecht, 1996), 154-72.

²⁴ H. van der Linden, *De cope: bijdrage tot de rechtsgeschiedenis van de openlegging der Hollands-Utrechtse laagvlakte* (Assen, 1956), 160-82; 'Het platteland in het Noordwesten met de nadruk op de occupatie circa 1000-1300', *Algemene Geschiedenis der Nederlanden*, 2 (1982), 48-82; P. Henderikx, 'Die mittelalterliche Kultivierung der Moore im Rhein-Maas-Delta (10.-13. Jahrhundert)', *Siedlungsforschung*, 7 (1989), 67-87.

²⁵ J. de Vries & A. van der Woude, *The first modern economy: success, failure and perseverance of the Dutch economy, 1500-1815* (Cambridge, 1997), 159-65.

²⁶ van Bavel, *Manors and markets*, 86-7.

van opstrek') which allowed all colonists to continue to reclaim as much of the marshes as they wanted by extending their linear plots, until they met up with a natural boundary or were stopped by someone else's property.²⁷ The same process can be traced for much of the Frisian and German coastal marshes too.²⁸ As a result of the reclamation of the marshes, the societies of medieval Holland knew great personal freedoms and secure rights to their lands with few onerous obligations.

Through this free and equitable colonisation context, there also developed a peasant society characterised by highly egalitarian distribution of property. Landownership was small-scale and in the hands of peasant farmers themselves, with agriculture in the initial phases highly unspecialised.²⁹ Aristocratic landownership was minimal, perhaps only 5-10% of the total area in the late Middle Ages.³⁰ This free peasant property structure remained in place from the moment that reclamation took off up to the sixteenth century.³¹ Even by 1560 farms of more than 20 hectares were scarce.³² It was only in the late sixteenth century that peasant landownership gave way to urban capital and urban accumulation of land in the countryside.³³ After 1500, the free peasant character of Holland was lost through urban expropriation of rural lands, and disappeared further through a new wave of polder reclamations initiated through urban capital investment from powerful institutions and wealthy burgers.³⁴

²⁷ J. de Vries, *The Dutch rural economy in the Golden Age, 1500-1700* (New Haven, 1974), 56.

²⁸ K. Brandt, 'Die mittelalterliche Siedlungsentwicklung in der Marsch von Butjadingen (Landkreis Wesermarsch). Ergebnisse archaologischer Untersuchungen', *Siedlungsforschung*, 2 (1984), 123-46; J. Ey, 'Late medieval and early-modern reclamation of marsh lands: the role of the state and of village communities. A case-study of the north-western Weser-marshes under the counts of Oldenburg', in H.-J. Nitz (ed.), *The medieval and early-modern rural landscape of Europe under the impact of the commercial economy* (Göttingen, 1987), 214-5; P. Hoppenbrouwers, 'Grondgebruik en agrarische bedrijfsstructuur in het Oldambt na de vroegste inpolderingen (ca.1630-ca.1720)', in J. Elerie & P. Hoppenbrouwers (eds.), *Het Oldambt. Nieuw visies op geschiedenis en actueel problemen*, ii (Groningen, 1991), 73-95; F. Petri, 'Entstehung und Verbreitung der niederländischen Marschenkolonisation in Europa', in W. Schlesinger (ed.), *Die deutsche Ostsiedlung des Mittelalters* (Sigmaringen, 1975), 695-754.

²⁹ de Vries, *The Dutch rural economy*, 49-56, 62-73; B. van Bavel, 'Rural development and landownership in Holland, c.1400-1650', in O. Gelderblom (ed.), *The political economy of the Dutch Republic* (Farnham, 2009), 167-96.

³⁰ A. Janse, *Ridderschap in Holland. Portret van een adellijke elite in de late Middeleeuwen* (Hilversum, 2001), 129-39. On the weaknesses of the Holland aristocracy, see H. van Nierop, 'Het Quade Regiment: de Hollandse edelen als ambachtsheren, 1490-1560', *Tijdschrift voor Geschiedenis*, 93 (1980), 433, 443; J. Dewald, *The European nobility, 1400-1800* (Cambridge, 1996), 65-7, 76-7.

³¹ P. Hoppenbrouwers, 'Mapping an unexplored field. The Brenner debate and the case of Holland', in P. Hoppenbrouwers & J.L. van Zanden (eds.), *Peasants into farmers? The transformation of rural economy and society in the Low Countries (Middle Ages-19th Century) in the light of the Brenner Debate* (Turnhout, 2001), 41-66.

³² B. van Bavel, P. van Cruyningen & E. Thoen, 'The Low Countries, 1000-1750', in B. van Bavel & R. Hoyle (eds.), *Social relations, property and power. Rural economy and society in north-western Europe, 500-2000* (Turnhout, 2010), 183.

³³ By 1560 urban landownership in Holland comprised around 30-35% of the total area as calculated in van Bavel, 'Rural development', 181-2. Supported by estimates in P. Hoppenbrouwers, 'Van waterland tot stedenland: de hollandse economie, ca. 975-ca. 1570', in T. de Nijs & E. Beukers (eds.), *Geschiedenis van Holland*, i (Hilversum, 2002), 146.

³⁴ See the polders described in C. Baars, *De geschiedenis van de landbouw in de Beijerland* (Wageningen, 1973), 81-7, 111-7; H. Jonker, *Hoofdstukken uit de geschiedenis van de polder Wieringerwaard 1610-1960* (Amsterdam, 1960), 1-3; T. Stol, 'De leeuw en zijn longen. Waterbeheersing, landaanwinning en landverlies', in de Nijs & Beukers (eds.), *Geschiedenis van Holland*, ii, 111; H. Danner, *Van water tot land, van land tot water. Verwikkelingen bij de indijking van de Beemster* (Edam, 1987), 6-18; S.

Probably to some extent this transition from small-peasant farming society to one more dominated by urban elite investment and landownership in the sixteenth century was facilitated by the favourable institutional framework and flexible land markets which emerged through the reclamation context. In many parts of the pre-industrial world, the transfer of land was more complicated and hindered by overlapping signorial, ecclesiastical, communal, and kin-based rights and claims.³⁵ In medieval Western Europe, it would be incorrect to even speak of 'landownership': ownership was not over 'land' per se but a complicated bundle of rights and obligations associated with the land.³⁶ Tallages, recognition fees, and obligations blocked the transfer of land – particularly in societies slow to cast off the shackles of feudalism.³⁷ The lack of a feudal tradition from the point of reclamation in Holland favoured the easy transfer of land when urban institutions and burghers began to expropriate peasant holdings in the sixteenth century.³⁸ Taxes on the sale of land did not exist in Holland, and any that were implemented (such a 'Twentieth Penny' tax on immovable goods transfer in 1569) were abolished quickly after complaints.³⁹

In contrast to the situation in medieval Holland, the reclamation of the Po Valley was carried out through a context of coercion and repression, and furthermore, the reclamation process perpetuated and crystallised coercive structures. Reclamation also contributed to widespread social and economic polarisation. The process of bringing more land into cultivation in the Po Valley can be divided into three clear phases. First, reclamation initiated under a context of the earliest manors and large landownership from the late eighth century, second, reclamation connected to the crystallisation of signorial lordships between the tenth and twelfth centuries, and finally, land clearances performed under a context of coercive urban jurisdiction in the late Middle Ages.

Earliest evidence of attempts to clear the forests and drain the wetlands are mentioned in charters from the late eighth century, for example, in the area of Carpi

Ciriaco, *Acque e agricoltura. Venezia, l'Olanda e la bonifica europea in Età Moderna* (Milan, 1994), 208-42; M. van Tielhof & P. van Dam, *Waterstaat in stedenland. Het hoogheemraadschap van Rijnland voor 1857* (Utrecht, 2006), 152-79.

³⁵ For the fluid land market of medieval Holland in a Western European perspective, see B. van Bavel, 'The land market in the North Sea area in a comparative perspective, 13th-18th centuries', in S. Cavaciocchi (ed.), *Il mercato della terra secc. XIII-XVIII* (Prato, 2003), 119-45; B. Campbell, 'Factor markets in England before the Black Death', *Continuity & Change*, 24 (2009), 79-106.

³⁶ B. van Bavel & R. Hoyle, 'Introduction: social relations, property and power in the North Sea area, 500-2000', in *Social relations, property and power*, 12.

³⁷ P. Schofield, *Peasant and community in medieval England, 1200-1500* (Basingstoke, 2003), 65-9; L. Genicot, *L'économie rurale Namuroise au Bas Moyen Age*, iii (Louvain, 1982), 78-9; E. Thoen, *Landbouweconomie en bevolking in Vlaanderen gedurende de late Middeleeuwen en het begin van de moderne tijden. Testregio: de kasselrijen van Oudenaarde en Aalst, einde 13de – eerste helft van de 16de eeuw* (Ghent, 1988), 411; E. Scholliers & F. Daelemans, *De conjunctuur van een domein: Herzele, 1444-1752* (Brussels, 1981), 59-62.

³⁸ de Vries & van der Woude, *First modern economy*, 169-65.

³⁹ F. Grapperhuis, *Belasting, vrijheid en eigendom. Hoe belastingheffing leidde tot meer zeggenschap voor burgers en meer eenheid tussen staten, 517-1787* (Amsterdam, 1989), 146-91.

in Emilia-Romagna.⁴⁰ Archaeological evidence also indicates the emergence of new settlements in marshes and woodlands in the area around Verona in the ninth century.⁴¹ Indeed, the settlement of Bovolone, for example, was only made possible by the digging of canals that separated the settlement from the surrounding swamps.⁴² This sort of early-medieval reclamation was conducted through, but also reinforced, large landownership structures and the manorial system.⁴³ Lords and especially powerful ecclesiastical institutions entirely controlled the reclamation process – and sometimes were involved in disputes over the ownership to wastes. The Silva de Ostilia, a large expanse of swamps and woods between Mantova, Padua, and Verona, became the object of a dispute between the monastery of Nonantola and the Count of Verona in the early ninth century – a dispute which the monastery won.⁴⁴ Upon securing the right of possession, the monastery instigated land clearance by granting standardised farms of around 100 x 1500 metres to colonists with fixed contracts of 29 years, who were ordered to clear the land and build and maintain drainage systems.⁴⁵ Inventories of ninth century manors also show how initial reclamation in the Po Valley was affirmed through large estates.⁴⁶ The *polyptych* of the monastery of S. Giulia in Brescia reveals that between the ninth and tenth centuries, the forest belonging to the *curtis* became substantially smaller, supporting only 2000 pigs instead of 4000.⁴⁷ Further *polyptychs* of the monastery of S. Colombano of Bobbio also show the replacement of woodland for arable fields in the ninth century: in 883 woodland was cleared for 32 new farms.⁴⁸ In the lands granted

⁴⁰ C. Brühl (ed.), *Codice diplomatico longobardo*, iii (Rome, 1973), no. 41.

⁴¹ F. Saggiaro, 'Insediamenti, proprietà ed economie nei territori di pianura tra Adda e Adige', in G. Brogiolo, A. Chavarria Arnau & M. Valenti (eds.), *Dopo la fine delle ville* (Mantova, 2005), 91-4.

⁴² F. Saggiaro, G Di Anastasio, C. Malaguti, A. Manicardi & L. Salzani, 'Insediamento ed evoluzione di un castello della Pianura Padana (Bovolone VR) (1995-2002), Località Crosare e Via Pascoli', *Archeologia Medievale*, 32 (2004), 169-86.

⁴³ On the dominance of large landowners over the wastes, see C. Fasoli, 'Monasteri padani', in *Monasteri in alta Italia dopo le invasioni saracene e magiare (sec. X-XII)* (Turin, 1966), 189; V. Fumagalli, *Le origini di una grande dinastia feudale. Adalberto-Atto di Canossa* (Tübingen, 1971), 8-9; A. Casatagnetti, 'La distribuzione geografica dei possedimenti di un grande proprietario veronese del secolo IX: Engelberto del fu Grimoaldo di Erbè', *Rivista di Storia dell'Agricoltura*, 9 (1969), 22.

⁴⁴ E. Rossini, *Contributi alla storia dell'agricoltura veronese* (Verona, 1979), 37-42; C. Manaresi (ed.), *I placiti del 'Regnum Italiae'*, i (Rome, 1955), 95-8.

⁴⁵ A. Castagnetti, 'La Pianura Veronese nel medioevo', in G. Borelli (ed.), *Un città e il suo fiume*, ii (Verona, 1977), 49; M. Baruzzi & M. Montanari, 'Silva runcare. Storie di cose, di parole, di immagini', in B. Andreoli & M. Montanari (eds.), *Il bosco nel Medioevo* (Bologna, 1988), 101.

⁴⁶ G. Pasquali, 'L'azienda curtense e l'economia dei secoli VI-XI', in A. Cortonesi (ed.), *Uomini e campagne nell'Italia medievale* (Rome, 2002), 19-20; P. Toubert, 'L'Italie rurale aux VIIIe-IXe siècles. Essai de typologie domaniale', in *I problemi dell'Occidente nel secolo VIII*, i (Spoleto, 1973), 95-132.

⁴⁷ V. Fumagalli, 'Il paesaggio delle campagne nei primi secoli del Medioevo', in B. Andreoli, V. Fumagalli & M. Montanari (eds.), *Le campagne italiane prima e dopo il Mille. Una società in trasformazione* (Bologna, 1985), 101; A. Andreoli & M. Montanari, *L'azienda curtense in Italia. Proprietà della terra e lavoro contadino nei secoli VIII-XI* (Bologna, 1983), 147-60.

⁴⁸ A. Castagnetti et al. (ed.), *Inventari altomedievali di terre, coloni e redditi* (Rome, 1979), 127-65.

to the monastery of S. Benedetto in Polirone near Mantova in 1007, a number were clearly areas recently cleared – affirming the establishment of large landownership.⁴⁹

As central authority collapsed in large parts of Western Europe, local and territorial lordships began to fill the vacuum in power.⁵⁰ Thus, already powerful lords and ecclesiastical institutions in the Po Valley used land reclamation to crystallise and secure their strengthened signorial dominion over tenants and property. As a result, land reclamation in the Po Valley expanded from the tenth century onwards.⁵¹ All across the plains of Lombardy, new irrigation canals began to be constructed between the Adda and Serio Rivers.⁵² New Latin toponyms such as *Runco* or *Ronco* appear, derived from the latin ‘*runcare*’ and referring to uprooting of bushes and reclamation of swamps.⁵³ Through reclamation of new land, elite aristocratic landlords were able to confirm impositions on colonists – forcing them to dig and maintain canals.⁵⁴ Colonists were fined and lost usufruct rights if land was not tilled.⁵⁵ For example, the Bishop of Modena granted land to some families to ‘clear and work it’ but on the condition that any of the colonists who failed to clear his portion after two years, had to return the land and pay a fine of twenty imperial *solidi* per *iugerum*.⁵⁶ Near Mantova, the monastery of S. Benedetto in Polirone forced rural communities to clear land near the Po River and repair dikes.⁵⁷ In a land grant from the same monastery, every inhabitant of Villabona had to build and maintain dikes to protect their fields.⁵⁸ The abbey of Pomposa in 1156 imposed labour obligations on the inhabitants of Codigoro, which were linked to the excavation of new canals and

⁴⁹ R. Rinaldi, C. Villani & P. Golinelli (eds.), *Codice diplomatico polironiano (961-1125)* (Bologna, 1993), no. 14.

⁵⁰ C. Wickham, ‘Rural economy and society’, in C. La Rocca (ed.), *Italy in the early Middle Ages* (Oxford, 2001), 137; S. Reynolds, *Kingdoms and communities in Western Europe, 900-1300* (Oxford, 1997), 101-54; R. Fossier, ‘Rural economy and country life’, in T. Reuter (ed.), *The New Cambridge Medieval History, c. 900-c. 1024*, iii (Cambridge, 2000), 27-63; T. Bisson, ‘The Feudal Revolution’, *Past & Present*, 142 (1994), 6-42.

⁵¹ F. Saggioro, ‘Insediamento e monasteri nella pianura veronese tra VIII e XIII secolo’, in R. Francovich & S. Gelichi (eds.), *Monasteri e castelli fra X e XI secolo. Il caso di San Michele alla Verruca e le alter ricerche storico-archeologiche nella Tuscia occidentale* (Florence, 2003), 178.

⁵² F. Menant, *Campagnes lombardes au moyen age* (Rome, 1993), 172-6, 183-93.

⁵³ F. Saggioro, ‘Ricognizioni, paesaggi ed esperienze di ricerca nei territori di pianura tra Veneto e Lombardia’, in N. Mancassola & F. Saggioro (eds.), *Medioevo, paesaggi e metodi* (Padova, 2006), 79-81.

⁵⁴ V. Fumagalli, ‘Precarietà dell’economia Contadina e affermazione della grande azienda fondiaria nell’Italia settentrionale dall’VIII all’XI secolo’, *Rivista di Storia dell’Agricoltura*, 15 (1975), 19-21; A. Castagnetti, *La pieve rurale nell’Italia padana. Territorio, organizzazione patrimoniale e vicende della pieve veronese di San Pietro di Tillida dall’alto medioevo al secolo XIII* (Rome, 1976), 85-7.

⁵⁵ F. Panero, *Terre in concessione e mobilità contadina. Le campagne fra Po, Sesia, e Dora Baltea (secoli XII e XIII)* (Bologna, 1984), 84-94; V. Fumagalli, ‘L’evoluzione dell’economia agraria e dei patti colonici dall’alto al basso Medioevo. Osservazioni su alcune zone dell’Italia settentrionale’, in Andreolli et al. (eds.), *Le campagne italiane*, 1032-3.

⁵⁶ E. Vicini, *Regesto della Chiesa Cattedrale di Modena*, ii (Rome, 1936), no. 627.

⁵⁷ A. Castagnetti, *Le comunità rurali dalla soggezione signorile alla giurisdizione del commune cittadino* (Verona, 1983), 7.

⁵⁸ P. Torelli (ed.), *Regesto mantovano. Le carte degli archive Gonzaga e di Stato in Mantova e dei monasteri Mantovani soppressi (Archivio di Stato in Milano)*, i (Rome, 1914), 365-6.

dikes.⁵⁹ Lords were able to use reclamation projects to move and settle whole communities in new areas, thereby strengthening their territorial presence.⁶⁰ Lords also took advantage of ancient communal and collective duties such as water management by reasserting them as signorial obligations – effectively imposing their will on collective organisation.⁶¹

However, it would be wrong to frame reclamation as an entirely coercive and repressive process in the Po Valley. Rural communities did proceed occasionally through their own initiative, such as the repopulation of the area at Brescello near Reggio Emilia.⁶² According to a chronicle, peasants tried to reoccupy land abandoned after the Lombard invasion.⁶³ Nonetheless, even this reclamation eventually came under the authority of a territorial lord, as the Marquis Adalberto-Atto was able to secure jurisdiction over this territory and force the peasants to build a castle.⁶⁴ The imposition of lordly authority was not always simply accepted by submissive rural populations. Rural communities frequently strived for recognition of their use rights to wastelands.⁶⁵ Groups of fishermen at Pavia consistently tried to enforce their rights of access to the Ticino River in the twelfth century.⁶⁶ Rural communities and lords also disputed the possession of reclaimed land.⁶⁷ For example, a confusing situation emerged in the late twelfth century at Pegognana, where land reclamation had already been started on peasant initiative but thereafter completed by the monastery of S. Benedetto in Polirone.⁶⁸ Both parties asserted ownership rights over the new lands. Such moves towards evasion of lordly restrictions through land reclamation

⁵⁹ M. Zucchini, 'Di un documento pomposiano sulla laboreria', *Rivista di Storia dell'Agricoltura*, 5 (1965), 95-101; R. Rinaldi, *La disciplina delle acque nell'Alto Medioevo: problemi e letture* (Bologna, 2000), 28-9.

⁶⁰ T. Bacchi, 'Conquista del territorio e modificazione dei modelli impeditive. Le aziende fondiarie nel Ferrarese (secoli XI-XII)', in in Andreolli et al. (eds.), *Le campagne italiane*, 144-9.

⁶¹ F. Provero, 'Le corvées nelle campagne dell'Italia settentrionale', in M. Bourin & P. Martinez Sopena (eds.), *Pour une anthropologie du prélèvement seigneurial dans les campagnes médiévales (XIe-XIVe siècles). Réalités et représentations paysannes* (Paris, 2004), 375-7; S. Bortolami, 'Comuni e beni comunali nelle campagne medioevali: un episodio della Scodosia di Montagnana (Padova) nel XII secolo', *Mélanges de l'École Française de Rome*, 99 (1989), 560-1; G. Bognetti, 'Sulle origini dei comuni rurali con speciali osservazioni per territori milanese e comasco', in S. d'Amico & C. Violante (eds.), *Studi sulle origini del comune rurale* (Milan, 1978), 143-50.

⁶² A. Settia, *Castelli e villaggi nell'Italia padana* (Naples, 1984), 139-40, 255-6.

⁶³ *Cronica sancti Genesii episcopi et antistitis Brizelli*, in G. Cappellenti (ed.), *Le chiese d'Italia dalla loro origine ai nostri giorni* (Venice, 1859), 451.

⁶⁴ V. Fumagalli, *Le origini di una grande dinastia feudale. Adalberto-Atto di Canossa* (Tübingen, 1971), 23; F. Provero, 'Il sistema di potere carolingio e la sua rielaborazione nei comitati di Parma e Piacenza (secoli IX-XI)', in R. Greci (ed.), *Studi sull'Emilia occidentale nel Medioevo: società e istituzioni* (Bologna, 2001), 43-64.

⁶⁵ Menant, *Les chartes de franchises*, 239-40; V. Fumagalli, *Terra e società nell'Italia padana. I secoli IX e X* (Turin, 1974), 62-3.

⁶⁶ E. Occhipinti, 'Fortuna e crisi di un patrimonio monastico e le sue grangie fra XII e XIV secolo', *Studi Storici*, 26 (1985), 302-1; C-R. Bruhl & C. Violante (eds.), *Honorantie Civitatis Papiæ* (Tübingen, 1983), 20; M. Venditelli, 'Diritti ed impianti di pesca degli enti ecclesiastici Romani tra X e XIII secolo', *Mélanges de l'École Française de Rome. Moyen Age*, 104 (1992), 407-8.

⁶⁷ C. Wickham, 'Land disputes and their social context in Lombard-Carolingian Italy', in W. Davies & P. Fouracre (eds.), *The settlement of disputes in early medieval Europe* (Cambridge, 1986), 105-24.

⁶⁸ Torelli (ed.), *Regesto mantovano*, i, 261-2.

were the first steps towards the establishment of freedom charters and supposed self-rule of rural communities.⁶⁹ More often than not, however, these attempts towards greater independent autonomy were refuted by the urban governments.⁷⁰

These peasant reclamation initiatives did not bring widespread freedoms or the ‘emancipation of the common man’ from the high Middle Ages onwards, as shown in certain regions from Bryce Lyon’s influential article.⁷¹ Although signorial lordships and manorialism withered away very early in North and Central Italy, these old elements of rural repression were replaced by new urban repressors.⁷² This transition from rural to urban forms of repression was very likely aided by the fact that the rural *signori* or *nobili* of the *contadi* were often at the same time urban burghers and citizens – it was increasingly difficult to distinguish between the two interest groups.⁷³ Thus, in Northern and Central Italy, the urban population doubled between 1000 and 1300 – a much higher rate than elsewhere in Western Europe (except parts of Holland and Flanders).⁷⁴ As these urban agglomerations grew in size, number and stature, the numbers of ‘non-productive’ or dependent citizens also grew.⁷⁵ Cities realised they had to (a) create more direct and explicit legal relationships with their hinterlands,⁷⁶ and (b) exploit these hinterlands more intensively. In that sense, urban institutions, governments and burghers became the new ‘feudal lords’ of the late Middle Ages and early modern period in Europe.⁷⁷ Newly colonized areas fitted very nicely into the larger story of the subordination of the countryside to the political and economic aims of the cities. Cities extended their

⁶⁹ F. Panero, ‘Signori e servi: una conflittualità permanente’, in M. Bourin, G. Cherubini & G. Pinto (eds.), *Rivolte urbane e rivolte contadine nell’Europa del Trecento: un confronto* (Florence, 2008), 305-21.

⁷⁰ For example in Bologna and its hinterlands, see A. De Benedictis, *Patrizi e comunità. Il governo del contado bolognese nel ‘700* (Bologna, 1984), 15-6, 142-56.

⁷¹ Lyon, ‘Medieval real estate developments’.

⁷² D. Waley, *The Italian city-republics* (New York, 1988), 84-5; G. Chittolini & G. Coppola, ‘Grand domaine et petites exploitations: quelques observations sur la version italienne de ce modèle (XIIIe-XVIIIe siècle)’, in P. Gunst & T. Hoffman (eds.), *Large estates and smallholdings in Europe in the Middle Ages and modern times* (Budapest, 1982), 181.

⁷³ D. Curtis, ‘Florence and its hinterlands in the late Middle Ages: contrasting fortunes in the Tuscan countryside, 1300-1500’, *Journal of Medieval History* (forthcoming, December 2012); C. Wickham, *Community and clientele in twelfth-century Tuscany: the origins of the rural commune in the plain of Lucca* (Oxford, 1998), 172-6.

⁷⁴ P. Malanima, ‘Urbanisation and the Italian economy during the last millenium’, *European Review of Economic History*, 9 (2005), 99-102. For urban population developments in Holland, see B. van Bavel & J.L. van Zanden, ‘The jump-start of the Holland economy during the late-medieval crisis, c. 1350-c. 1500’, *Economic History Review*, 57 (2004), 505.

⁷⁵ For example for Venice’s need to feed itself from its *contado*, see S. Ciriaco, ‘L’economia regionale veneta in epoca moderna. Note a margine del caso bergamasco’, in *Venezia e la Terraferma. Economia e società* (Bergamo, 1989), 45; G. Del Torre, *Venezia e la Terraferma dopo la guerra di Cambrai. Fiscalità e amministrazione (1515-1530)* (Milan, 1986), 199-216.

⁷⁶ A classic case was the thirteenth-century fixation of territorial boundaries of the *contado* surrounding Mantova described in M. Vaini, *Dal comune alla signoria. Mantova dal 1200 al 1328* (Mantova, 1986), 137-64, 316-22. Mantova displayed one of the most repressive holds over the countryside; see C. Mozzarelli, *Mantova e i Gonzaga dal 1382 al 1707* (Turin, 1987), 53-80.

⁷⁷ S. Epstein, ‘Cities, regions and the late medieval crisis: Sicily and Tuscany compared’, *Past & Present*, 130 (1991), 3-50; ‘Town and country: economy and institutions in late medieval Italy’, *Economic History Review*, 46.3 (1993), 453-77.

control over an expanding *contado* by reclaiming more land,⁷⁸ but supported these colonisation activities through jurisdictions that subsumed rural communities into their governmental structure.⁷⁹ Land reclamation became an effective framework for legitimisation of urban control and socio-political influence over the countryside – particularly in the Po Valley.⁸⁰

Just like the rural lords before them, urban governments also tried to enforce labour works on rural communities in the interests of water management. In the second half of the eleventh century, Pavia asked nearby communities to work the locks of the Ticino River.⁸¹ As a result of Verona's food-supply problems in the twelfth and thirteenth centuries, the commune tried to reclaim new land by settling colonists within free boroughs such as Villafranca in 1184; each given a standardised plot to work and build a house.⁸² Elsewhere at the swamps of the commune of Verona (where Palu is now located), the waste was bought by a consortium of Veronese citizens belonging to a professional and commercial class, as well as an assortment of aristocrats and office-holders.⁸³ Similar urban-led reclamation occurred in the *contado* around Cremona.⁸⁴ This sort of reclamation dominated by urban interest groups led to a consolidation of urban landownership in the Po Valley countryside, and eventually leading to the urban acquisition of rural landholdings.

Rural communities became compelled in the thirteenth and fourteenth centuries to colonise wastes, as attested to in the city-statutes.⁸⁵ The Statutes of Reggio Emilia ordered assarting of trees near to the village of Rivalta.⁸⁶ Cities invested in the construction of canals to expand irrigation of the fields.⁸⁷ Cities also

⁷⁸ Indeed, there was still much uncultivated woodland and waste even in the fifteenth century; see G. Viviani (ed.), *La villa nel Veronese* (Verona, 1975), 64-5.

⁷⁹ P. Cammarosano, 'Città e campagna: rapporti economici e politici', in *Società e istituzioni dell'Italia comunale: l'esempio di Perugia (secoli XII-XIV)* (Perugia, 1988), 303-49; G. Varanini, 'L'organizzazione del distretto cittadino nell'Italia padana dei secoli XIII-XIV (Marca Trevigiana, Lombardia, Emilia)', in G. Chittolini & D. Willoweit (eds.), *L'organizzazione del territorio in Italia e Germania, secoli XIII-XIV* (Bologna, 1994), 133-233. On the weak position of the village communities, see S. Zamperetti, 'Sinedri dolosi; la formazione e lo sviluppo dei corpi territoriali nello stato regionale Veneto tra '500 e '600', *Rivista Storica Italiana*, 99 (1987), 269-320.

⁸⁰ A process described in G. Chittolini, 'Cities, city-states, and regional states in North-Central Italy', *Theory & Society*, 18 (1989), 689-706.

⁸¹ P. Grillo, 'Comuni urbani e poteri locali nel governo del territorio in Lombardia (XII-inizi XIV secolo)', in L. Chiappa Mauri (ed.), *Contado e città in dialogo. Comuni urbani e comunità rurali nella Lombardia medievale* (Milan, 2003), 45-6.

⁸² A. Castagnetti, 'Primi aspetti di politica annonaria nell'Italia comunale. La bonifica della 'palus comunis Verone' (1194-1199)', *Studi Medievali*, 13 (1974), 363-481; E. Sereni, *History of the Italian agricultural landscape* (Princeton, 1997), 83-4.

⁸³ Castagnetti, 'Primi aspetti', 399-410.

⁸⁴ G. Chittolini, 'I beni terrieri del Capitolo della cattedrale di Cremona fra il XIII e il XIV secolo', *Nuova Rivista Storica*, 49 (1965), 218-24.

⁸⁵ Fumagalli, 'Il paesaggio', 104-5; G. Fantoni, *L'acqua a Milano. Uso e gestione nel basso medioevo (1385-1535)* (Bologna, 1990), 39.

⁸⁶ A. Campanini (ed.), *I rubricari degli statute comunali di Reggio Emilia (secc. XIII-XVI)* (Reggio Emilia, 1997), 31-58; A. Cerlini (ed.), *Consuetudini e Statuti reggiani del sec. XIII* (Milan, 1933), 23.

⁸⁷ P. Boucheron, 'Water and power in Milan, c. 1200-1500', *Urban History*, 28 (2001), 180-93; Menant, *Campagnes lombardes*, 197-200.

struck up agreements with large rural landowners, such as the pact between Bologna and a consortium of lords who agreed to work on a canal that brought water from the Reno River to the city.⁸⁸ Elsewhere the Statutes of Parma from the thirteenth century indicated that any rural communities that benefited from the canal which ran across the lands of Sant’Ilario, Taneto, and Prato Ottesola, had to maintain the structure.⁸⁹ The Statutes of Ferrara around the same time clearly show that officials of the city had to discuss with the inhabitants of local communities any matters regarding the improvement of water management, and furthermore, it is indicated that rural communities were supposed to provide a labour force to work the embankments of the rivers.⁹⁰ The late-medieval Statutes of Reggio Emilia revealed that consuls from the rural communities had to appear in front of courts every month to report malfunctions in the infrastructure.⁹¹ The Statutes of the village of Nirone were actually integrated into the Public Water Statutes of Milan in 1346.⁹²

As land reclamation became the legitimising framework behind increasing urban jurisdiction and control over its rural hinterlands, the distribution of property by the late Middle Ages began to get further polarised.⁹³ In Lombardy 57% of the land in the Cremonese *contado* was owned by burghers of Cremona (and that excludes urban ecclesiastical institutions), while in the Venetian *terraferma*, urban citizens owned between half to two-thirds of the land.⁹⁴ A similarly high proportion of the land was controlled by urban interest groups in the late-medieval territories of Parma, Piacenza, and in particular, Bologna.⁹⁵ The benefits of landownership for urban residents became even more apparent in the late Middle Ages in the Po Valley, where burgher lands were taxed a rate between four and eight times lower than a peasant.⁹⁶ In fact, one of the reasons behind urban expropriation of peasant lands

⁸⁸ D. Balestracci, ‘La politica delle acque urbane nell’Italia comunale’, *Mélanges de l’Ecole Française de Rome. Moyen Age*, 104 (1992), 442.

⁸⁹ *Monumenta Historica ad provincias parmensem et Placentia pertinentia* (Parma, 1860), 382.

⁹⁰ R. Zupko & R. Laures, *Straws in the wind. Medieval urban environmental law. The case of Northern Italy* (Boulder, 1996), 69.

⁹¹ A. Campanini (ed.), ‘Quam partem dugalium tenentur facere mezzadri et laboratores’, in *I rubricari degli statuti comunali di Reggio Emilia (secc. XIII-XVI)* (Reggio Emilia, 1997), 193, 232.

⁹² G. Porro Lambertenghi (ed.), ‘Statuti delle strade e delle acque del contado di Milano fatti nel 1346’, *Miscellanea di Storia Italiana*, 7 (1869), 415-20.

⁹³ An overview in G. Cherubini, ‘La proprietà fondiaria nei secoli XV-XVI nella storiografia italiana’, *Società e Storia*, 1 (1978), 9-33.

⁹⁴ S. Epstein, ‘The peasantries of Italy’, in Scott (ed.), *The peasantries of Europe*, 89. On late-medieval urban land acquisition in the *terraferma* of Venice, see G. Gullino, ‘Quando il mercante costruì la villa: le proprietà dei Veneziani nella Terraferma’, in *Storia di Venezia. Dal Rinascimento al Barocco*, iv (Rome, 1994), 875-924; D. Beltrami, *La penetrazione economica dei veneziani in Terraferma. Forze di lavoro e proprietà fondiaria nella campagne venete dei secoli XVII e XVIII* (Venice, 1961).

⁹⁵ L. Arcangeli, ‘Giurisdizioni feudali e organizzazione territoriale nel Ducato di Parma (1545-1587)’, in M. Romani (ed.), *Le corti farnesiane di Parma e Piacenza, 1543-1622*, i (Rome, 1978), 97; G. Chittolini, *La formazione dello stato regionale e le istituzioni del contado* (Turin, 1979), 261-5.

⁹⁶ G. Chittolini, ‘Notes sur la politique fiscale de Charles Quint dans le duché de Milan: le nuovo catasto et les rapports entre ville et campagne’, in W. Blockmans & N. Mout (eds.), *The world of Emperor Charles V* (Amsterdam, 2004), 147-8; G. Vigo, *Fisco e società nella Lombardia del Cinquecento* (Bologna, 1979), 160.

may have been the sharp increase in fiscal pressures experienced in the countryside.⁹⁷ The commons also came to be almost entirely eroded on the plains by the late Middle Ages.⁹⁸ In line with a distorted distribution of land, wealth was also entirely polarised in the Po Valley; for example, three-quarters of the taxable wealth in the district of Brescia belonging to urbanites.⁹⁹

In sum, the reclamation of the Po Valley was stimulated by a variety of dominant interest groups in the Middle Ages; but the key point is that land reclamation provided a context for the establishment and reinforcement of coercive structures and polarised distributions of power and property. In medieval Holland, this was never the case, and the hands-off attitude of the territorial lords allowed a society to emerge entirely free from signorial restrictions, dominant interest groups, and the manorial system.

B: Modes of exploitation

The reclamation of the marshes of medieval Holland created legally free and relatively (to other parts of Western Europe) egalitarian societies, which in turn impacted on the modes of exploitation undertaken there. Land was worked by the people that colonised it and owned it almost outright - the peasants.¹⁰⁰ What emerged from the earliest moments of colonisation all the way through to the fifteenth century was a proliferation of small to medium-sized farms, which were exploited by the peasant household directly. Even at the end of the sixteenth century, 80% of the land belonging to the peasants that remained was used by themselves.¹⁰¹

As well as no tradition of feudal relations and manorial exploitation, there was a very limited and restricted emergence of a market for lease land – only widows decided to lease their land.¹⁰² Indirect exploitation of land was not commonplace in medieval Holland until the sixteenth century, and even then it did not proliferate until the century end.¹⁰³ This situation contrasted with other parts of late-medieval

⁹⁷ J. Ferraro, 'Proprietà terriera e potere nello stato veneziano', *Civis*, 8 (1984), ?

⁹⁸ L. Chiappa Mauri, 'Riflessioni sulle campagne lombarde del Quattro-Cinquecento', *Nuova Rivista Storica*, 69 (1985), 129; G. Panjek, 'Beni comunali: note storiche e proposte di ricerca', in A. Tagliaferri (ed.), *Venezia e la Terraferma attraverso le relazioni dei Rettori* (Milan, 1981), 371-82.

⁹⁹ A. Rossini, *Le campagne Bresciane nel Cinquecento: territorio, fisco, società* (Milan, 1994), 33, 124, 195.

¹⁰⁰ van Bavel, 'Rural development', 167.

¹⁰¹ B. van Bavel, 'The emergence and growth of short-term leasing in the Netherlands and other parts of Northwestern Europe (11th-16th centuries). A preliminary investigation into its chronology and causes', in B. van Bavel & P. Schofield (eds.), *The development of leasehold in northwestern Europe, c. 1200-1600* (Turnhout, 2008), 179-213.

¹⁰² P. Hoppenbrouwers, *Een middeleeuwse samenleving. Het Land van Heusden, ca. 1360-ca. 1515* (Wageningen, 1992), 437.

¹⁰³ See the limited amount of early sixteenth-century leasing in H. van Gelder, *Nederlandse dorpen in de 16de eeuw* (Amsterdam, 1953), 18; W. Diepeveen, *De vervening in Delfland en Schieland* (Leiden,

Western Europe, where the emergence of absolute and exclusive property rights went hand-in-hand with a clearly defined system of leasing.¹⁰⁴ The main reason was the assortment of disruptive customary rights that tenants tried to claim over the land, making the termination of a lease relationship an arduous process for the owner.¹⁰⁵ Tenants often assumed a sort of right to ‘silent sub-letting’, whereby they believed in an unspoken hereditary right to remain on the land and former tenants often resorted to violence against new tenants that moved in.¹⁰⁶ The close attachment to these tenant rights was rooted in customs and common, but sometimes explicitly formalised in local by-laws.¹⁰⁷ This belief in the enduring heritable rights of tenants was undoubtedly linked to the dominance of the peasant-owner property structure taken from the first stages of reclamation. It was only after these unfavourable conditions disappeared that indirect exploitation of land proliferated in Holland (stricter punishments against sub-letting and inheritance of leases by the government), in tandem with a break in the general arrangement of property constellations as urban investment in land took hold in the later part of the sixteenth century.¹⁰⁸

While the manorial mode of exploitation was almost entirely absent in Holland, the rationale for the earliest stages of medieval reclamation in the Po Valley was the affirmation of large estates and their reorganisation through a series of manors. Aristocratic lords strengthened their influence over wastes in order to increase the cultivation of grain and vines.¹⁰⁹ Monastic houses also provided the impetus for increased production levels.¹¹⁰ The *curtes* were able to extract large surpluses: for example, it has been calculated that the monastery of S. Giulia of Brescia at the end of the ninth century collected a surplus of around 20% grain and wine combined, after accounting for self-consumption and seeds.¹¹¹ Vineyards began to be kept in demesne from at least the eighth century, and many of the *corvées*

1950), 57-63; E. van Dissel, ‘Grond in eigendom en huur in de ambachten van Rijnland omstreeks 1545’, *Handelingen en Mededelingen van de Maatschappij der Nederlandsche Letterkunde* (1896-7), 152-4.

¹⁰⁴ B. van Bavel, ‘The land market in the North Sea area in a comparative perspective, 13th-18th centuries’, in S. Cavaciocchi (ed.), *Il mercato della terra secc. XIII-XVIII* (Prato, 2003), 119-45.

¹⁰⁵ See J. de Smidt, *Rechtsgewoonten: de gebruiken en plaatselijke gebruiken waarnaar het Burgerlijk Wetboek verwijst* (Leiden, 1954), 92-6.

¹⁰⁶ J. Kuys & J. Schoenmakers, *Landpachten in Holland, 1500-1650* (Amsterdam, 1981), 23-5; van Bavel, ‘Rural development’, 175.

¹⁰⁷ B. de Geer (ed.), ‘De heerlijkheid van Langerak en hare rechten’, *VMOVR*, 3 (1898), 173-5.

¹⁰⁸ van Bavel, ‘Rural development’, 177, 180.

¹⁰⁹ Pasquali, *L’azienda curtense*, 57-8.

¹¹⁰ C. Wickham, ‘L’Italia e l’alto medioevo’, *Archeologia Medievale*, 15 (1988), 148. Also, C. Balzaretti, ‘The lands of Saint Ambrose: the acquisition, organisation and exploitation of landed property in north-western Lombardy by the monastery of Sant’Ambrogio, Milan, c.780-1000’, (unpublished PhD thesis, University of London, 1989), 248-86; A. Vasina (ed.), *Ricerche e studi sul ‘Breviarium Ecclesiae ravennatis’* (Rome, 1985).

¹¹¹ G. Pasquali, ‘I problemi dell’approvvigionamento alimentare nell’ambito del sistema curtense’, *Archeologia Medievale*, 8 (1981), 93-116.

imposed on tenants were to maintain newly planted vines.¹¹² In fact the planting of vineyards in the newly reclaimed lands was highly encouraged by lay and ecclesiastical lords, and there is evidence from monasteries such as Nonantola reducing rent on vineyards to 25% of the output in order to stimulate cultivation.¹¹³ The extension of the cultivated area through the context of large manorial estates laid the foundation for the revival of urban markets from the eighth or ninth centuries.¹¹⁴ There were, however, some grave consequences for some of the rural communities who had come to rely on the wastes that were a main source of subsistence for medieval peasants in the Po Valley. In 824, for example, conflict broke out between the monastery of Nonantola and the inhabitants of Fiesso, who under the threat of the loss of their fishing and grazing rights in the woodlands, pointed to an earlier document which had decreed that the Lombard King Liutprand had granted usufruct rights to all the residents in domicile of San Lorenzo.¹¹⁵

When signorial-led and manorial-focused land reclamations began to be replaced by reclamations stimulated through urban investment and coercion in the high Middle Ages, new modes of exploitation began to appear in the Po Valley. While late-medieval Holland was still characterised by its predominantly peasant-owner property structure and direct exploitation, short-term leasehold had already made its way to the Po Valley by 1300 due to urban consolidation of land in the countryside – facilitated by the urban grip over the reclamation process.¹¹⁶ The urban elite used the political power of towns to achieve surplus extraction.¹¹⁷ Thus by the late Middle Ages, there had emerged on the plains of Lombardy a proliferation of large (often isolated) tenant farms, often between 50 and 130 hectares in size, and paying fixed-rents.¹¹⁸ These farms were made possible in the first place by the high investment of wealthy urbanites in the irrigation of large expanses of new land, changing the

¹¹² A. Cortonesi, 'Agricoltura e tecniche nell'Italia medievale. I cereali, la vite, l'olivo', in *Uomini e campagne*, 217-9; A. Pini, *Vite e vino nel Medioevo* (Bologna, 1989); 'Vite e olio nell'alto Medioevo', in *L'ambiente vegetale nell'alto Medioevo* (Spoleto, 1990), 329-70; G. Pasquali, 'Vite e vino in Piemonte (secoli VIII-XII)', in *Vigne e vine nel Piemonte medievale* (Cuneo, 1990), 17-33.

¹¹³ C. Violante, *La società Milanese nell'età precomunale* (Bari, 1953), 79-80.

¹¹⁴ B. Ward-Perkins, 'The towns of northern Italy: rebirth or renewal?', in R. Hodges & B. Hobley (eds.), *The rebirth of towns in Western Europe AD 700-1050* (London, 1988), 24.

¹¹⁵ Manaresi (ed.), *I placiti*, I, no. 36.

¹¹⁶ B. van Bavel, 'Markets for land, labor, and capital in Northern Italy and the Low Countries, twelfth to seventeenth centuries', *Journal of Interdisciplinary History*, 41.4 (2011), 510.

¹¹⁷ C. Belfanti, 'Town and country in Central and Northern Italy, 1400-1800', in S. Epstein (ed.), *Town and country in Europe, 1300-1800* (Cambridge, 2001), 292-314.

¹¹⁸ D. Sella, 'Household, land tenure and occupation in North Italy in the late sixteenth century', *Journal of European Economic History*, 16 (1987), 491; D. Dowd, 'The economic expansion of Lombardy, 1300-1500: a study in political stimuli to economic change', *Journal of Economic History*, 21 (1961), 148-9, 154; G. Chittolini, 'Avvicendamenti e paesaggio agrario nella pianura irrigua lombarda (secoli XV-XVI)', in A. Guarducci (ed.), *Agricoltura e trasformazione dell'ambiente (secoli XIII-XVIII)* (Le Monnier, 1984), 555-65; L. De Angelis Cappabianca, 'Le cassine tra il XII ed il XIV secolo: l'esempio di Milano', in *Paesaggi urbani dell'Italia padana nei secoli VIII-XIV* (Bologna, 1988), 375-415.

appearance of the countryside.¹¹⁹ By the sixteenth century, tens of thousands of hectares of new land had come into cultivation through draining water as a result of urban investment.¹²⁰ Urban capital also funded the proliferation of mills powered through the complex hydraulic systems,¹²¹ while the new canals improved urban-rural transportation and physical connections.¹²² In contrast to the situation in sharecropping regions of Central Italy where the labour market was inhibited, most of these large farms in the Po Valley were worked by a pool of wage labourers.¹²³

C: Economic portfolios

In medieval Holland, the land reclamation process created a favourable ecological and institutional setting for the emergence of a diverse array of economic activities. Probably between the tenth and twelfth centuries, peasant households performed a number of different activities in the interests of subsistence – combining things like hunting, gathering,¹²⁴ and fishing with arable farming.¹²⁵ However, by the late Middle Ages, the variety of economic activities grew even wider (within the region), but individual peasant households also began to specialise production towards the market. The conditions of reclamation allowed this to happen. First, the persistent drainage of the marshes through dikes in order to extend the cultivable land changed the environmental conditions within many parts of rural Holland. Peat extraction left the top layer of soil exposed to oxidisation, in turn lowering the soil level in relation to the water.¹²⁶ Not only did this make Holland peasants more vulnerable to flooding, but their lands became too wet and infertile to grow crops on¹²⁷ (although recent work

¹¹⁹ G. Chittolini, 'Alle origini delle 'grandi aziende' della bassa lombarda: l'agricoltura dell'irriguo fra XV e XVI secolo', *Quaderni Storici*, 39 (1978), 828-44; E. Occhipinti, 'L'economia agraria in territorio milanese fra continuità e spinte innovative', in *Milano ed il suo territorio in età comunale* (Spoleto, 1989), 245-63; D. Bolognesi, 'Le campagne dell'Italia padana nel Seicento', *Cheiron*, 3 (1984), 77-99; E. Roveda, 'Il beneficio delle acque. Problemi di storia dell'irrigazione in Lombardia tra XV e XVII secolo', *Società e Storia*, 24 (1984), 269-8; F. Menant, 'Agriculture et environnement: le moment communal dans l'Italie padane', in L. Segre (ed.), *Agricoltura, ambiente e sviluppo economico nella storia europea* (Milan, 1993), 83-96.

¹²⁰ F. Cazzola, *Bonifiche e investimenti fondiari. Storia dell'Emilia Romagna*, ii (Bologna, 1978), 209-28; B. Rigobello, *Le bonifiche estensi in Polestine dopo le rotte di Malopera e di Castagnaro* (Lendinara, 1976).

¹²¹ L. Chiappa Mauri, 'I mulini ad acqua nel milanese (secoli X-XV)', *Biblioteca della Nuova Rivista Storica*, 36 (1984), 67.

¹²² For example in the Venetian *terraferma*, see E. Orlando, 'Governio delle acque e navigazione interna. Il Veneto nel basso medioevo', *Reti Medievali Rivista*, 12.2 (2011), 251-93.

¹²³ van Bavel, 'Markets for land', 527.

¹²⁴ R. Kok, *Wonen op het veen. Archeologisch en ecologisch onderzoek van een twaalfde-eeuwse boerderij in de oostpolder te Gouda* (Gouda, 1999), 83-6.

¹²⁵ T. Edelman, 'Oude ontginningen van de veengebieden in de Nederlandse kuststrook', *Tijdschrift voor Economische en Sociale Geografie*, 49 (1958), 239-45.

¹²⁶ D. de Boer, *Graaf en grafiek: sociale en economische ontwikkelingen in het middeleeuwse 'Noordholland' tussen c. 1345 en c.1415* (Leiden, 1978), 222; P. van Dam, 'Sinking peat bogs: environmental change in Holland, 1350-1550', *Environmental History*, 6.1 (2001), 32-45.

¹²⁷ It has been argued that the wet ground allowed only summer grains in J.L. van Zanden, 'Op zoek naar de 'missing link'. Hypothesen over de opkomst van Holland in de late middeleeuwen en de

has made a point of showing that mixed arable farming lingered on longer than previously assumed).¹²⁸ This situation encouraged free peasants to look towards proto-industrial alternatives instead, often focused towards the market.¹²⁹ By the end of the fifteenth century, around half of the rural population of Holland was engaged in ‘non-agricultural’ occupations.¹³⁰ Former agricultural peasants began to specialise in reed and peat-cutting, sweet water fishing, fowling, eel fishing, salt-making, ship-building, water transportation, brick-making, spinning and weaving, brewing, labouring on the dikes and ditches, as well as a move towards new forms of dairy production. Nearby regions of the Low Countries which actually took an earlier path towards commercialisation, failed to get anywhere near the level of proto-industry found in Holland.¹³¹

The lack of exploitative feudal structures or urban jurisdictions within the reclamation process, also created a favourable institutional context for the emergence of a wide range of specialised non-agricultural activities to emerge in the Holland countryside. First of all, the lack of signorial or manorial presence meant that the rural producers were able to keep high proportions of any surplus they made.¹³² Apart from standard rents to territorial lords, the total exactions were minimal – encouraging rural people into more market-orientated activities. Second, it was important that the reclamation process did not become dominated by oppressive urban jurisdictions. Indeed, it has been shown that the late-medieval towns of Holland did not exploit their close hinterlands like Italian *contadi* as a way of feeding the non-productive populations – instead they were well supplied by grain from

vroegmoderne tijd’, *Tijdschrift voor Sociale Geschiedenis*, 14 (1988), 372; J. Bieleman, *Geschiedenis van de landbouw in Nederland* (Meppel, 1992), 58. The lowest-lying lands were completely unsuitable for cultivation; see A. van Braam, *Zaandam in de middeleeuwen* (Hilversum, 1993), 99.

¹²⁸ W. Ettema, ‘Boeren op het veen (1000-1500): een ecologisch-historische benadering’, *Holland*, 37 (2005), 239-58. Other authors have accepted the gradual transition from arable to pastoral farming but are unsure if the cause was environmental degradation; for example G. Borger, ‘Draining – digging – dredging: the creation of a new landscape in the peat areas of the Low Countries’, in J. Verhoeven (ed.), *Fens and bogs in the Netherlands: vegetation, history, nutrient dynamics and conservation* (Dordrecht, 1992), 148.

¹²⁹ J.L. van Zanden, *Arbeid tijdens het handelskapitalisme. Opkomst en neergang van de Hollandse economie, 1350-1850* (Bergen, 1991), chp. 1; ‘A third road to capitalism? Proto-industrialisation and the moderate nature of the late medieval crisis in Flanders and Holland, 1350-1550’, in P. Hoppenbrouwers & J.L. van Zanden (eds.), *Peasants into farmers? The transformation of rural economy and society in the Low Countries (Middle Ages – 19th century) in light of the Brenner debate* (Turnhout, 2001), 85-101; B. van Bavel, ‘Early proto-industrialization in the Low Countries? The importance and nature of non-agricultural activities on the countryside in Flanders and Holland’, *Revue Belge de Philologie et d’Histoire*, 81.4 (2003), 1109-65. An overview of the literature on the late-medieval transition of the Holland economy can be found in M. Gubbels, ‘Boeren, bezit en bodemproblemen. Verklaringsmodellen voor de transitie van de Hollandse economie in de late middeleeuwen’, *Historisch Tijdschrift Holland*, 42 (2010), 65-84.

¹³⁰ J.L. van Zanden, ‘Taking the measure of the early modern economy. Historical national accounts for Holland in 1510/14’, *European Review of Economic History*, 6 (2002), 135-9.

¹³¹ B. van Bavel, ‘Proto-industrie tussen de Gelderse rivieren? Een eerste verkenning naar de niet-agrarische, marktgerichte activiteiten op het platteland van het Gelderse rivierengebied, 1300-1600’, *Bijdragen en Mededelingen Gelre*, 93 (2002), 55-78.

¹³² R. Brenner, ‘The Low Countries in the transition to capitalism’, in Hoppenbrouwers & van Zanden (eds.), *Peasants into farmers?*, 310-5.

north-east France and parts of the eastern Low Countries.¹³³ Actually from the first reclamations and right through the Middle Ages, Holland towns did not achieve any sort of power dominance over the countryside, unlike in Flanders.¹³⁴ This can be connected to a series of weak urban guilds,¹³⁵ which were unable or unwilling to prevent rural production of items like cloth and beer, and furthermore, were not able to put any restrictions on the mobility and actions of workers.¹³⁶ ‘Outsider’ immigrants were actively recruited for labour projects in fifteenth-century Holland.¹³⁷ Specialisation and investment in the late Middle Ages was further enhanced by the well-functioning and unrestricted markets for capital.¹³⁸ Interest rates were consistently low and credit was accessible to a wide section of the population, both rural and urban.¹³⁹

In the Po Valley, colonists were initially urged by both manorial lords and urban governments to grow cereals and plant vines: this surplus would serve as a supply of food for the region’s numerous urban markets. A large proportion of rural inhabitants in the early and high Middle Ages were reliant on exploitation of the commons, and there is evidence that rural communities were able to defend their rights to undertake hunting and fishing and take wood for their homes – a famous

¹³³ For grain from the eastern Netherlands, see M. van Tielhof, *De Hollandse graanhandel, 1470-1570: koren op de Hollandse molen* (Den Haag, 1995), 231-5; ‘Grain provision in Holland’, in Hoppenbrouwers & van Zanden (eds.), *Peasants into farmers?*, ?; For grain from north-east France, see M. Tits-Dieuaide, *La formation des prix céréalières en Brabant et en Flandre au Xve siècle* (Brussels, 1975). In the sixteenth century a grain trade with the Baltics emerged; see M. van Tielhof, *The mother of all trades: the Baltic grain trade in Amsterdam from the late 16th to the early 19th century* (Leiden, 2002); J. Faber, ‘Het probleem van het dalende graanaanvoer uit de Oostzeelanden in de tweede helft van de zestiende eeuw’, *AAG Bijdragen*, 9 (1963), 3-28.

¹³⁴ P. Hoppenbrouwers, ‘Town and country in Holland, 1300-1550’, in Epstein (ed.), *Town and country*, 64-7, 69-71, 76-9. For urban control of the Flemish countryside, see D. Nicholas, *Town and countryside: social, economic and political tensions in fourteenth-century Flanders* (Bruges, 1971), 59-65, 142-6, 187-9; W. Blockmans, *De volksvertegenwoordiging in Vlaanderen in de overgang van Middeleeuwen naar nieuwe tijden, 1384-1506* (Brussels, 1978), 107-27; P. Stabel, *De kleine stad in Vlaanderen. Bevolkingsdynamiek en economische functies van de kleine en secundaire centra in het Gentse kwartier (14de-16de eeuw)* (Brussels, 1995), 119-20.

¹³⁵ B. van Bavel, ‘The medieval origins of capitalism in the Netherlands’, *BMGN – Low Countries Historical Review*, 125 (2010), 57. Weak guilds later perpetuated by free trade interests of the mercantile elite. See C. Lis & H. Soly, ‘Different paths of development: capitalism in the Northern and Southern Netherlands during the late Middle Ages and the early modern period’, *Review*, 20 (1997), 230-6.

¹³⁶ B. de Munck, P. Lourens & J. Lucassen, ‘The establishment and distribution of craft guilds in the Low Countries, 1000-1800’, in M. Prak et al. (eds.), *Craft guilds in the early modern Low Countries: work, power, and representation* (Aldershot, 2006), 32-73; B. van Bavel, ‘Rural wage labour in the sixteenth-century Low Countries: an assessment of the importance and nature of wage labour in the countryside of Holland, Guelders, and Flanders’, *Continuity & Change*, 21 (2006), 65-66.

¹³⁷ B. van Bavel, J. Dijkman, E. Kuijpers & J. Zuijderduijn, ‘The organisation of markets as a key factor in the rise of Holland, fourteenth-sixteenth centuries. A test case for an institutional approach’, *Centre for Global Economic History Working Paper Series*, 6 (2011), 11.

¹³⁸ J. Zuijderduijn, *Medieval capital markets: markets for rents between state formation and private investment in Holland (1300-1550)* (Boston, 2009), 242-6; ‘Accessing a medieval capital market. The capacity of the market for renten in Edam and De Zeevang (1462-1563)’, *Jaarboek voor Middeleeuwse Geschiedenis*, 11 (2009), 138-64.

¹³⁹ J. Zuijderduijn, J.L. van Zanden & T. de Moor, ‘Small is beautiful. On the efficiency of credit markets in late medieval Holland’, *European Review of Economic History*, 16.1 (2012), 3-22; ‘Microcredit in late medieval Waterland. Households and the efficiency of capital markets in Edam and De Zeevang (1462-1563)’, in Cavaciocchi (ed.), *La famiglia*, 651-68.

case being the Nonantola villagers against the local monastery.¹⁴⁰ In general, however, signorial and urban-led reclamations only served to reduce and limit the options for communal economic activities.¹⁴¹ Indeed, as wealthy urbanites came to invest more in the hydrology and consolidation of land, the economic organisation was adapted. First, a basic point was that rural producers lost their land to urban landlords, and eventually ended up working as labourers on large tenant farms. Second, as a result of the improved irrigation on the plains, tenant farmers moved away from arable cultivation and instead began to turn land over to meadows (around a third of the total area in places) and focus on meat and dairy produce oriented on urban markets.¹⁴² The labour demands for these enterprises were smaller and increased the level of underemployment in the countryside.¹⁴³ In the irrigated plain south of Milan, peasant landownership was basically nothing, but in other areas of the Po Valley, however, agricultural labourers managed to scrape together a meagre existence by combining wage work with their own tiny micro-plots.¹⁴⁴

Outside of agriculture, the opportunities for work for a large portion of the rural population were limited. Whereas in medieval Holland the reclamation context eventually led to the emergence of a wide range of specialised and commercialised proto-industrial activities in the countryside, in the Po Valley the economic portfolio was much more restricted. From the high Middle Ages all the way through to the sixteenth century, this was generally down to the impositions put on rural manufacturing by urban governments using guilds. As Venice began to expand its *terraferma* in the fifteenth century, it made sure it rigorously regulated all economic

¹⁴⁰ G. Alfani, 'Le partecipanze: il caso di Nonantola', in G. Alfani & R. Rao (eds.), *La gestione delle risorse collettive nell'Italia settentrionale (secoli XII-XVIII)* (Milan, 2011), 48-62; P. Cremonini, 'Dispute tra il monastero di Nonantola e la comunità rurali sulla proprietà e l'utilizzazione delle terre incolte', in *I beni comuni nell'Italia comunale: fonti e studi*, in *Mélanges de l'École Française de Rome. Moyen Age – Temps Modernes*, 99 (1987), 585-614; M. Debbia, 'Il territorio di Nonantola durante il medioevo: partecipanza o beni comuni? Il significato dei beni comuni nella storia della comunità locale', in *Terre e comunità nell'Italia padana. Il caso delle partecipanze agrarie emiliane: da beni comuni a beni collettivi* (Mantova, 1992), 123-30.

¹⁴¹ Evidence for encroachment into the commons in the Po Valley is plentiful. See G. Comino, 'Sfruttamento e redistribuzione di risorse collettive: il caso della confraria del S. Spirito nel Monregalese dei secoli XIII-XVIII', in D. Moreno & O. Raggio (eds.), *Risorse collettive*, in *Quaderni Storici*, 81 (1992), 687-702; P. Grillo, 'Il Comune di Milano e il problema dei beni pubblici fra XII e XIII secolo: da un processo del 1207', *Mélanges de l'École Française de Rome. Moyen Age – Temps Modernes*, 113 (2001), 433-51; R. Rao, 'Risorse collettive e tensioni giurisdizionali nella pianura vercellese e novarese (XII-XIII secolo)', *Quaderni Storici*, 120 (2005), 753-76; 'Lo spazio del conflitto. I beni comunali nel Piemonte del basso Medioevo', *Zapruder*, 11 (2006), 8-25.

¹⁴² G. Alfani, 'Population and environment in Northern Italy during the sixteenth century', *Population*, 62.4 (2007), 566-8.

¹⁴³ On the lack of work on the plains for agricultural labourers (particularly in the winter), see C. Cipolla, 'Prezzi, salari e teoria dei salari in Lombardia alla fine del Cinquecento', in *Saggi di storia economica e sociale* (Bologna, 1988), 113-24; C. Cipolla & G. Aleati, 'Contributo alla storia dei consumi e del costo della vita in Lombardia agli inizi dell'età moderna', in *Idem*, 87-112.

¹⁴⁴ E. Roveda, 'Piccola e grande proprietà nella pianura lombarda fra '400 e '500', in *Rapporti tra proprietà, impresa e mano d'opera nell'agricoltura italiana dal IX secolo all'Unità* (Verona, 1984), 74-5.

activities within its rural hinterlands.¹⁴⁵ Rural cloth production in the *terraferma* and smaller towns was restricted by the Venetian State, although markets did appear for inferior quality cloths produced in the countryside.¹⁴⁶ Some of the strongest blocks to economic activities in the countryside were imposed in the areas around Mantova, and there is evidence in the late Middle Ages of legal proceedings being started up against entrepreneurs from small communities in the *contado* making cheap woollen cloth.¹⁴⁷ In fact, manufacturing did not appear in the countryside of Mantova until the eighteenth century, in the form of silk.¹⁴⁸ The rural *contado* of Bologna was also rigorously controlled, and the production of important goods such as silk was almost entirely concentrated within the city itself.¹⁴⁹ Those rural people who defied the guilds were resented, such as the shoemakers operating around Milan and Mantova who were regarded as parasites by the shoemaking guilds.¹⁵⁰ However, there were some exceptions to the urban guild regulation of rural economic activity – some production did go ahead without recourse to submission.¹⁵¹ Indeed, many rural boroughs and communities around Milan experienced a growth in cloth production activity, stimulated through privileges granted by the lords of Milan.¹⁵²

By the sixteenth century, there were signs that (frequently poor) rural inhabitants had begun to disregard the urban restrictions – fishing in the rivers and the preparation of hemp thread were two important examples.¹⁵³ Hat-making under the putting-out system employed thousands of impoverished rural workers also.¹⁵⁴ Rural labourers found seasonal work south of Ravenna on the salt marshes.¹⁵⁵

¹⁴⁵ S. Ciriaco, 'Venise et ses villes. Structuration et déstructuration d'un marché régional (XVIe-XVIIe siècle)', *Revue Historique*, 276 (1986), 288-9.

¹⁴⁶ D. Sella, 'The rise and fall of the Venetian woollen industry', in B. Pullan (ed.), *Crisis and change in the Venetian economy* (London, 1968), 106-26; W. Panciera, *L'arte matrice. I lanifici della Repubblica di Venezia nei secoli XVII e XVIII* (Treviso, 1996), 39-66.

¹⁴⁷ Belfanti, 'Town and country', 311.

¹⁴⁸ C. Belfanti, 'Dalla città alla campagna: industrie tessili a Mantova tra carestie ed epidemie (1550-1630)', *Critica Storica*, 25 (1988), 443-53.

¹⁴⁹ C. Poni, 'Per la storia del distretto industriale serico di Bologna (secoli XVI-XIX)', *Quaderni Storici*, 25 (1990), 98-9.

¹⁵⁰ E. Merlo, *Le corporazioni. Conflitti e soppressioni a Milano nei Sei e Settecento* (Milan, 1996), 44; C. Belfanti, *Mestieri e forestieri. Immigrazione ed economia urbana a Mantova fra Sei e Settecento* (Milan, 1994), 103-10.

¹⁵¹ C. Belfanti, 'Rural manufactures and rural proto-industries in the Italy of the cities', *Continuity & Change*, 8 (1993), 261-4; S. Ciriaco, 'Proto-industria, lavoro a domicilio e sviluppo economico nelle campagne venete in epoca moderna', *Quaderni Storici*, 18 (1983), 60-3.

¹⁵² Chittolini, *La formazione*, 76-7. Also *Idem*, 'Governo ducale e poteri locali', in *Gli Sforza a Milano e in Lombardia e i loro rapporti con gli Stati italiani ed europei (1450-1535)* (Milan, 1982), 27-42.

¹⁵³ D. Sella, 'Peasant strategies for survival in Northern Italy, XVI-XVII centuries', *Journal of European Economic History*, 37 (2008), 458. Perhaps indicative of the declining power of cities over the countryside; D. Sella, *L'economia lombarda durante la dominazione spagnola* (Bologna, 1982), 237-42; S. Epstein, 'Manifatture tessili e strutture politico-istituzionali nella Lombardia tardo medievale: ipotesi di ricerca', *Studi di Storia Medievale e Diplomatica*, 14 (1992), 1-32.

¹⁵⁴ C. Poni & S. Franzoni, 'L'economia di sussistenza della famiglia contadina', in *Cultura popolare nell'Emilia Romagna*, iii (Milan, 1979), 13-6.

¹⁵⁵ C. Casanova, 'Il sale: risorsa e svantaggio. L'evoluzione politico-sociale di una città "camerale"', in D. Bolognesi & A. Turchini (eds.), *Storia di Cervia*, iii (Rimini, 2001), 166-77.

Poor quality rural production of cloth continued in the Milanese *contado*.¹⁵⁶ For the most disadvantaged of rural inhabitants in the Po Valley, however, the only real solution was migration. Most of the significant proto-industries emerged away from the plains and in the mountains:¹⁵⁷ limestone processing around Lake Maggiore, silk textile in Trentino,¹⁵⁸ silver and copper mining in the mountains north of Vicenza,¹⁵⁹ and iron production north of Bergamo and Brescia.¹⁶⁰ The emergence of these proto-industries set the foundations for the de-industrialisation of the cities which occurred in the seventeenth and eighteenth centuries.¹⁶¹ Other than that, impoverished rural people sought work in the cities or in the military as the last resort.¹⁶²

D: Markets

The fact that land reclamation in medieval Holland was not undertaken supporting a manorial system and was not imposed through coercive urban jurisdictions allowed for the emergence of a flexible marketing framework for commodities, not dominated by powerful interest groups.¹⁶³ As a result, there was very little attempt to create urban market monopolies or '*stapelrechten*' (coercion of commodity flow to one market), in contrast to the situation that developed in the Po Valley, but also in nearby Flanders or in Groningen.¹⁶⁴ Only some limited exceptions existed such as Dordrecht.¹⁶⁵ Holland inhabitants could choose from a wide variety of rural and urban marketing opportunities for their produce and furthermore, this vast network

¹⁵⁶ H. Beonio Brocchieri, 'Artigianati, manifatture e proto-industrie fra città e campagna: la Lombardia del XVI secolo', *Studi di Storia Medievale e Diplomatica*, 14 (1992), 193-209.

¹⁵⁷ G. Chittolini, 'Quasi-città. Borghi e terre in area lombarda nel tardo medioevo', *Società e Storia*, 13 (1990), 3-26.

¹⁵⁸ D. Sella, *Commerci e industrie a Venezia nel secolo XVII* (Venice, 1961), 80-1.

¹⁵⁹ R. Vergani, *Miniere e società nella montagna del passato. Alpi venete, secoli XIII-XIX* (Verona, 2003), chp. 8.

¹⁶⁰ W. Panciera, 'Il lanificio bergamasco nel XVII secolo: lavoro, consumi e mercanti', in *Storia economica e sociale di Bergamo. Il tempo della Serenissima* (Bergamo, 2000), 100-7; M. Calegari, 'Forni 'alla bresciana' nell'Italia del XVI secolo', *Quaderni Storici*, 70 (1989), 77-99; J-F. Belhoste, 'Le migrazioni dei fabbri bergamaschi in Delfinato', in G. Fontana, A. Leonardi & L. Trezzi (eds.), *Mobilità imprenditoriale e del lavoro nelle Alpi in età moderna e contemporanea* (Milan, 1998), 49.

¹⁶¹ A. Moioli, 'La deindustrializzazione della Lombardia nel secolo XVII', *Archivio Storico Lombardo*, 112 (1986), 189-90; P. Malanima, *La perdita del primato. Crisi e riconversione nell'Italia del Seicento* (Milan, 1988), 102-4; R. Corritore, 'Il processo di 'ruralizzazione' in Italia nei secoli xvii-xviii. Verso una regionalizzazione', *Rivista di Storia Economica*, 10 (1993), 353-86.

¹⁶² Sella, 'Peasant strategies', 464. On the role of the militia, see M. Mallett & J. Hale, *The military organization of a Renaissance State. Venice c.1400 to 1617* (Cambridge, 1984), 350-66.

¹⁶³ A thesis put forward in the excellent J. Dijkman, *Shaping medieval markets. The organisation of commodity markets in Holland, c. 1200- c. 1450* (Leiden, 2011).

¹⁶⁴ For Groningen *stapelrecht* privileges, see J. van den Broek, *Groningen, een stad apart. Over het verleden van een eigenzinnige stad (1000-1600)* (Assen, 2007), 63-5.

¹⁶⁵ D. Beulink, 'Dordrecht en Schoonhoven: conflicten over stapel- en marktrecht', *Historische Encyclopedie Krimpenerwaard*, 14 (1989), 61-88; Dijkman, *Shaping medieval markets*, chp. 4; J. Niermeyer, 'Dordrecht als handelsstad in de tweede helft van de veertiende eeuw', *BVGO* 3 (1942), 1-36 & 177-222; 'Een vijftiende-eeuwse handelsoorlog: Dordrecht contra de Bovenlandse steden, 1442-1445', *Bijdragen en Mededelingen van het Historisch Genootschap*, 66 (1948), 1-59. For comment on the exceptions, see W. Unger, 'De Hollandsche graanhandel en de graanhandelspolitiek in de middeleeuwen', *De Economist*, 65 (1916), 356-7.

of marketing opportunities often amounted to informal trading venues.¹⁶⁶ Institutional barriers and exclusive privileges in the marketing structure were minimal when compared to the English burgesses, for example.¹⁶⁷ Furthermore, due to the absence of feudalism, there were no villages with markets in Holland which rose up out of favourable signorial concessions to instigate trade as what happened in England with burgage tenure.¹⁶⁸ The only (very few) exceptions were some towns in the borders between South Holland and Brabant, which were given charters of liberties as compulsory trading venues for their hinterlands.¹⁶⁹ In sum, the lack of urban and feudal restrictions which accompanied the process of reclamation in Holland led in turn to a flexible marketing structure, based around more informal trading centres, and without many coercive elements or exclusive privileges benefiting dominant interest groups. ‘Outsiders’ had freedom and access to this marketing structure,¹⁷⁰ and there is no evidence that producers were ever forced to sell their goods.¹⁷¹

The emergence of markets for commodities in the Po Valley were instead tied in with the more repressive contexts of land reclamation. As manorial lords and monasteries began to encourage the extension of cultivation, they looked to market their surplus in their nearest towns, but also on manors with the marketing and fiscal privileges conferred by kings or the Emperor (kept in storehouses known as ‘dispensae’).¹⁷² Many of the monasteries which traded goods were actually located in the towns anyway.¹⁷³ Good evidence for early medieval markets in the Po Valley is still meagre,¹⁷⁴ however what can be said is that regional exchange was very limited in

¹⁶⁶ Dijkman, *Shaping medieval markets*, esp. chp. 3.

¹⁶⁷ O. Gelderblom, ‘The decline of fairs and merchant guilds in the Low Countries, 1250-1650’, *Jaarboek voor Middeleeuwse Geschiedenis*, 7 (2004), 199-238. With the exception of tolls on transportation mentioned in D. Aten, ‘Als het geweld comt...’ *Politiek en economie in Holland benoorden het IJ, 1500-1800* (Hilversum, 1995), 22-63. For formalised markets with trading privileges in medieval England, see R. Britnell, ‘The proliferation of markets in England, 1200-1349’, *Economic History Review*, 34 (1981), 209-21; J. Galloway, ‘Town and country in England, 1300-1570’, in Epstein (ed.), *Town and country*, 117-8. On blocks to informal marketing opportunities in England see C. Dyer, ‘The hidden trade of the Middle Ages: evidence from the West Midlands of England’, *Journal of Historical Geography*, 18 (1992), 141-57.

¹⁶⁸ R. Goddard, ‘Small boroughs and the manorial economy: enterprise zones or urban failures?’, *Past & Present*, 210.1 (2011), 3-31.

¹⁶⁹ R. Rutte, *Stedenpolitiek en stadsplanning in de Lage Landen (12de-13de eeuw)* (Zutphen, 2002), 125-7; K. Korteweg, ‘Het stadsrecht van Geertruidenberg’, *VMVOVR*, 10 (1946), 67-8.

¹⁷⁰ Dijkman, *Shaping medieval markets*, 89-96.

¹⁷¹ A. Janse, *Grenzen aan de macht. De Friese oorlog van de graven van Holland omstreeks 1400* (The Hague, 1993), 300-6. In contrast to forced sales in England; for example, see J. Masschaele, *Peasants, merchants, and markets. Inland trade in medieval England, 1150-1350* (New York, 1997), 36-41.

¹⁷² Violante, *La società Milanese*, 3-40.

¹⁷³ R. Balzaretto, ‘The monastery of Sant’Ambrogio and dispute settlement in early medieval Milan’, *Early Medieval Europe*, 2.2 (1993), 1-18; G. Pasquali, ‘Gestione economica e controllo sociale di S. Salvatore-S. Giulia dall’epoca longobarda all’età comunale’, in G. Brentagni & C. Stella (eds.), *S. Giulia di Brescia. Archeologia, arte, storia di un monastero regio dai Longobardi al Barbarossa* (Brescia, 1992), 131-46; G. Porro Lambertenghi (ed.), *Codex Diplomaticus Langobardiae* (Turin, 1873), 15, 28, 34-9, 43.

¹⁷⁴ R. Balzaretto, ‘The curtis, the archaeology of sites of power’, in R. Francovich & G. Noyé (eds.), *La storia dell’alto medioevo italiano (VI-X secolo) alla luce dell’archeologia* (Florence, 1994), 99-108.

the eighth to tenth centuries.¹⁷⁵ Urban markets depended on produce from the close hinterlands rather than long-distance trade – revealing the importance of land reclamation.¹⁷⁶ Of the (likely small) trade that was undertaken down the rivers, we can be sure, nonetheless, that numerous tolls and taxes were applied.¹⁷⁷

Later in the medieval period, it should come as no surprise that urban-stimulated land reclamation which led to the formalisation of urban jurisdiction over wider rural *contadi* also led to the emergence of highly regulated and monopolised networks of markets. Frequently colonists who were told where and what to cultivate were also told they had to sell their output in specialised city markets.¹⁷⁸ Cities tended to take exclusive and prioritised access to the food supply of their hinterlands, essentially enforcing monopolies from the high Middle Ages up to the sixteenth century (and sometimes beyond).¹⁷⁹ Price controls, bans on exporting, and forced sales during times of scarcity occurred in rural areas around Bologna and Pavia, for example.¹⁸⁰ Inevitably, this led at times to unpredictable market regulations and frequently high transaction costs.¹⁸¹

III: The configuration of new societies and coping with environmental degradation

From around the ninth century in the Po Valley and from roughly the tenth century in the Holland marshes, new societies began to form as a result of land reclamation – a process which continued unabated into the late Middle Ages. However, land reclamation is a process which is known to have environmental consequences. New drainage channels can cause water to flow in unnatural directions, building up pressure, and making lands susceptible to flooding.¹⁸² Deforestation can lead to the

¹⁷⁵ A cellular society as described in C. Wickham, 'Problems of comparing rural societies in early medieval Western Europe', *Transactions of the Royal Historical Society*, 42 (1992), 221-46. Revising an earlier view suggesting a flourishing distance-trade down the length of the Po; for example in G. Fasoli, 'Navigazione fluviali. Porti e navi sul Po', *Settimane di Studio di Spoleto*, 25 (1978), 583.

¹⁷⁶ R. Balzaretto, 'Cities, emporia and monasteries: local economies in the Po Valley, c. AD 700-875', in N. Christie & S. Loseby (eds.), *Towns in transition: urban evolution in late antiquity and the early Middle Ages* (Aldershot, 1996), 228; C. Wickham, *Early medieval Italy* (London, 1981), 96-7.

¹⁷⁷ For example the much-discussed eighth-century Pact of Comacchio. See G. Bognetti, 'La navigazione padana e il sopravvivere della civiltà antica', *L'Età Longobarda*, 4 (1964), 541-53; C. Mor, 'Un'ipotesi sulla data del 'Pactum' c.d. liutprandino coi 'milites' di Comacchio relative alla navigazione sul Po', *Archivio Storico Italiano*, 135 (1977), 493-502.

¹⁷⁸ A. Guenzi, *Pane e fornai a Bologna in età moderna* (Padua, 1982), 9-18.

¹⁷⁹ Ciriaco, 'L'economia regionale veneta', 45.

¹⁸⁰ D. Zanetti, *Problemi alimentari di una economia preindustriale. Cereali a Pavia dal 1398 al 1700* (Turin, 1964), 40-50; B. Farolfi, *Strutture agrarie e crisi cittadina nel primo Cinquecento bolognese* (Bologna, 1977), 35-6.

¹⁸¹ G. Tocci, *Le terre traverse. Poteri e territory nei ducati di Parma e Piacenza tra Sei e Settecento* (Bologna, 1985), 280-9.

¹⁸² For example, in Egypt; S. Borsch, 'Environment and population: the collapse of large irrigation systems reconsidered', *Comparative Studies in Society & History*, 46 (2004), 451-68. In China; P. Perdue, *Exhausting the earth: state and peasant in Hunan, 1500-1850* (Cambridge, 1987). In the

fast run-off of water, landslides, and furthermore, can contribute to the ruination of the soils.¹⁸³ These kinds of problems caused by land reclamation often led to the irreversible decline or collapse of certain pre-industrial societies. It has been argued above, however, that reclamation produced different ‘types’ of societies. Indeed, medieval colonisation of new land in the Po Valley and Holland led to two entirely divergent arrangements of societal constellations. In this final section, some consideration is given to whether the particular structural configuration of society played an important role in negating or lessening potentially disturbing environmental degradation through the effects of land reclamation.

Certainly there is evidence that reclamation in both the Po Valley and Holland caused environmental damage. It has already been discussed how the drainage of the Holland marshes, and in particular the digging of peat through the Middle Ages, caused a lowering of the soil surface – perhaps as much as one metre every century. As a result, peasants had to frequently deal with the drainage problems and the chances of flooding.¹⁸⁴ Many of the very early reclaimed settlements were lost to the water.¹⁸⁵ The Po Valley also experienced degradation through reclamation. The embankments which constrained the rivers in unnatural directions led to the subsidence of the banks and beds, further worsened by the discharge of water into the rivers through canals, and leading to frequent and high magnitude flooding.¹⁸⁶ Franciscan chronicler Salimbene de Adam described terrible flooding of the Crostolo River, near Reggio Emilia in 1276, which submerged all the land between Rivalta and Bagnolo in Piano, and claimed numerous victims.¹⁸⁷ Similarly, a third of the whole territory of Mantova was flooded in 1293.¹⁸⁸ Later in the Middle Ages, there is an abundance of evidence of ‘water disasters’, often linked with badly designed canals.¹⁸⁹

British Punjab; See I. Ali, ‘Malign growth? Agricultural colonization and the roots of backwardness in the Punjab’, *Past & Present*, 114 (1987), 124.

¹⁸³ For example, in the Caribbean; B. Richardson, ‘Slavery to freedom in the British Caribbean: ecological considerations’, *Caribbean Geography*, 1 (1984), 164-75. In China; A. Osborne, ‘The local politics of land reclamation in the lower Yangzi highlands’, *Late Imperial China*, 15.1 (1994), 1-46. In Brazil; W. Dean, *With broadax and firebrand: the destruction of the Brazilian Atlantic forest* (Berkeley, 1995).

¹⁸⁴ See the cases described in M. Gottschalk (ed.), *Stormvloeden en rivieroverstromingen in Nederland, 500-1700* (3 vols, Assen, 1971-7).

¹⁸⁵ C. van der Esch & T. Groeneveld, ‘Het verdronken dorp Cruyskerck c.q. Erkentrudenkerke gevonden’, *Westerheem*, 51 (2002), 50-61; J. Moree, ‘Barendrecht bouwt Carnisselande, een dijk van een wijk. Archeologisch onderzoek in een nieuwbouwwijk naar het middeleeuwse dijkdorp Carnisse in de verdwenen Riederwaard’, in B. Wouda (ed.), *Ingelanden als uitbaters. Sociaal-economische studies naar Oud- en Nieuw- Reijerwaard, een polder op een Zuid-Hollands eiland* (Hilversum, 2003), 45-69; G. Renting, *Verdronken land, herwonnen land. Historische geografie van het Eiland van Dordrecht* (Alphen aan den Rijn, 1993).

¹⁸⁶ Marchetti, ‘Environmental changes’, 367-9; D. Camuffo & S. Enzi, ‘The analysis of two bi-millennial series: Tiber and Po River floods’, in P. Jones, S. Bradley & J. Jouzel (eds.), *Climatic variations and forcing mechanisms of the last 200 years* (New York, 1996), 439, 444-5; M. Pavese, V. Banzon, M. Colacino, G. Gregori & M. Pasqua, ‘Three historical data series on floods and anomalous climatic events in Italy’, in Jone et al. (eds.), *Climatic variations*, 159-65.

¹⁸⁷ S. de Adam, *Chronica*, ed. G. Scalia, ii (Bari, 1966), 723.

¹⁸⁸ Fumagalli, ‘Il paesaggio’, 119.

¹⁸⁹ Alfani, ‘Population and environment in Northern Italy’, 581.

However, while both areas faced challenging environments as a direct result of land reclamation, it was the societies of medieval Holland that appear better set-up and more resilient, or at the very least, more pro-active in their attempts to ensure long-term sustainability. The water management structures which emerged in Holland in the twelfth century were effective because a larger proportion of the newly colonised free society had direct participation and direct interest in the process.¹⁹⁰ The dikes dug to protect the land from water were well-maintained by formalised institutions (waterboards) which often overlapped with village communities of small and medium-sized landowning peasant farmers.¹⁹¹ Every farmer was given responsibility for maintaining a portion of a dike in relation to his landholding. Local committees inspected the work and imposed sanctions on deficiencies in the work, giving all stakeholders the incentive not to 'free-ride'.¹⁹² Faced with serious threats to their existence, village communities cooperated and pooled resources together in order to build dams (such as the Zwammerdam in the twelfth century) to stop the flow of water from higher grounds.¹⁹³ When peat-digging became more of a problem in the fourteenth century, the Rijnland drainage authority established rules and regulations to stop unbridled destruction of the common good.¹⁹⁴

That is not to say we should fall into the trap of uncritically supporting a clichéd 'poldermodel' philosophy, which dictates that Dutch society was founded on notions of cooperation and consensus.¹⁹⁵ While the institutions necessary for water management may have been effective for some time through the Middle Ages, it is clear that Holland society changed after 1500. It lost its original peasant characteristics and became dominated by wealthy urban interest groups who financed (amongst other things) further land reclamation and expropriation. As

¹⁹⁰ Something shown in a variety of settings; see P. Trawick, 'The moral economy of water: equity and antiquity in the Andean commons', *American Anthropologist*, 103.2 (2001), 361-79; R. Beardsley, 'Ecological and social parallels between rice-growing communities of Japan and Spain', in V. Garfield & E. Friedl (eds.), *Symposium on community studies in anthropology* (Seattle, 1963), 51-63; K. Butzer, 'French wetland agriculture in Atlantic Canada and its European roots: different avenues to historical diffusion', *Annals of the Association of American Geographers*, 92.3 (2002), 458.

¹⁹¹ H. van der Linden, 'Geschiedenis van het waterschap als instituut van waterstaatbestuur', in B. de Goede et al. (eds.), *Het waterschap, recht en werking* (Deventer, 1982), 13-33; P. Henderikx, 'De ontginningen en de zorg voor de afwatering en dijken in het Hollands-Utrechtse veengebied (tiende tot dertiende eeuw)', in D. de Boer, E. Cordfunke & H. Sarfatij (eds.), *Holland en het water in de middeleeuwen. Strijd tegen het water en beheersing en gebruik van het water* (Hilversum, 1997), 57-70; B. Dolfing, 'Vroegste ontwikkeling in het waterschap', in J. Raadschelders & T. Toonen (eds.), *Waterschappen in Nederland: een bestuurskundige verkenning van de institutionele ontwikkeling* (Hilversum, 1993), 61-80.

¹⁹² Van Dam, 'Ecological challenges', 503.

¹⁹³ H. van der Linden, 'Rijnland. Oorsprong en oudste ontwikkeling van een streekwaterschap', in A. Kouwenhoven, G. de Bruijne & G. Hoekveld (eds.), *Geplaatst in de tijd: Liber amicorum aangeboden aan Prof. Dr. M.W. Heslinga* (Meppel, 1984), 292-7; *De Zwammerdam* (Leiden, 1971), 5-9.

¹⁹⁴ W. TeBrake, 'Land drainage and public environmental policy in medieval Holland', *Environmental Review*, 12.3 (1988), 90.

¹⁹⁵ M. van Tielhof, 'Op zoek naar het poldermodel in de waterstaatsgeschiedenis', *Tijdschrift voor Geschiedenis*, 122 (2009), 149-61; P. van Dam, 'Water en land', *Bijdragen en Mededelingen Betreffende de Geschiedenis der Nederlanden*, 124 (2009), 459-66.

Holland became socially and economically polarised, it is inevitable that some of its water management structures changed too.¹⁹⁶ Tim Soens has skilfully shown that in Coastal Flanders, the water management system broke down simultaneously when property began to be consolidated in the hands of rich urban burghers and institutions and worked by a group of large tenant farmers.¹⁹⁷ Absentee owners had less interest in investing their income derived from the rents back into effective water management, thereby leaving the reclaimed polders highly susceptible to environmental collapse.¹⁹⁸ The ferocity of the storm surges and flooding in coastal Zeeland and Flanders was testament to this.¹⁹⁹ It remains to be seen whether a similar thesis could be argued for Holland in the transition from the Middle Ages to the early modern period, though the severity of disastrous flooding after 1500 suggests it can.²⁰⁰

In the medieval Po Valley, the environmental problems inevitably caused by prolific land reclamation were to some extent limited by coercive jurisdictions by lords and cities, urging rural inhabitants to maintain dikes, ditches and river banks (as described above). However, the more repressive and polarised nature of societies within the Po Valley formed and crystallised through land reclamation (especially in comparison to Holland) actually ended up making large parts of Northern Italy very susceptible and vulnerable to crisis – which by the end of the Middle Ages manifested itself in famine, flooding, and an extremely high number of casualties.²⁰¹ In the late

¹⁹⁶ Including a transition of power from local to regional waterboards; see C. Postma, *Het Hoogheemraadschap van Delfland in de middeleeuwen, 1289-1589* (Hilversum, 1989), 352-66; S. Fockema Andreae, *Het Hoogheemraadschap van Rijnland: zijn recht en zijn bestuur van den vroegste tijd tot 1857* (Leiden, 1982 [1932]), 95-112.

¹⁹⁷ T. Soens, 'The origins of leasehold in the former county of Flanders', in B. van Bavel & P. Schofield (eds.), *The development of leasehold in Northwestern Europe, c. 1200-1600* (Turnhout, 2008), 19-38; E. Thoen, 'Social agrosystems as an economic concept to explain regional differences. An essay taking the former county of Flanders as an example (Middle Ages-19th century)', in B. van Bavel & P. Hoppenbrouwers (eds.), *Landholding and land transfer in the North Sea area (late Middle Ages-19th century)* (Turnhout, 2004), 47-66.

¹⁹⁸ T. Soens, 'Polders zonder poldermodel? Een onderzoek naar de rol van inspraak en overleg in de waterstaat van de laatmiddeleeuwse Vlaamse kustvlakte (1250-1600)', *Tijdschrift voor Sociale en Economische Geschiedenis*, 4 (2006), 3-36; 'Explaining deficiencies of water management in the late medieval Flemish coastal plain (13th-16th centuries)', *Jaarboek voor Ecologische Geschiedenis* (2005/6), 35-62; *De spade in de dijk? Waterbeheer en rurale samenleving in de Vlaamse kustvlakte (1280-1580)*, (Gent, 2009), 73-105; 'Floods and money: funding drainage and flood control in coastal Flanders from the thirteenth to the sixteenth centuries', *Continuity & Change*, 26.3 (2011), 348-50.

¹⁹⁹ J. Buisman & A. van Engelen, *Duizen jaar weer, wind en water in de lage landen* (2 vols. Franeker, 1996-2000); A. de Kraker, 'Flood events in the Southwestern Netherlands and coastal Belgium, 1400-1953', *Hydrological Sciences Journal*, 51 (2006), 913-29. Also the documents contained within Gottschalk (ed.), *Stormvloed en rivieroverstromingen*.

²⁰⁰ M. van Tielhof, 'Texel, kerstavond 1593. De ramp die Tesselschade haar nam gaf', in M. Damen & L. Sicking (eds.), *Bourgondie voorbij. De Nederlanden 1250-1650. Liber alumnorum Wim Blockmans* (Hilversum, 2010), 311-24; Gottschalk (ed.), *Stormvloed en rivieroverstromingen*, ii, 388-90; J. De Bruin & D. Aten, *Een gemene dijk? Verwikkelingen rond de dijkszorg in West-Friesland. De watersnood van 1675-1676* (Purmerend, 2004).

²⁰¹ E. Guidoboni, 'Human factors, extreme events and floods in the lower Po Plain (Northern Italy) in the 16th century', *Environment & History*, 4 (1998), 279-308. On the general poor state of Northern Italy in the late sixteenth century, see N. Davidson, 'Northern Italy in the 1590s', in P. Clark (ed.), *The European crisis of the 1590s. Essays in comparative history* (London, 1985), 157-76. For population decline see, A.

Middle Ages, the whole hydraulic system of the Po Valley was in a precarious state – quite simply the water flow did not know which way to turn.²⁰² Canals which had been a source of wealth by bringing new watercourses into cities had begun to create serious imbalances by depositing silt and sand into the Po basin leading to frequent flooding.²⁰³ Ineffective drainage systems had left areas of land submerged under water for long periods of time, eventually leading to malaria epidemics.²⁰⁴

By the sixteenth century, rural people of the plains had begun to flee to the mountains or swarm upon the cities in search of food (forcing many to close their gates to beggars and vagrants).²⁰⁵ The environmental degradation caused by land reclamation hit the people of the Po Valley harder than the people of Holland. The outward migration to the cities first of all meant that the peasant assistance in the maintenance of the hydraulic works completely unravelled.²⁰⁶ More to the point, the proletarianisation of the countryside thanks to early urban encroachment had left many rural people landless – and therefore not interested or willing to provide labour for the water works. Migration to the Appennines led additionally to further deforestation in the mountains (the sources of the main rivers across the Po Valley), making the plains more susceptible to flooding.²⁰⁷ Most importantly, however, land reclamation in the Po Valley had created a polarised society, dominated by a select number of urban interest groups. As flooding became more and more frequent, a higher pressure was put upon the reserves of grain to stave off famine as so many harvests were ruined.²⁰⁸ Land reclamation and the new hydraulic society which characterised the transition from the medieval to the early modern period, however, had led to a society that (a) had lost the means to the production, but also (b) were faced with an absentee landlord group that had turned large areas of land from arable to meadow. Not only did the move towards the production of meat and dairy for an elite urban market reduce the amount of work available in the countryside, but it reduced the supply of grain – and left the greatest number of people facing terrible

Bellettini, *La popolazione di Bologna dal secolo XV all'unificazione italiana* (Bologna, 1961), 25–6, 47–8; G-L. Basini, *L'uomo e il pane* (Milan, 1970), 14, 17.

²⁰² F. Cazzola, 'La terra costruita', in A. Visser Travagli & G. Vighi (eds.), *Terre ad acqua. La bonifiche ferraresi nel delta del Po* (Ferrara, 1990), 35–50.

²⁰³ A. Giacomelli, 'Appunti per una rilettura storico-politica delle vicende idrauliche del Primaro e delle bonifiche nell'età del governo pontificio', in *La pianura e le acque tra Bologna e Ferrara: un problema storico* (Ferrara, 1983), 101–254.

²⁰⁴ I. Fenlon, *Music and patronage in sixteenth-century Mantua*, i (Cambridge, 1980), 11.

²⁰⁵ J. Gutton, *La société et les pauvres en Europe, XVIe-XVIIIe siècles* (Paris, 1974), 104–6.

²⁰⁶ M. Cattini, 'Strade liquide e archipelaghi di terre: lo spazio estense visto da Ferrara', in G. Papagno & A. Quondam (eds.), *La corte e lo spazio estense* (Rome, 1982), 119–30. The only solution was employing wage labourers as noted in F. Cazzola, 'L'evoluzione contrattuale nelle campagne ferraresi del Cinquecento e le origini del patto di boaria', in *Il Rinascimento delle corti padane. Società e cultura* (Bari, 1977), 299–327.

²⁰⁷ See the criticisms made in A. Alberti & R. Cessi (eds.), *Un codice veneziano del 1600 per le acque e le foreste* (Rome, 1934).

²⁰⁸ Alfani, 'Population and environment in Northern Italy', 581.

shortages in subsistence foodstuffs by the sixteenth century.²⁰⁹ The deficit in basic foods became a serious problem in many parts of Northern Italy.²¹⁰ In accordance with Amartya Sen's work on late-twentieth century Bangladesh, 'natural disasters' hit the poorest people the hardest in the Po.²¹¹

In sum, medieval reclamation of the marshes of Holland and the plains of Northern Italy had created two divergent societies. Medieval Holland was characterised by egalitarian distribution of property, high levels of freedom and autonomy for its inhabitants, secure rights to property and a modern system of property transfer, a wide range of specialised and commercialised (non-agricultural) economic activities, and a flexible and unrestricted market for commodities and capital. In contrast, the Po Valley was characterised by two different forms of repression (manorial and then urban), increasingly higher levels of polarised distributions of landownership, an entirely restricted and manipulated set of economic activities, and markets subject to domination by interest groups through monopoly. In this paper it has been argued that societies based more around notions of equality and freedom were better placed to deal with the consequences of environmental degradation (this time through land reclamation) than those marked by polarisation and repression – even when those polarised societies made recourse to capital investment in technology. Perhaps these sentiments may be applied to the modern world, where technology has become the answer to all of life's problems.

²⁰⁹ M. Bellabarba, *Seriolanti e arzenisti. Governo delle acque e agricoltura a Cremona fra Cinque e Seicento* (Cremone, 1986); Zanetti, *Problemi alimentari*, chp. 4; G-L. Basini, *Sul mercato di Modena tra Cinque e Seicento. Prezzi e salari* (Milan, 1974), chp. 3; M. Romani, *Nella spirale di una crisi: popolazione, mercato e prezzi a Parma tra Cinque e Seicento* (Milan, 1975), chp. 3.

²¹⁰ B. Belotti, *Storia di Bergamo e dei Bergamaschi*, ii (Milan, 1940), 264; V. Beonio-Brocchieri, 'Piazza universale di tutte le professioni del mondo'. *Famiglia e mestieri nel Ducato di Milano in età spagnola* (Milan, 2000), 66; O. Raggio, 'Social relations and control of resources in an area of transit: eastern Liguria, XVI-XVII centuries', in *Domestic strategies: work and family in France and Italy, 1600-1800* (Cambridge, 1991), 21; D. Sella, 'Coping with famine: the changing demography of an Italian village in the 1590s', *The Sixteenth Century Journal*, 22.2 (1991), 185-7.

²¹¹ Sen, *Poverty and famines*.