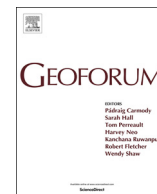




ELSEVIER

Contents lists available at ScienceDirect

Geoforum

journal homepage: [www.elsevier.com/locate/geoforum](http://www.elsevier.com/locate/geoforum)

# Artisans as knowledge workers: Craft and creativity in a long term perspective

Bert De Munck

Urban Studies Institute, University of Antwerp, Belgium

## ARTICLE INFO

### Keywords:

Labour  
Skill  
Craft  
Creative class  
Guilds  
City

## ABSTRACT

This paper proceeds from the observation that critical approaches to the present-day disparagement of craftsmanship often invoke an idealized image of the early modern artisan as basically the other of modernity. While Richard Florida and others reduce talent and creativity to the cerebral capacity to invent cutting-edge products in the context of the global knowledge economy, the late medieval and early modern counterpart of this is considered to be an autonomous artisan focused on the quality of work for its own sake. This is unfortunate because the critical potential of the historical view thus remains untapped. Recent historical insights show that the intellectual and political claims implicit in the work and strategies of late medieval and early modern artisans have a far more radical potential. This becomes clear especially when considering not only the work of social and economic historians (focused on labour) and historians of technology, but also intellectual historians, art historians and historians of science. They have recently unearthed an ‘artisanal epistemology’ in which the creative capacity of late medieval artisans was not limited to the instrumental invention of new products and technologies but gave access to God’s wisdom and truth and was akin to creating new ways of being. The political potential thereof is illustrated with the political struggles of manufacturing guilds, which in spite of contemporary ideologies sometimes succeeded in being accepted as valuable and rational political actors notwithstanding having to work with their hands. The most fruitful conceptual approaches emerging from this work are based on Foucauldian notions of power and governmentality, in which the economic, the political and the epistemological dimensions are considered to be intimately entangled.

## 1. Introduction

Artisanal and hands-on skills are traditionally framed in a narrative about deskilling, but while this has often been attributed to economic and technological factors, the picture is more complex today. Marxist scholars have referred to new managerial techniques, which would have deprived workers of autonomy and subjected them to an ever more rationalized factory regime (Braverman, 1974; Montgomery, 1974; Marglin, 1974; also Haydu, 1988). Since the 1980s, under the influence of symbolic anthropology and post-structuralism and in the wake of debates about class and working class consciousness, it is moreover argued that the value of skills partly results from perceptions and discourses, which interacted with economic and political transformations (Joyce, 1980; Sewell, 1980; Reddy, 1984; Biernacki, 1995). Both Sewell (1980) and Reddy (1984) for instance argued that social resistance and protest from the part of nineteenth-century artisans involved discourses and attitudes about the value of work originating in the early modern period. According to Reddy (1984), workers continued to see themselves as independent artisans notwithstanding the

inexorable rise of concentration trends and mechanization, explaining why they did not only stand up for higher wages but for dignity and custom-related rights too.

Since then, social and labour historians have often focused on the perception of and attitudes to work – including for Antiquity and the Medieval and Early Modern Period. They have shown that prior to the mid-eighteenth century already attitudes to work varied enormously, both in time and according to social group (see esp. Lis and Soly, 2012). Nevertheless, all too often the medieval and early modern artisan remains the mirror-image of the nineteenth-century alienated factory worker, which is due to present-day views of intellectuals and scholars as well as of those of nineteenth-century artisans themselves. The latter often claimed to hark back to and continue an ancient regime tradition when protesting mechanization and guarding their so-called ‘property in skill’ (Sewell, 1980; Rule, 1987). In the same vein, nineteenth-century thinkers and critics such as William Morris and John Ruskin started to create an idealized image of handwork and skills, summed up in the term ‘craft’. Glenn Adamson (2013) has convincingly argued recently that craft emerged as a coherent idea and a separate category already at

E-mail address: [bert.demunck@uantwerpen.be](mailto:bert.demunck@uantwerpen.be).

<https://doi.org/10.1016/j.geoforum.2018.05.025>

Received 18 February 2017; Received in revised form 28 May 2018; Accepted 31 May 2018  
0016-7185/ © 2018 Elsevier Ltd. All rights reserved.

the end of the eighteenth century and the first half of the nineteenth, when it was forged and fabricated as a counterpart and complement to modernity and machine-driven production. Not least in England, the cradle of the industrial revolution, craft became connected to tradition, as basically the ‘other’ of modernity (see also Adamson, 2007).

Ever since, references to craftsmanship are often dipped in nostalgia, driven by a yearning for an idealized past in which workers were autonomous and un-alienated and craft played an organic role in society, including a socially binding one. From the Arts and Crafts movement, over the Studio Craft Movement and the Do It Yourself scene, up to the critical views of Richard Sennett, craftsmanship tends to be presented as a means to repair the faults of modernity while building on, or helping to build, an idealized past (e.g., Sennett, 2008; Levine and Heimerl, 2008; also Mills, 1956; Pye, 1968). Sennett (2008: 9) notoriously considers craftsmanship an inborn and trans-historical human impulse, viz. ‘the desire to do a job well for its own sake’. Without tracing the historical evolution he thus implies that craftsmanship would have been less decayed before modernity obliterated our innate yearning for creation and the making of good products (cf. Sennett, 1998, 2012). This is unfortunate because while the search for less alienating and more self-fulfilling and enriching conceptions of work is entirely legitimate, the potential of a critical historical reading is not tapped in this way.

This paper presents some of the recent literature on late medieval and early modern attitudes to work and craftsmanship in order to shed a critical light on present-day discussions about ‘good work’. A great deal of these discussions center around the notion of creativity. Richard Florida (2002, 2004) has famously described the existence of a ‘creative class’, the members of which would have the potential to escape processes of alienation and be liberated from the forces of capital because of their knowledge and creativity. Following Florida, what matters for workers in the context of the new global (knowledge) economy is no longer capital but ‘creative capacity [which] is intangible because it is literally in their heads’ (2002: 68; also quoted in Peck, 2005: 744). Others have criticized this, however, arguing that creativity in this work is conceived in a very narrow sense, viz. as contingent upon a specific (neo-liberal) economic and governmental context in which creative capacity is to result in products catering to a market and consumers who highly value novelty and in artefacts which provide psychic gratification as signs and symbols (cf. Edensor et al., 2010; also Lash and Urry, 1994).

On the surface, late medieval and early modern craftsmanship could be referred to as a valuable alternative here. Sociologists, geographers and art critics have already criticized the narrow conception of creativity as something purely cerebral and intellectual and pointed to the ambiguity of craftsmanship being indispensable for artistic and creative work while simultaneously considered subordinate and inferior (e.g., Banks, 2010; also Adamson, 2007). But this is not to say that pre-modern hands-on skills can simply be invoked to replace the present-day conceptions of creativity. This paper proceeds from the observation that the critical ideas of Adamson, Sennett and others still invoke or imply outdated notions of deskilling which are in a process of being refuted among historians. My aim is to further the debate by reviewing recent insights of historians, which show that present-day conceptions of craftsmanship often build on narratives of modernity originating in the late seventeenth and eighteenth century. These narratives have eclipsed a far more fundamental critical potential of craftsmanship than that invoked by Sennett.

The recent views of historians of science in particular will be shown to imply a radical critique of present-day conceptions of craftsmanship. I will argue that late medieval and early modern artisans in contrast to present-day craftsmen succeeded in being accepted not only as valuable for economic innovation but as genuine knowledgeable actors. This will be shown in the first and second sections, in which I will first qualify the importance of the industrial revolution and then show that the artisans’ technical knowledge was not necessarily opposed to neither artistic nor

intellectual knowledge up to the sixteenth century. While according to some contemporary intellectuals artisans would have had a privileged access to truth and wisdom, current historians of knowledge even point at the importance of artisanal skills and practices in the coming about of the so-called ‘scientific revolution’.

The critical political potential thereof will be substantiated in the third and fourth section, in which I will connect late medieval and early modern artisanal work to the changing governmental context – particularly at the urban level. Following Florida, who builds on work from Franco Bianchini and Charles Landry (Bianchini and Landry, 1995; Landry, 2000) knowledge today is crucial not only for firms but for cities as well. As well as firms, cities have to invest in attracting knowledge workers and creative individuals, by accommodating them and catering to their need for a tolerant and entrepreneurial atmosphere, pleasant meeting places, and cultural activities corresponding to their taste and lifestyle (Florida, 2004). Others have however pointed to the ambivalent co-emergence of neo-liberal forms of production, on one hand, and the search for self-realization and authenticity through creative labour, on the other (an overview in Edensor et al., 2010). Under the influence of the Foucauldian notion of governmentality, this is recently revealed as a process of self-commodification and emotional investment in a logic of productivity (e.g., Ursell, 2000; also Rose, 1999). Building on this, I will show that the recent literature on late medieval artisans implies a radical response to such a logic of productivity – even if this was not voiced as such by the artisans themselves.

## 2. Qualifying the industrial revolution

One of the key issues among economic and urban geographers is the definition of human capital and skills, with the debate often centring around the question whether they can be seen as independent variables which precede economic growth and patterns of urbanization in an analytical or chronological way. Common sense ideas on the post-Fordist knowledge economy in general and the creative class in particular have favoured an approach in which knowledge, skills and creativity are seen as not simply indispensable for economic growth but, more specifically, as exogenous drivers of economic innovation. However, critical voices have rightfully argued that creativity and innovation should be understood as partly endogenous to place-specific economic clusters (Storper and Scott, 2009) and as emerging in concrete fields of social interaction (Peck, 2005: 763–5; Scott, 2014). A proper understanding thereof requires an historical approach, but it remains to be seen whether the insights provided by social and economic historians are sufficiently critical.

Skills have been examined particularly by labour historians, which typically addressed them from the vantage point of the industrial revolution. Yet over the last few decades, the impact of the ‘industrial revolution’ on skills has been questioned. On the one hand, deskilling is shown to have often resulted from division of labour in un-mechanized sectors like shoemaking and woodcarving (Berg, 1980: 29; Adamson, 2013: xix and ch 1). On the other hand, high level hands-on skills continued to be important throughout the industrial revolution. Increasing scale and technological transformations are revealed to have been gradual processes, limited both regionally and in terms of the sectors involved (e.g., Crafts, 1985; also Berg and Hudson, 1992). Most sectors were hardly mechanized at all by the end of the nineteenth century. This was certainly the case for local trades like tailoring and shoemaking, but such large export sectors as the silk and linen industries too continued to rely on high quality skills and experience – not to mention earthenware (Samuel, 1977, 1992; Berg, 1980, ch 2; Sabel and Zeitlin, 1985). Hands-on skills were simply not antithetical to machine-based production, and not only because sophisticated skills were often needed to make the machines.

Alternatively, most historians do no longer idealize the medieval and early modern craftsmen. The nineteenth and early twentieth

century image of the guild master working independently in his own house with his sons, an apprentice and perhaps a few journeymen has been qualified – especially from a social and economic perspective. Economically, these masters were often not independent at all. Rather than producing directly for their own customers, they often worked for one or a few merchants, who controlled both access to markets and the supply chains of raw materials (a recent synthesis with extensive references is [Farr, 2000](#)). Nor was the level of their skills untouched by the economic context. Deskilling resulted from changing organization of production, for instance when subcontracting emerged in traditional trades like eighteenth-century shoemaking or early nineteenth-century silk weaving ([Cottureau, 1997](#); [Riello, 2006: 161–189, 2008](#)). Subcontracting was ubiquitous in the eighteenth century, but it was already discernable before, in the seventeenth and sixteenth centuries (e.g., [Deceulaer, 2000](#); [Lis and Soly, 2008](#)). In the textile and construction sector, subcontracting and the contracting out of work to home workers have even been recorded as early as the fourteenth century ([Lis and Soly, 2008: 100–1](#)). Nor did sectors famous for their sophisticated skill-levels escape deskilling trends. Painters as well as gold- and silversmiths witnessed the emergence of specialized ateliers, as a result of which some apprentices did no longer learn the whole range of skills available in the sector (e.g., [Bimbenet-Privat, 1995](#); [Honig, 1998](#); [De Munck, 2007a: 41–58](#)).

Nevertheless, medieval and early modern craftsmanship is still associated with sophisticated and cutting-edge items produced by highly reputed guild-based masters – and increasingly so in some of the recent research. Economic historians now stress the importance of skills and human capital in the late medieval and early modern period. In the 1970s already Herman [Van Der Wee \(1975\)](#) pointed at the importance of skills in late medieval cycles of growth. In his wake, Jan Luiten van Zanden has recently argued that Northwest Europe was bound to out-compete other regions because of its superior levels of human capital originating in the late medieval period. The latter historian figures prominently among those who link up with present-day views on the knowledge economy. What they have in common is that they project present-day views on knowledge and skills into the distant past – including the idea that knowledge and skills can be considered independent variables and exogenous drivers of economic innovation and rising productivity. With an eye at measuring it, they have mostly looked at levels of literacy, with the ability to write one's own name as a proxy, or else, estimates of the number of books sold (e.g., [van Zanden, 2009, chs 3 and 5](#)). More recently, they have added numeracy levels to that, using 'age heaping' (the extent to which people knew their ages precisely or rather guessed) as a proxy ([A'Hearn et al., 2006](#); [De Moor and van Zanden, 2008](#)). The quality of these proxies is highly questionable, to say the least, and they imply a normative view on the value of skills and knowledge. Being able to read, write and even count was unnecessary for the largest part of the workforce. Reading and writing was in all likelihood more important for cultural reasons, like the need to be able to read the bible or the catechism. Counting may have been important for employers, but not for employees. A focus on literacy and numeracy in all likelihood amounts to projecting a modern framework on the pre-modern past in an anachronistic way.

Far more important than reading and writing was the ability to manufacture products hands-on. This was mostly learned on the spot in this period and involved, above all, tacit skills. Manufacturing skills were overwhelmingly acquired by doing, in a process of trial and error supervised and monitored by a master artisan (cf. [De Munck et al., 2007](#)). Being able to read a recipe may have made a difference in some trades, such as dyeing; and pharmacists in all likelihood needed to know Latin. But on the whole, the key issue was acquiring embodied knowledge, that is, either hands-on automatisms or an intuitive understanding of how raw materials would react to mechanical, physical and chemical processes. In the terminology of Joel [Mokyr \(2002\)](#), this is prescriptive knowledge – knowing what without necessarily knowing why – which he distinguishes from propositional knowledge – i.e.,

understanding the underlying natural laws. According to Mokyr, prescriptive knowledge would have predominated before the eighteenth century, during which the age-old gap between prescriptive knowledge (typically available and used on the shop floor) and propositional knowledge (the prerogative of natural philosophers) would have finally narrowed, explaining the emergence of the industrial revolution and sustained economic growth in Europe in the decades and centuries to come.

Mokyr's views loom large in the work of economic historians and historians of technology, but they have rightfully been criticized as teleological and Eurocentric. Just as is the case with the economic historians referred to above, Mokyr projects current views on skills – in particular the distinction between doing and understanding, or between hand and mind – into a distant past ([Hilaire-Pérez and Verna, 2006](#); [Berg, 2007, 2013](#)). While bridging economic history and the history of technology with the history of knowledge and science, he builds on an opposition between mechanical arts and liberal arts, which crystallized during the eighteenth century, but the origins of which are to be situated in the Renaissance and even Antiquity (cf. [Lis and Soly, 2012](#); also [Adamson, 2007, 2013](#)).

Limiting our view to this narrative of modernity would do injustice to the artisans' agency. For starters, we should not assume that the tacit and embodied knowledge of artisans was incompatible with creativity and innovation. Most economic development in the late medieval context was not driven by process innovation but rather product innovation. Although in textiles some new labour saving machines were gradually introduced – notably the engine loom and the ribbon frame ([Pfister, 2008](#); [Davids and De Munck, 2014](#)) – regions and cities typically gained prominence whenever new markets were entered with new types of products. The pre-dominance of fifteenth-century Florence was for instance connected to its cutting-edge textile production, including silks like figured velvets and brocades with embroidery and gold and silver threads ([Goldthwaite, 2009, ch 4](#)). Venice was famous, among other things, for its glass production ([Trivellato, 2006](#)). In these sectors as well as most others, technology developed incrementally in correspondence with new products, whether it be textiles needing new types of yarn preparation or tin-glazed pottery requiring fine-tuned baking techniques. And innovation was typically based on trial-and-error and the tacit and embodied knowledge of artisans ([De Munck et al., 2007](#); [Davids and De Munck, 2014](#)).

As a consequence, a key issue arguably is the notion of invention and the way it was connected with embodied skills and tacit knowledge. But here again, we should be wary not to reduce invention – and its corollary 'creativity' – to an exogenous factor and independent variable the definition of which is immutable and trans-historical. Critical geographers have made clear recently that innovation and the value attached to creativity are not only contingent on histories and geographies of production, but also on broader social, cultural and political dynamics. [Peck \(2005: 763–5\)](#) has notoriously argued that the creative class concept is fundamentally entangled with neo-liberal forms of governance and inter-urban competition in which cultural artefacts and repertoires are commodified and turned into competitive assets. In a similar vein, [Scott \(2014\)](#) has advocated cognitive-cultural capitalism as a concept to replace the concept of creative city and the notion of creativity that pertains to it. While thus referring to a process in which culture and cognition have become entangled with economic productivity, Scott also invites to reflect critically upon the definition of culture, as well as that of art and artist. In a recent literature overview, [Markusen \(2014\)](#) has rightfully pointed out that art and culture are not only instrumentalized in present urban economies, but are also exclusive because based on such dichotomies as 'fine arts' versus 'crafts', 'professional' versus 'amateur' and 'formal' versus 'informal' ([Markusen, 2014: 572](#)).

Consequently, it is not sufficient to point at the importance of tacit and embodied types of knowledge and the artisans' capacity to be creative and original – let alone to simply link skills to a specific type of

economic or technological context. The challenge is to connect the definition and value of artisanal skills and knowledge to broader societal transformations from which new notions of economic productivity emerged. In the next section, it will be shown that artisans were once seen as knowledgeable actors in a much broader sense, but that intellectual, economic and political elites gradually reduced them to being valuable in a narrow logic of productivity only – especially from the late seventeenth and eighteenth century onwards. What the recent literature adds to this, is that this gradual disparagement is to be understood beyond a simple economic or traditional political logic. It was the result of a complex history in which the economic was entangled with epistemological and political transformations.

### 3. Artisans as knowledge workers and inventors

In the late medieval period, invention – the contemporary equivalent of innovation – was closely connected to imitation. Artists and artisans constantly tried to improve their own work by imitating other products. In Europe, a great deal of ceramic and faience production (white glazed ceramic named after the North-Italian city Faenza) was for instance driven by the desire to equal Chinese porcelain, which was considered to be of better quality (Finlay, 2010). Nor was this an economic issue exclusively. As intellectual historians have shown, *aemulatio*, trying to imitate and surpass the model, was the order of the day during the Renaissance, which as an intellectual enterprise can be summed up as imitating and competing with the Ancient philosophers, rhetoricians and poets. Not unrelated to this, imitation and emulation could moreover be associated with trying to imitate or surpass the perfection of nature, which in the religious context of the time was the ultimate perfection because it was created by God (e.g., Gouwens, 1998; Syson and Thorton, 2001; Mackenney, 2005).

In this vein, the term invention cannot be properly understood from a modern frame of reference. Following intellectual historians, invention was not so much creating something new during the Renaissance, but rather discovering the truth. In rhetoric, truth emerged as soon as the right words were found (Marr and Keller, 2014). This affected artisans because something similar applied to things, which in the Renaissance epistemological tradition could give access to the truth too. While truth was equal to God's wisdom, God was immanent in everything on earth. Consequently, making a new product could be seen as both invention and accessing God's wisdom. In the fifteenth century and beyond, intellectuals like Nicolas of Cusa seriously debated the question of whether craftsmen had a privileged access to God's creation. In some of the Humanists' mystic framework, the artisans' naïve, unmediated experience of nature was seen as a direct route to God's wisdom and truth (Miner, 2004, chs 1 and 2; Oosterhoff, 2014). The flipside was that artisans could not be seen as the 'authors' of a work of art or a product. The real and ultimate creator was always God. Nor was this any different with scientists.

Nevertheless, in recent research of historians of science artisans are seen as co-responsible for what they have formerly coined the 'scientific revolution'. The basic idea is that the daily dealing with matter from the part of artisans, artists and experts fostered the shift from speculative (deductive) philosophical reasoning to the inductive grounding of knowledge in observation and experiment (Cf. Rossi, 1970; Zilsel, 2003; Dear et al., 2007; Long, 2011; also Klein and Spary, 2010; Smith et al., 2014; Valleriani, 2017b). It is important to understand here that their role was not limited to the manufacturing of compasses and air-pumps and their capacity to grind lenses. Based on his study of the role of artisans in the philosophical work of Descartes, Jean-François Gauvin argues that Descartes' *mathesis* was very much based on the necessity to perceive differences and similarities in things. Artisans, whether it be weavers or blacksmiths, were considered to be very good at that. They were considered to be constantly training such mental faculties as perspicacity and discernment, because their daily operations required them, for instance, to concentrate and fix their eyes on a single point,

and to look at details (Gauvin, 2006: 190).

Up to a degree at least, Descartes considered the activities of artisans an epistemic model of sorts. He saw an orderly soul (an *âme réglée*) at work, an innate rationality which helped to substitute speculative philosophy with the Cartesian method of knowledge production on a conceptual level (Gauvin, 2006). However, the danger still looms large here to frame this in a narrative of modernity. As recently argued by Dupré and Göttler (2017), discernment was not only about the faculty of using the senses in a certain way; it was simultaneously the moral and ethical ability to distinguish the good from the evil, or god's goodness from the devil's truces. Taking the religious context seriously, it becomes clear, moreover, that agency cannot be located exclusively in the mind or the hands of the artisan. In her book the *Body of the artisan* Smith (2004) notoriously revealed an 'artisanal epistemology' in which knowledge about nature was not something 'possessed' by an individual or a group. As she argued with respect to Paracelsus, scientific knowledge could not be seen as located in the mind of the observing scientist. At least partly it was always located in matter itself (Smith, 2000a: 17; also Smith, 2000b, 2004). For manufacturing artisans, this implied that the value of the products manufactured by their human hands derived not from specific expertise or virtuosity but from a fusion of sorts of, on one hand, the body and soul of the artisans, and, on the other, the heavenly spirit in matter (Smith, 2000a, 2000b, 2004).

In a somewhat paradoxical way, then, handicraft was closer to creation than we would readily admit today. In the Platonic philosophical tradition, even God, the supreme Creator, was imagined as a craftsman, a Demiurge, who had the capacity to impose order onto the chaos of Nature. In the Aristotelian tradition too, there was a connection between creation and craftsmanship, although here, nature itself rather worked like a craftsman (Solmsen, 1963). Although it remains to be seen of course to what extent such views had an impact on late medieval conceptions of craftsmanship – or were even remotely connected to it – the broader mental framework was in any case one in which neither art and craftsmanship nor invention and craftsmanship were separated at the time. While the notion of invention cut across theory and practice as well as production and conception, the work of both artists and craftsmen could be seen as participating in God's creation (Miner, 2004). This is why sculptors and painters were often joined in the same guilds as masons and panel makers, or at least as gold- and silversmiths and engravers. Up to the Renaissance period, art and craftsmanship were simply not seen as separate categories. Art did not exist as an entirely separate category prior to the fifteenth or even the sixteenth century, nor could artists claim to be more creative and innovative than artisans.

Telling from the work of art historians and historians of science, it is on this level that the most important transformations occurred. During the Renaissance, artists started to distinguish themselves from what they then called 'mere handworkers'. They started to align themselves with the 'liberal arts', claiming that in contrast to artisans they needed intellectual capacities (Levy, 1984; Filipczak, 1987; also De Munck, 2010a; Lis and Soly, 2012: 365–399). These intellectual capacities included being acquainted with classical examples and Latin, which helped to cater to the taste and expectations of a certain learned public in the design of new paintings and sculptures (see also Syson and Thornton, 2001). Yet there was more at stake than different learning trajectories. This is illustrated in a juridical litigation between the Antwerp masons and sculptors in which the latter wanted to part ways from the former, with which they were joined in the same guild (the Guild of the Four Crowned). The sculptors argued that while apprentices in masonry could support themselves by their work from the first day of their training, 'apprentices in sculpture did not know for four or five years whether they would be able to continue in the profession' (De Munck, 2010a: 346–7; see also Filipczak, 1987: 16). Beyond the economic idea that training in masonry could coincide with earning a living, this argumentation implies that talent was needed for sculpture but not for masonry. While the latter could always be learned the



former could be beyond the capacities of some.

The gradual separation of art (and invention) from craftsmanship is shown to be part of a broader epistemological shift in which embodied skills gradually lost credibility. In the same timeframe, mathematics was elevated to the level of natural philosophy as a source of knowledge, or components of it were at least appropriated by natural philosophers (Cormack, 2017: 2, 4–5). Practical mathematics too grew more important and was increasingly seen as indispensable for measuring and controlling the environment, in fields such as navigation, cartography, surveying, and fortification. For artisans, this was detrimental. While mathematical practitioners were usually university trained, most artisans faced what H el ene V erin has identified as ‘la r eduction en art’. With this phrase V erin refers to the emergence of a ‘practical science’ in which the routines of artisans were replaced by the abstraction and systematization of engineers and architects from roughly the second half of the sixteenth century onward (V erin, 1998, 2002; Dubourg Glatigny and V erin, 2008). Nor was this simply a top down process. As is explained by Matteo Valleriani in his introduction to the volume *The structures of practical knowledge*, processes of codification and abstraction which made practical knowledge relevant for the emerging new sciences, partly emerged from practical activities like mining and ship building enterprises and other forms of exploration and manufacturing (Valleriani, 2017a).

All these transformations crystallized in the growing importance of drawing and design. As art historians and economic historians studying the art market have shown, the price of artwork gradually became dependent on the reputation and excellence of the artist instead of just work hours and the value of the raw materials used (e.g., Bok, 1998; Honig, 1995; also Baxandall, 1972). Not only were artists at the upper end of the scale increasingly being paid for their inventiveness, ‘disegno’ (meaning both invention and drawing) emerged as the visible manifestation of genius (‘ingegno’) (Filipczak, 1987: 40–45; also Syson and Thornton, 2001: esp 135–136). Talent, or, in the contemporary terminology, *ingegno* or *ingenium*, was progressively seen as a mental faculty, connected first of all to the capacity to draw or design. Along with drawing, the ability to read and write became more important as a marker of distinction in the early modern period. In the art sector, this all culminated in the foundation of art academies, in which painters, sculptors, and architects gathered to select and instruct new generations of artists according to the new standards. By the end of the seventeenth century, a great deal of artisans from other sectors frequented the academies in order to learn to draw too (e.g., De Munck, 2007a, ch 6.5). In the eighteenth century, drawing and design schools popped up like mushrooms all over Europe, illustrating the ever increasing importance of drawing, in addition to reading and writing (e.g., Puetz, 1999).

All this took place in a context, in the seventeenth and eighteenth centuries, in which novelty, fashion and design became increasingly important in consumer preferences and the assessment and valuation of products (Styles, 1993, 2000; Berg, 2002; De Vries, 2002, 2008, ch. 4; De Munck, 2014; a critical overview in Blond e and Ryckbosch, 2015). This partly explains the ambition of a range of artisans to take part in a new type of economy as well as the fact that they often frequented art academies and design schools. Yet to see the artisans’ difficulties in being accepted as ‘knowledge workers’ after the sixteenth century to something resulting from changing consumer preferences would be as reductive as attributing deskilling to the industrial revolution. While the importance of drawing was connected to epistemological evolutions, the artisans’ struggles bridged the political and the epistemological. Turning to the medieval urban revolts with this perspective in mind, is particularly revealing. It illustrates the radical political potential of taking ‘artisanal epistemologies’ seriously.

#### 4. The politics of knowledge

Using the phrase of Minard (2004), the transformations related to consumer preferences and material culture could be summarized as a

shift from a supply-side economy to a demand-side economy. In the former, producers to a large extent guarded product quality themselves. Up to the end of the eighteenth century, guild-based masters often set minimum standards and prescribed the use of collective hall marks in case it was not visible to the naked eye whether the product was up to the standards or not. This implies that producers were trusted as actors capable of defining what a high quality product is. It is something they had fought for during the late medieval revolts. Before, monitoring product quality and applying the hall marks had often been the prerogative of urban officials or merchants (which often came down to the same, given that merchants mostly controlled urban governments) (De Munck, 2012).

Yet, while the late medieval urban revolts typically involved artisans, they were mostly examined by historians with Marxist concepts in mind. Before the famous urban revolts, which startled the European cities between the twelfth and the fifteenth centuries, artisans were economically exploited by merchants (or by larger artisans) and lacked political representation. This goes a long way in explaining the often protracted and bloody struggles of artisans in the late medieval cities, during which the artisans partly succeeded in becoming accepted as part of the urban body politic via their guilds (see Schulz, 1992; Cohn, 2009 for overviews). Depending on the outcome of the urban revolts between the twelfth and the fifteenth century, the guilds’ representatives had a fixed number of seats reserved for them in the local councils (see e.g., Schulz, 1994; Prak, 2006; Kl uge, 2009: 88–98). Yet, our understanding of these struggles is not exhausted with reference to the economic exploitation of the artisans by the mercantile elite – however important that was. Their strife was not only about the fruits of labour and surplus extraction, as expressed in wages and taxes. As the example of the county of Flanders illustrates, the revolts were genuine political struggles. If successful, the artisans’ professional organisations were not only accepted as legitimately representing their interests, they were structurally integrated as a constitutive part of the urban body politic (see e.g., Dumolyn and Haemers, 2005; Boone, 2010).

In addition, the political should be understood in its broader sense here, including the Foucauldian power/knowledge-nexus. In political philosophy, the artisans’ talents and skills were often seen as incompatible with the skills and talents needed to be a political subject – to be a citizen. In Greek philosophy, which very much informed late medieval and Renaissance political thinking, people who had to work with their hands were considered unfit for political participation because that required being free from authority and from financial and economic worries, which was considered the precondition of being able to act in a disinterested and therefore rational way in the service of the common good (instead of one’s self-interest). People who had to work with their hands were considered slaves of necessity, in contrast to the mercantile and aristocratic elites who ran the cities. Artisans were even considered being part of the realm of Nature rather than the realm of Politics – and therefore they could not be political subjects at all (Lis and Soly, 2012, ch 1: esp. 13–6; De Munck, 2017: 813–15). But this is precisely what changed when the revolts were successful. A new reading of the revolts suggests that artisans fought for having their talents and skill recognized as being valuable for the urban community in both an economic and a political way (De Munck, 2018, chs 1 and 2).

This new reading is based on the observation that the emancipation of guilds and guild-based groups in a great deal of late medieval cities was simultaneous with a shift towards high value added products (cf. Van Der Wee, 1975; De Munck, 2017: 814). In the very same period, manufacturing artisans started to compete not through the price but through the quality and status of their products. As a consequence, their political claims could be backed by the argument that their talents and skills mattered more in an economic sense. Secondly, and perhaps related to the economic transformation, these urban revolts coincided with an epistemological shift. They were also remarkably simultaneous with a very significant transformation in the relationship between

nature and ‘artifice’, or nature and the political. While artisans were often considered part of the realm of nature and therefore fundamentally outside the political or the ‘artificial’ sphere, the gap between nature and artifice narrowed in the fifteenth and sixteenth century. This is argued by Pamela Long (2011), in her book *Artisan/Practitioners and the Rise of the New Sciences, 1400–1600*. Artists and artisans were perceived as being able to imitate the perfection of nature better and better; and nature experienced a first phase of disenchantment – with artisans and others trying to understand nature through experiment and observation. In other words, artisans in the most important cities in Europe fought bitterly not only for control over the means of production and surpluses, but also for being accepted as valuable political and rational actors.

In most Italian cities and city-states, artisans did not emerge as victors from the urban revolts in the long run. While the revolts burst earlier than elsewhere in Europe and were first successful for artisans at least in some cities, artisans had mostly lost their political position by the end of the fifteenth century at the latest. This was the case in Venice and Florence and other famous Italian cities, where the urban governments and the guilds were soon again governed by the mercantile magnates who controlled the city both economically and politically (see e.g., Najemy, 1979, 1982; Mackenney, 1987). In such other regions as the Northern Netherlands and England too, merchants rather than artisans soon held the economic and political reins (Farr, 2000). Yet in the Southern Netherlands and a range of German (and Swedish) cities, manufacturing artisans partly succeeded, albeit only up to the sixteenth century and under certain conditions – i.e., if the cities in question could safeguard a certain autonomy, and if the manufacturing guilds in the cities were sufficiently powerful and run by manufacturing masters. Even here, however, artisans were no longer accepted as either knowledge workers or legitimate political actors by the eighteenth century. From the sixteenth century onwards, craft guilds progressively lost power also in those parts of Europe where they were traditionally strong.

By the mid-eighteenth century, Adam Smith considered the dexterity of a workman ‘in the same light as a machine or instrument of trade which facilitates and abridges labor, and which, though it costs a certain expense, repays that expense with a profit’ (Smith, 1776, Book II, ch 1: 335). On the surface, the Scottish philosopher is here describing labour as a commodity, which is how labour historians have mostly understood this. But Smith is no longer seen as simply the godfather of modern *laissez-faire* thinking. His views exemplify the culmination of broad societal transformations, which among other things include both changing views on talents and skills and the role of manufacturing guilds in the urban body politic. Both dimensions merge perfectly in his famous diatribes against apprenticeship, which were part of his diatribes against guilds and economic regulations. Specifically, Adam Smith considered the obligation for apprentices to serve a minimum training period – which in England was exceptionally long due to the 1563 Statute of Artificers, which prescribed a uniform term of seven years across trades and cities – obsolete and detrimental for economic development. Yet his argumentation betrays a profoundly changed view on the talents and skills of artisans. Smith sketched a stark opposition between making and invention, arguing that

*‘Long apprenticeships are altogether unnecessary. The arts, which are much superior to common trades, such as those of making clocks and watches, contain no such mystery as to require a long course of instruction. The first invention of such beautiful machines, indeed, and even that of some of the instruments employed in making them, must, no doubt, have been the work of deep thought and long time, and may justly be considered as among the happiest efforts of human ingenuity. But when both have been fairly invented and are well understood, to explain to any young man, in the compleatest manner, how to apply the instruments and how to construct the machines, cannot well require more than the lessons of a few weeks: perhaps those of a few days might be*

*sufficient.’*

(Smith, 1776, Book I, ch 10, Part 2: 151–153; also quoted in De Munck, 2015: 9)

In this quote Smith seals the distinction between, on the one hand, a small economic elite with the capacity to invent new products and techniques and, on the other, the large majority of rank-and-file artisans devoid of talent and ingenuity. By the mid-eighteenth century, the largest part of the artisans had lost their status of knowledgeable workers. In the famous *Encyclopédie* of Diderot and D’Alembert artisans were rendered as valuable in an economic sense – perhaps even more than ever –, but they were nevertheless reduced to sophisticated robots, or to a simple factor in a broader production process (Sewell, 1986; Schaffer, 1999; Koeppe, 1986, 2009). Moreover, Smith’s work implies that this was also connected to profound political transformations. Not only did Smith and others argue that the manufacturing guilds’ standards were not needed because consumers were themselves able to assess the quality of a product (cf. De Munck, 2014: 69; see also Van Damme, 2015), his views were also based upon a worldview in which guilds were entirely obsolete.

This too was typically looked at by social and economic historians through a Marxist lens, in which transformations in the field of economic thinking or accompanying discourses related to the value of artisanal knowledge were mostly seen as justifications for different economic policies for the benefit of new economic elites (see e.g., Kaplan, 2001; Haupt, 2002; Maitte, 2002). However, as hinted at above, historians of art, science and knowledge have recently pointed to the gradual disparagement of artisanal skills and embodied knowledge too – Pamela Smith, Simon Schaffer and Lissa Roberts being the most prominent examples (Schaffer, 1999; Smith, 2004; Dear, Roberts and Schaffer, 2007; also Fox, 2010). They have helped to reveal that the value of artisanal skills was at least partly also subject to changing ways of knowing. In so doing, they have moreover pointed to the need to connect this to changing modes of governance and to address, in the words of Roberts and Schaffer, ‘the interplay between the rationalising efforts of bureaucrats and factory managers and the micro-physics of rationality as a circulating system of epistemological and ontological authority’ (Roberts and Schaffer, 2007: xxii).

The last section of this essay will partly respond to this call through a focus on the city. As is clear among urban and economic geographers, economic transformations and patterns of urbanization are not only mutually entangled, but are both also connected to the production and movement of human capital. Part of the debate concentrates on whether the ‘creative class’ is attracted to burgeoning cities by the presence of convenient facilities and services (including a pleasant climate) or should be addressed from the perspective of shifting geographies of production and the demand for skills (cf. Scott, 2009). But, it is time to move the debate beyond the question whether a city’s amenities or jobs drives urban growth. The point is that the very definition of knowledge and skills was intimately connected to the conception of the city as a body politic.

## 5. Skills, creativity and the urban body politic

The disparagement of artisanal skills was intimately entangled with the disparagement of the manufacturing guilds, in which the artisans had organized during the revolts. The decline and eventual abolishment of guilds is mostly seen as a political process, which can be summarized as territorial states gaining strength and bureaucratic weight. Charles V notoriously curtailed the guilds’ power – along with the power and independence of cities – around the mid-sixteenth century (Friedrichs, 1982; Farr, 2000: 164–189). From the seventeenth century on this was increasingly accompanied by a type of mercantillistic economic thinking, in which mercantile activities were seen as the source of a nation’s wealth (cf. Farr, 2000, ch 8). Thomas Buchner (2009) has rightfully shown recently that political circumstances and power

relations had a significant impact on the perception of labor. In the Dutch Republic, where mercantile elites controlled both the economic and political levers, ‘the wealth of nations’ supposedly derived from trade. In the German context, this was more ambivalent, with the so-called cameralism showing a tendency to value the work of peasants and artisans more.

Typically, the urban revolts in the fourteenth and fifteenth century had pitched mercantile elites against manufacturing artisans. The recognition and incorporation of the guilds entailed that their members obtained a privilege, viz. the entitlement to manufacture a certain range of products within the city concerned, because the guild then held a monopoly in a certain sector – whether it be an export trade like wool weaving or a local trade like shoemaking and baking. This is rightfully seen by most historians as a victory over mercantile capital, given that it brought manufacturing artisans the levers to influence the price of their products and labour – for instance by controlling entrance to the group and regulations related to workshop size and, last but not least, product quality. On the surface, the decline thereof can then simply be seen as mercantile elites regaining power. But the explanation of the disparagement of artisanal skills is not exhausted with reference to the tension between mercantile and manufacturing interests.

With an eye at understanding the artisans’ fate, it is important to connect the ideological to the epistemological in general and the hand-mind-dichotomy in specific. Some historians have already argued in favour of connecting the history of productivity to the history of the body, the working body in particular (Bänzinger et al., 2017). In a way, this is the key nexus emerging from eighteenth-century debates. In the work of French Physiocrats like François Quesnay the term ‘productivity’ acquired new meanings, connected to notions of fertility and generation. As is well known, land was viewed as the ultimate source of productivity in these circles. Yet with Adam Smith, building on Thomas Mun and others, labour was placed at the roots of productivity and the generation of wealth (Spencer, 2009, esp. ch 2). In the process, labour was reduced to something very ‘mechanical’. Smith does not even bother to refer to working bodies or bodily efforts, using the shorthand and metaphor of ‘hands’ instead (Bänzinger et al., 2017: 6–7). Labour had turned into an economic factor among others. This is what Marxist and later historical sociologists have pointed out, but it cannot be reduced to a victory of the owners of capital or to a shift from mercantile to industrial capitalism.

One valuable approach beyond that starts from the Foucauldian notions of biopolitics and governmentality. As Bänzinger et al. (2017: 4) argue, labour is to be seen as ‘a relational force field within which the activity of bodies is harnessed to other societal discourses, institutions and knowledge practices.’ In such a way, it has already been shown that the reduction of work to measurable labour power in the second half of the nineteenth century happened under the influence of physiology (thermodynamics), which helped to reduce work to the energy produced by a ‘human motor’ fed with calories (Rabinbah, 1990). With regard to the seventeenth and eighteenth centuries, historians have already pointed to the emergence of measuring techniques and tools of knowledge, in particular the rise of surveys and statistical techniques which made productivity (whether based on trade, land, or labour) measurable and, hence, produced a modern economy. This new economic model co-emerged with a new political rationality, grounded in the ‘reason of state’ (*raison d’état*) rather than the reason of a prince (e.g., Poovey, 1998; Desrosières, 2002; Soll, 2009a, 2009b; Mukerji, 2010). Political decisions were increasingly based on data collected with the use of proto-statistical techniques, or, in the phrase of seventeenth-century philosopher and economist William Petty, *political arithmetic*.

The epistemological background of this process is one in which a more mathematical and mechanical worldview gradually took shape. Geographer Stuart Elden (2005, 2009: 279–321) refers to the impact of Descartes’ notions of geometry, which would have helped to make land autonomous, abstract and measurable. Yet these transformations are

likely to have had an impact on the attitudes to work and skills too. As shown above, recent research has already pointed to the role of Descartes’ thinking in the changing attitude to artisanal knowledge. Jean-François Gauvin (2006) has shown that Descartes, in the first decades of the seventeenth century, gradually abandoned the idea that artisanal work has a rationality in itself and can be seen as an orderly soul (an *âme réglée*) at work. As his mechanical and mathematical worldview developed, the rational order could no longer be connected to bodily gestures alone, but was rather something guiding the unity of bodily gestures and machines. From the mid-1620s, the gestures and bodily dispositions of artisans failed to meet Descartes epistemological standards altogether, the new metaphor for the rational order being the machine.

Gradually, and not only with Descartes, the human body turned into a machine itself, something entirely devoid of talent and ingenuity. Of course, this does not explain why some artists and scientists and other social and political elites escaped this reduction to machinelike robots. A proper understanding thereof specifically implies understanding the way in which the value of labour and skills is connected to the political community as shaped and imagined by specific social groups. In 1980 already, William Sewell pointed to a connection between guilds and a specific view on the order of nature and society, arguing that the existence of guilds was consistent with the late medieval and early modern dichotomy between the ordered realm of the spirit and the disordered realm of matter, in which artisans were seen as connected to God’s wisdom through their souls. The waning and eventual abolition of the guilds would have been due, according to Sewell, to the advent of enlightened ideas propounding a unified order of nature which man was himself part of, rather than opposed to. In the new worldview individual artisans were connected to matter through their senses and experimental activity rather than their soul (Sewell, 1980: 22–5, 70–1).

What is still missing here is a view on the body politic, which for the artisans examined in this article was the city. Recent research has shown that the work and skills of the artisans were specifically connected to the urban context. While a city’s reputation depended on the reputation of products manufactured in its orbit, the value attached to the artisan’s skills were connected to the reputation and power of the city. Coterminous with the urban revolts and the strife for political participation and autonomy, guild-based artisans tried to eradicate country-side production – especially with regard to high value added products. With the use of military and political force, a division of labour of sorts emerged in which products which required sophisticated and highly valued technical knowledge were made in the city, while the manufacturing of cheaper products or the preparatory stages of production were relegated to the countryside (De Munck, 2017; De Munck and Bellavitis, 2017). The political rationale behind this rests on the idea that products made within the city were superior to those made on the countryside. Yet this is of course impossible to objectify. It depends on the reigning conventions and repertoires of evaluation, which are in turn entangled with the economic, cultural, political and epistemological context.

Put briefly, the reputation of certain artisanal skills and of a given city co-emerged, partly because the artisans themselves tied their skills to the city as a body politic. That this was at all possible, was partly due to the specific political philosophy of that time. Cities were imagined as corporations, i.e., as bodies with a ‘head’ and ‘members’. These members could be guilds (if they had succeeded in being accepted as members), which were themselves seen as bodies with a head (the board) and members (the individual masters, which were themselves ‘head’ of a household, the smallest unit of the body politic). Having access to the guild’s privilege as a member (and, hence, becoming entitled to make certain products in the city as an independent master) implied either being born a member as a master’s son or finishing an apprenticeship term and a trial piece. So either you were part of the corporative body by birth, or you had to learn and demonstrate your capabilities. In the latter case too, acquiring skills was connected to



becoming member of the political community in an extremely profound way – given that learning at that time (and in the corporative context) implied boarding with your master, who then acted in loco parentis (as a surrogate father), (Prak, 2004; De Munck, 2010b).

Acquiring the right skills was moreover connected to becoming a citizen to the city in a juridical way. Becoming a member of the guilds was often conditional upon being burgher or citizen to the city – or sometimes, vice versa (see e.g., Boone et al., 1996; Isenmann, 2002: 205–6; Wallis et al., 2015). The idea behind this was that economic privileges were only granted to people who had a political status, which was in turn intimately connected to skills – at least by the artisans themselves. Guild-based masters carried along references to their technical knowledge and expertise in public events like processions and parades. For instance, they carried torches or their blazons that featured one of their products or a typical tool they used. Or they had their blazons attached to their guild halls, often situated in the symbolical heart of the city. Or else, their altar pieces adorning their chapels in the local churches or cathedrals depicted not only their patron saints, but again their tools and instruments too (De Munck, 2017: 817). Last but not least, the city as a body politic was also referred to with their hall marks. The guilds' hall marks were quality marks stamped on their products, but these quality marks were simultaneously marks of origin. The message conveyed to customers was that the products were of a good or superior quality because they were made in that particular city, by urban citizens (De Munck, 2012).

What happened, then, was not only that the cultural capital of certain products increased because of the attachment thereof to a certain place (cf. Molotch, 1996; Scott, 2000), but also the artisans' skills and qualities involved in making them. To be sure, this is not to imply that the skills of urban artisans were of higher quality. It has rather become clear, in recent research, that the guilds' privileges are justified with reference to a specific type of product quality, based on 'intrinsic quality'. This is basically the value of the raw materials used, the implication being that guilds did not guarantee product quality with their skills and their training, but with their honesty, a moral quality. While the hall marks referred to specific product standards which were invisible to the naked eye, like the alloy in the case of silver, or the type of wood used in wood-related trades, the artisans deployed discourses in which their products were considered superior because as urban citizens they were more trustworthy (De Munck, 2007b, 2011, 2014; Bettoni, 2015). So, ultimately their products were not superior because of their skills and technical knowledge at all. But this did not prevent the artisans from grounding their superiority in their urban political standing.

## 6. Conclusion

Critical economic and urban geographers like Jamie Peck and Allen Scott have argued with justice that the prevailing definitions of creativity, the creative class and creative city are highly contingent upon neo-liberal forms of governance and competition as well as on specific types of consumer preferences. They have specifically pointed out that creativity is defined in an instrumental and rather narrow way in this context, and have called for more inclusive definitions in which, for instance, informal and vernacular types of creativity would be valued. This could include craft knowledge, but the idealized conception of craft as simply the counterpart of 'modernity' is standing in the way of a deep reflection on how craftsmanship could provide the ground for new thinking about production and work. What my literature overview has shown is that craft can be reduced to neither a derivative of economic or technological processes nor something intrinsically and trans-historically human. Put differently, it is neither dependent on economic context nor a exogenous factor explaining economic transformation. As such, it cannot simply be invoked as an alternative to instrumentalized notions of creativity, nor, for that matter, to other alienated forms of labour. Nevertheless, a critical engagement with the history of

craftsmanship has huge potential for further deepening the critical approach in geography and for thinking about alternative conceptions of 'good work' and creativity.

All well-meaning references to craft and craftsmanship notwithstanding, artisanal skills currently remain largely unconnected to knowledge. Craftsmen are seen as sophisticated and valuable, but not as intellectuals, scientists or philosophers. While reference is made to making as a natural human drive and to ecological and social sustainability issues, artisanal knowledge is not seen as a new way of knowing. This is prevented by our instrumental attitudes to knowledge, which favours the creativity of the type of professional knowledge workers envisaged by Richard Florida, who are to be capable of creating new products that respond effectively to the demands of fashion-sensitive consumers. As shown in this overview, this is based on such modern dichotomies like prescriptive versus propositional knowledge or hand versus mind, which originate in the early modern context – including both the Renaissance and the Enlightenment. The real potential of craftsmanship is to be found beyond such dichotomies, but tapping it requires opening the black boxes upon which they are build and, hence, venturing beyond narratives of modernity.

The insights of historians of science and knowledge are particularly relevant with regard to the notion of creativity, which in present-day debates on the so-called knowledge economy has taken central stage. This concept too is subject to narratives of modernity, as a consequence of which it is confounded with the invention of new products and technologies. Recent work of intellectual historians and historians of science have helped to reveal that the creative capacity of late medieval artisans was not limited to such an instrumental view. The invention of new products by artisans was even akin, at least for some, to reveal God's wisdom and truth. In a way, craftsmanship was all about new ways of being, which brings it in the orbit of present-day conceptions of vernacular forms of knowledge beyond the realm of economic values (cf. Edensor et al., 2010). But the implications are more fundamental. The importance of the immanence of God is also reminiscent of certain strands in the ecological movement and certain post-secular attitudes to nature. The latter views could help to change our attitude to the raw materials used and to again see the materiality of products as less utilitarian and functional.

Nor is the history of craftsmanship devoid of political potential. Some of the manufacturing artisans really gained access to the urban body politic and obtained their own political and economic privileges in the late medieval period. These privileges consisted of the exclusive right to make a certain range of products within the boundaries of the city, which they justified with the claim that their products, and hence their skills and expertise, were superior to the products made on the countryside or in another city. As such, they connected their skills to the city they worked in, showing that artisans too could 'embody' the body politic. But again, the explanation thereof is not exhausted with reference to the economic context. While the connection between skills and the urban context is mostly addressed today through the lens of economies of agglomeration and spatial clustering, a broad review of the historical literature reveals that the epistemological context is important too. An effective critique should therefore look beyond the views of Marxist social and economic historians, who tend to reduce intellectual and epistemological elements to the ideologies justifying the positions of specific power groups, and tend to view social hierarchies as resulting from economic, financial and military power.

A Foucauldian approach to power, in contrast, enables to bridge and integrate the epistemological and the political. Historians acquainted with Foucault's notion of 'governmentality' have specifically hinted at new ways of understanding the deskilling of artisans from a perspective in which the economic, the political and the epistemological are intimately entangled, and which centers around the notion of 'productivity'. In a similar vein, attitudes to artisanal skills can be connected to the city as a body politic and level of governance. The conception of the city as a site of circulation, traffic, and exchange is



just as well a modern one, originating in the seventeenth century (Sennett, 1996; Joyce, 2003). From the sixteenth century on, the conception of the European city transformed from a political body entangled with an animated material reality into a infrastructural reality enabling human and economic interaction, and economies of agglomeration (Davis, 1981; De Munck, 2017). Recently, this is again connected to epistemological transformations. In a critical dialogue with Foucault's famous lectures in the Collège de France geographer Stuart Elden (2009, 2013) argued that a shift towards governing a territory accompanied the shift towards governing a population with reference to Descartes's notions of geometry.

This was to the detriment of manufacturing artisans, who guarded the value of their skills by tying them to the urban body politic. While the city was ultimately reduced to an effect of a few variables in an economic and demographic process – as is often still the case today – artisanal skills were stripped of both ingenuity and political relevance. Consequently, artisanal forms of work and creativity can only be forwarded as a credible alternative in a context of epistemological openness and when accompanied by political claims about the connection between skills and the (urban) body politic.

## References

- Adamson, G., 2007. *Thinking through Craft*. Berg, Oxford.
- Adamson, G., 2013. *The Invention of Craft*. Bloomsbury, London etc.
- B. A'Hearn, B., Baten J., Crayen, D., 2006. Quantifying quantitative literacy: age heaping and the history of human capital. *Universidad Pompeu Fabra Economic Working Paper n° 996*.
- Banks, M., 2010. Craft labour and creative industries. *Int. J. Cultural Policy* 16 (3), 305–321.
- Bänziger, P.-P., Streng, M., Suter, M., 2017. Histories of productivity: an introduction. In: Bänziger, P.-P., Suter, M. (Eds.), *Histories of Productivity: Genealogical Perspectives on the Body and Modern Economy*. Routledge, London etc., pp. 1–19.
- Baxandall, M., 1972. *Painting and Experience in Fifteenth-Century Italy*. Oxford University Press, New York.
- Berg, M., 1980. *The Machinery Question and the Making of Political Economy*. Cambridge University Press, Cambridge.
- Berg, M., 2002. From imitation to invention: creating commodities in eighteenth-century Britain. *Econ. History Rev.* 55, 1–30.
- Berg, M., 2007. The genesis of 'useful knowledge'. *History Sci.* 45(148) Part 2, 123–133.
- Berg, M., 2013. Useful knowledge, industrial enlightenment and the place of India. *J. Global History* 8 (1), 117–141.
- Berg, M., Hudson, P., 1992. Rehabilitating the industrial revolution. *Econ. History Rev.* XLV, 24–50.
- Bettoni, B., 2015. Usefulness, ornament and novelty: the Debate on quality in button and buckle manufacturing in Northern Italy (XVIII-XIX century). In: De Munck, B., Lyna, D. (Eds.), *Concepts of Value in Material Culture, 1500–1900*. Ashgate, Aldershot, pp. 171–206.
- Bianchini, F., Landry, Ch., 1995. *The Creative City*. Demos/Comedia, London.
- Biernacki, R., 1995. *The Fabrication of Labor: Germany and Britain, 1640–1941*. University of California Press, Berkeley.
- Bimbenet-Privat, M., 1995. Goldsmiths' apprenticeship during the first half of the seventeenth century: the situation in Paris. In: Mitchell, D. (Ed.), *Goldsmiths, Silversmiths and Bankers. Innovation and the Transfer of skill, 1500–1800*. Alan Sutton Publishing Ltd. and Centre for Metropolitan History, London and Stroud, pp. 23–31.
- Blondé, B., Ryckbosch, W., 2015. In 'splendid isolation'. A comparative perspective on the historiographies of the 'material renaissance' and the 'consumer revolution'. *History Retailing Consump.* 1 (2), 105–124.
- Bok, M.J., 1998. Pricing the unpriced: how Dutch 17th-Century painters determined the selling price of their work. In: North, M., Ormrod, D. (Eds.), *Markets for Art, 1400–1800*. Universidad de Sevilla, Sevilla, pp. 101–110.
- Boone, M., Cerutti, S., Descimon, R., Prak, M., 1996. Introduction: citizenship between individual and community, 14th–18th centuries. In: Boone, M., Prak, M. (Eds.), *Individual, Corporate and Judicial Status in European Cities (late middle ages and early modern period)*. Garant, Leuven, pp. 3–10.
- Boone, M., 2010. *A la recherche d'une modernité civique. La société urbaine des anciens Pays-Bas au bas Moyen Age*. Editions de l'université de Bruxelles, Brussels.
- Braverman, H., 1974. *Labour and Monopoly Capital: The Degradation of Work in the Twentieth Century*. Monthly Review Press, New York & London.
- Buchner, Th., 2009. Perceptions of work in early modern economic thought: Dutch mercantilism and central European cameralism in comparative perspective. In: Ehmer, J., Lis, C. (Eds.), *The Idea of Work in Europe from Antiquity to Modern Times*. Ashgate, Farnham, pp. 191–214.
- Cohn Jr., S.K., 2009. *Lust for Liberty: The Politics of Social Revolt in Medieval Europe, 1200–1425*. Harvard University Press, Cambridge MA.
- Cormack, L.B., 2017. Introduction: practical mathematics, practical mathematicians, and the case for transforming the study of nature. In: Cormack, L.B., Walton, S.A., Schuster, J.A. (Eds.), *Mathematical Practitioners and the Transformation of Natural Knowledge in Early Modern Europe*. Springer, Cham, pp. 1–10.
- Cottureau, A., 1997. The fate of collective manufactures in the industrial world. The silk industries of Lyon and London, 1800–1850. In: Sabel, C.F., Zeitlin, J. (Eds.), *World of Possibilities. Flexibilities and Mass Production in Western Industrialization*. Cambridge University Press, Cambridge, pp. 86–87.
- Crafts, N.F.R., 1985. *British Economic Growth during the Industrial Revolution*. Clarendon Press, Oxford.
- Dauids, K., De Munck, B., 2014. Innovation and creativity in late medieval and early modern European cities: an introduction. In: Dauids, K., De Munck, B. (Eds.), *Innovation and Creativity in Late Medieval and Early Modern European Cities*. Ashgate, Aldershot, pp. 1–33.
- Davis, N.Z., 1981. The sacred and the body social in sixteenth-century Lyon. *Past & Present* 90, 40–70.
- Dear, P., Roberts, L., Schaffer, S. (Eds.), 2007. *The Mindful Hand: Inquiry and Invention from the late Renaissance to Early Industrialization*. KNAW, Amsterdam.
- Deceulaer, H., 2000. Entrepreneurs in the guilds: ready-to-wear clothing and subcontracting in late sixteenth and early Seventeenth-century Antwerp. *Textile History* 31 (2), 133–149.
- Desrosières, A., 2002. *The Politics of Large Numbers: A History of Statistical Reasoning*. Harvard University Press, Cambridge, MA (trans.).
- De Munck, B., 2007a. *Technologies of Learning. Apprenticeship in Antwerp from the 15th Century to the end of the ancien régime*. Brepols, Turnhout.
- De Munck, B., 2007b. Skills, trust and changing consumer preferences: the decline of Antwerp's craft guilds from the perspective of the product market, ca. 1500 – ca. 1800. *Int. Rev. Social History* 53(2), 197–233.
- De Munck, B., Kaplan, S.L., Soly, H. (Eds.), 2007. *Learning on the Shop Floor. Historical Perspectives on Apprenticeship*. Berghahn Books, London/New York.
- De Munck, B., 2010a. Corpses, live models, and nature. Assessing skills and knowledge before the industrial revolution (case: Antwerp). *Technol. Culture* 51 (2), 332–356.
- De Munck, B., 2010b. From brotherhood community to civil society? Apprentices between guild, household and the freedom of contract in early modern Antwerp. *Social History* 35 (1), 1–20.
- De Munck, B., 2011. Guilds, product quality and intrinsic value: towards a history of conventions? *Historical Social Research/Historische Sozialforschung* 36(4), 103–124 - Special Issue, Diaz-Bone, R., Salais, R., (Eds.) *Conventions and Institutions from a Historical Perspective/Konventionen und Institutionen in historischer Perspektive*.
- De Munck, B., 2012. The agency of branding and the location of value: hallmarks and monograms in early modern tableware industries. *Business History* 54 (7), 1–22.
- De Munck, B., 2014. Artisans, products and gifts: rethinking the history of material culture in early modern Europe. *Past and Present* 224, 39–74.
- De Munck, B., 2017. Disassembling the city: a historical and an epistemological view on the agency of cities. *J. Urban History* 43 (5), 811–829.
- De Munck, B., Bellavitis, A., 2017. The urban imaginary as a social and economic factor: renaissance cities and the fabrication of quality, 15–17th century. In: Van Damme, I., De Munck, B., Miles, A. (Eds.), *Cities and Creativity from the Renaissance to the Present*. Routledge, London, pp. 45–64.
- De Munck, B., 2018. *Guilds, Labour and the Urban Body Politic: Fabricating Community in the Southern Netherlands, 1300–1800*. Routledge, New York & London.
- De Moor, T., van Zanden, J.L., 2008. Van fouten kan je leren. Een kritische benadering van de mogelijkheden van leeftijdstapelen voor sociaal-economisch onderzoek naar gecijferdheid in het pre-industriële Vlaanderen en Nederland. *Tijdschrift voor economische en sociale geschiedenis* 5 (4), 55–81.
- De Vries, J., 2002. Luxury in the Dutch golden age. In: Berg, M., Eger, E. (Eds.), *Luxury in the Eighteenth Century: Debates, Desires and Delectable Goods*. Palgrave Macmillan, Basingstoke, pp. 41–56.
- De Vries, J., 2008. *The Industrious Revolution: Consumer Behavior and the Household Economy, 1650 to the Present*. Cambridge University Press, Cambridge.
- Dubourg Glatigny, P., Vérin, H. (Eds.), 2008. *Réduire en art. La technologie de la Renaissance aux Lumières*. Maison des Sciences de l'Homme, Paris.
- Dumolyn, J., Haemers, J., 2005. Patterns of urban rebellion in medieval Flanders. *J. Medieval History* 31, 369–393.
- Dupré, S., Göttler, C., 2017. Introduction: hidden artifices. In: Dupré, S., Göttler, C. (Eds.), *Knowledge and Discernment in the Early Modern Arts*. Routledge, New York, pp. 1–16.
- Edensor, T., Leslie, D., Millington, S., Rantisi, N.M., 2010. Introduction: rethinking creativity: critiquing the creative class thesis. In: Edensor, T., Leslie, D., Millington, S., Rantisi, N.M. (Eds.), *Spaces of Vernacular Creativity. Rethinking the Cultural Economy*. Routledge, London.
- Elden, S., 2005. Missing the point: globalization, deterritorialization and the space of the world. *Trans. Inst. British Geogr.* 30 (1), 8–19.
- Elden, S., 2009. *The Birth of Territory*. University of Chicago Press, Chicago and London.
- Elden, S., 2013. How should we do the history of territory? *Territory, Politics, Governance* 1 (1), 5–20.
- Farr, J.R., 2000. *Artisans in Europe, 1300–1914*. Cambridge University Press, Cambridge.
- Filipczak, Z.Z., 1987. *Picturing art in Antwerp, 1550–1700*. Princeton University Press, Princeton.
- Finlay, R., 2010. *The Pilgrim Art: Cultures of Porcelain in World History*. University of California Press, Berkeley (Volume 11 of California World History Library).
- Florida, R.L., 2002. *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Basic Books*, New York, Community and Everyday Life.
- Florida, R.L., 2004. *Cities and the Creative Class*. Taylor and Francis, New York.
- Friedrichs, Ch.R., 1982. German town revolts and the seventeenth-century crisis. *Renaissance Modern Stud.* 26, 27–51.
- Fox, C., 2010. *The Arts of Industry in the Age of Enlightenment*. Yale University Press, New Haven and London.
- Gauvin, J.-Fr., 2006. Artisans, machines, and descartes's *Organon*. *History of Sci.* 44,

- 187–216.
- Goldthwaite, R.A., 2009. *The Economy of Renaissance Florence*. Johns Hopkins University Press, Baltimore.
- Gouws, K., 1998. Perceiving the past: renaissance humanism after the 'cognitive turn'. *Am. Historical Rev.* 103 (1), 55–82.
- Haupt, H.-G., (Ed.) 2002. *Das Ende der Zünfte. Ein europäischer Vergleich*. Vandenhoeck & Ruprecht, Göttingen.
- Haydu, J., 1988. *Between Craft and Class: Skilled Workers and Factory Politics in the United States and Britain*. University of California Press, Berkeley and Los Angeles.
- Hilaire-Pérez, L., Verna, C., 2006. Dissemination of technical knowledge in the middle ages and the early modern era: new approaches and methodological issues. *Technol. Culture* 47 (3), 536–556.
- Honig, E.A., 1995. The beholder as work of art: a study in the location of value in seventeenth-century Flemish painting. In: Falkenburg, R., de Jong, J., Roodenburg, H., Scholten, F. (Eds.), *Image and Self-Image in Netherlandish Art, 1550–1750*. Waanders, Zwolle, pp. 253–293.
- Honig, E.A., 1998. *Painting and the Market in Early Modern Antwerp*. Yale University Press, London.
- Isemann, E., 2002. *Bürgerrecht und Bürgeraufnahme in der spätmittelalterlichen und frühneuzeitlichen Stadt*. In: Schwinges, R.C., (Ed.) *Neubürger im späten Mittelalter. Migration und Austausch in der Städtelandschaft des alten Reiches (1250–1550)*. Duncker & Humblot, Berlin, pp. 203–249.
- Joyce, P., 1980. *Work, Society and Politics. The Culture of the Factory in Later Victorian England*. The Harvester Press, Brighton.
- Joyce, P., 2003. *The Rule of Freedom. Liberalism and the Modern City*. Verso, London.
- Kaplan, S.L., 2001. *La fin des corporations*. Fayard, Paris.
- Klein, Ursula, Spary, Emma C. (Eds.), 2010. *Materials and Expertise in Early Modern Europe*. The University of Chicago Press, Chicago and London.
- Klüge, A., 2009. *Die Zünfte*. Franz Steiner Verlag, Stuttgart.
- Koeppe, C.J., 1986. The alphabetical order: work in Diderot's *Encyclopédie*. In: Kaplan, S.L., Koeppe, C.J. (Eds.), *Work in France. Representations, Meaning, Organization, and Practice*. Cornell University Press, Ithaca, pp. 229–257.
- Koeppe, C.J., 2009. Advocating for Artisans: the Abbé Pluche's *Spectacle de la Nature* (1732–51). In: Ehmer, J., Lis, C. (Eds.), *The Idea of Work in Europe from Antiquity to Modern Times*. Ashgate, Aldershot, pp. 245–273.
- Landry, Ch., 2000. *The Creative City. A Toolkit for Urban Innovators*. Earthscan Publications, London.
- Lash, S., Urry, J., 1994. *Economies of Signs and Space*. Sage Publications, London etc.
- Levine, F., Heimerl, C., 2008. *Handmade Nation: The Rise of DIY, Art, Craft and Design*. Princeton Architectural Press, Princeton.
- Levy, E., 1984. Ideal and reality of the learned artist: the schooling of Italian and Netherlandish artists. In: *Children of Mercury: The Education of Artists in the Sixteenth and Seventeenth Centuries*. Exhibition Catalogue, Providence, pp. 20–27.
- Lis, C., Soly, H., 2008. Subcontracting in guild-based export trades, thirteenth–eighteenth centuries. In: Epstein, S.R., Prak, M. (Eds.), *Guilds, Innovation, and the European Economy, 1400–1800*. Cambridge University Press, Cambridge, pp. 81–113.
- Lis, C., Soly, H., 2012. *Worthy Efforts: Attitudes to Work and Workers in Pre-Industrial Europe*. Brill, Leiden & Boston.
- Long, P.O., 2011. *Artisan/Practitioners and the Rise of the New Science*. Oregon State University Press, Corvallis.
- Mackenney, R., 1987. *Tradesmen and Traders: The World of the Guilds in Venice and Europe, c. 1250 – c. 1650*. Croom Helm, London and Sydney.
- Mackenney, R., 2005. *Renaissances: The Cultures of Italy, 1300–1600*. Palgrave Macmillan, Basingstoke.
- Maitte, C., 2002. Le réformisme éclairé et les corporations: l'abolition des Arts en Toscane. *Revue d'histoire moderne et contemporaine* 49 (1), 56–88.
- Marglin, S., 1974. What do bosses do? The origins and functions of hierarchy in capitalist production. Part I. *Rev. Radical Political Econ.* 6 (2), 60–112.
- Markusen, A., 2014. Creative cities: a 10-year research agenda. *J. Urban Affairs* 36 (S2), 567–589.
- Marr, A., Keller, V., 2014. Introduction: the nature of invention. *Intellectual History Rev.* 24 (3), 283–286.
- Mills, C.W., 1956. *White Collar*. Oxford University Press, New York.
- Minard, Ph., 2004. *Les Corporations en France aux XVIIIe siècle: métiers et institutions*. In: Kaplan, S.L., Minard, Ph., (Eds.) *La France, malade du corporatisme? XVIIIe–XXe siècles*. Bélin, Paris, pp. 39–52.
- Mokyr, J., 2002. *The Gifts of Athena: Historical Origins of the Knowledge Economy*. Princeton University Press, Princeton, N.J.
- Molotch, H., 1996. LA as design product: how art works in a regional economy. In: Scott, A.J., Soja, E. (Eds.), *The City: Los Angeles and Urban Theory at the End of the Twentieth Century*. University of California Press, Berkeley and Los Angeles, pp. 225–275.
- Montgomery, D., 1974. The 'New Unionism' and the transformation of workers' consciousness in America. *J. Social History* 7, 509–529.
- Mukerji, Ch., 2010. The territorial state as a figured world of power: strategies, logistics, and impersonal rule. *Sociol. Theory* 28 (4), 402–424.
- Najemy, J.M., 1979. Guild republicanism in Trecento Florence: the successes and ultimate failure of corporate politics. *Am. Historical Rev.* 84, 53–71.
- Oosterhoff, R.J., 2014. *Idiotiae, mathematics, and artisans: the untutored mind and the discovery of nature in the Fabrist circle*. *Intellectual History Rev.* 24 (3), 301–319.
- Peck, J., 2005. Struggling with the creative class. *Int. J. Urban Regional Res.* 29 (4), 740–770.
- Pfister, U., 2008. Craft guilds and technological change: the engine loom in the European silk ribbon industry in the seventeenth and eighteenth centuries. In: Epstein, S.R., Prak, M. (Eds.), *Guilds, Innovation, and the European Economy, 1400–1800*. Cambridge University Press, Cambridge, pp. 172–198.
- Prak, M., 2004. Moral order in the world of work: social control and the guilds in Europe. In: Roodenburg, H., Spierenburg, P. (Eds.), *Social Control in Europe*. Vol. 1, 1500–1800. Ohio State University Press, Columbus, pp. 176–199.
- Prak, M., 2006. Corporate politics in the Low Countries: guilds as institutions. In: Prak, M., Lis, C., Lucassen, J., Soly, H., (Eds.) *Craft Guilds in the Early Modern Low Countries. Work, Power and Representation*. Ashgate, Aldershot, pp. 74–106.
- Poovey, M., 1998. *A History of the Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society*. University of Chicago Press, Chicago and London.
- Puetz, A., 1999. Design instruction for artisans in eighteenth-century Britain. *J. Des. History* 12 (3), 217–329.
- Pye, D., 1968. *The Nature and Art of Workmanship*. Cambridge University Press, Cambridge.
- Rabinbah, A., 1990. *The Human Motor: Energy, Fatigue, and the origins of Modernity*. Basic Books, New York.
- Reddy, W.M., 1984. *The Rise of Market Culture: The Textile Trade and French Society, 1750–1900*. Cambridge University Press, Cambridge.
- Riello, G., 2006. *A Foot in the Past. Consumers, Producers and Footwear in the Long Eighteenth Century*. Oxford university Press, Oxford.
- Riello, G., 2008. Strategies and boundaries: subcontracting and the London trades in the long eighteenth century. *Enterprise Soc.* 9 (2), 243–280.
- Roberts, L., Schaffer, S., 2007. Preface. In: *The Mindful Hand: Inquiry and Invention from the late Renaissance to Early Industrialisation*, edited by Lissa Roberts, Simon Schaffer and Peter Dear, xiii–xxvii. Amsterdam: KNAW.
- Rose, N., 1999. *Powers of Freedom: Reframing Political Thought*. Cambridge University Press, Cambridge.
- Rossi, P., 1970. *Philosophy, Technology, and the Arts in the Early Modern Era*. Harper and Row, New York.
- Rule, J., 1987. The property of skill in the age of manufacture. In: Joyce, P. (Ed.), *The Historical Meanings of Work*. Cambridge University Press, Cambridge, pp. 99–118.
- Sabel, Ch., Zeitlin, Th., 1985. Historical alternatives to mass production: politics, markets and technology in nineteenth-century industrialization. *Past and Present* 108, 33–176.
- Samuel, R., 1977. Workshop of the world: steam power and hand technology In mid-Victorian Britain. *History Workshop* 3 (1), 6–72.
- Samuel, R., 1992. Mechanization and hand labour in industrializing Britain. In: Berlanstein, L.R. (Ed.), *The Industrial Revolution and Work in the Nineteenth Century*. Routledge, London and New York, pp. 26–43.
- Schaffer, S., 1999. *Enlightened Automata*. In: Clark, W., Golinski, J., Schaffer, S. (Eds.), *The Sciences in Enlightened Europe*. University Of Chicago Press, Chicago, pp. 126–165.
- Schulz, K., 1992. *Denn sie lieben die Freiheit so Sehr...: Kommunale Aufstände und Entstehung des europäischen Bürgertums im Hochmittelalter*. Wissenschaftliche Buchgesellschaft, Darmstadt.
- Schulz, K., 1994. Die politische Zunft. Eine die spätmittelalterliche Stadt prägende Institution? In: Ehbrecht, W. (Ed.), *Verwaltung und Politik in Städten Mitteleuropas. Beiträge zur Verfassungsnorm und Verfassungswirklichkeit in altstädtischer Zeit*. Böhlau, Cologne, pp. 1–20.
- Scott, A.J., 2000. *The Cultural Economy of Cities: Essays on the Geography of Image-Producing Industries*. Sage, London.
- Scott, A.J., 2014. *Beyond the creative city: cognitive cultural capitalism in the new urbanism*. *Regional Stud.* 48 (4), 565–578.
- Sennett, R., 1996. *Flesh and Stone: The Body and the City in Western Civilization*. W.W. Norton & co., New York/London.
- Sennett, R., 1998. *The Corrosion of Character: The Personal Consequences of Work in the New Capitalism*. Norton, New York, W.W.
- Sennett, R., 2008. *The Craftsman*. Penguin, London.
- Sennett, R., 2012. *Together: The Rituals, Pleasures and Politics of Co-operation*. Yale University Press, New Haven.
- Sewell Jr., W.H., 1980. *Work and Revolution in France. The Language of Labor from the Old Regime to 1848*. Cambridge University Press, Cambridge.
- Sewell Jr., W.H., 1986. *Visions of labor: illustrations of the mechanical arts before, in, and after Diderot's Encyclopédie*. In: Kaplan, S.L., Koeppe, C. (Eds.), *Work in France. Representations, Meaning, Organization, and Practice*. Cornell University Press, Ithaca, pp. 258–286.
- Smith, A., 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations*, first ed. W. Strahan, London.
- Smith, P.H., 2000a. Artists as scientists: nature and realism in early modern Europe. *Endeavour* 24 (1), 13–21.
- Smith, P.H., 2000b. Vital spirits: redemption, artisanship, and the new philosophy in early modern Europe. In: Osler, M.J. (Ed.), *Rethinking the Scientific Revolution*. Cambridge University Press, Cambridge, pp. 119–136.
- Smith, P.H., 2004. *The Body of the Artisan. Art and Experiment in the Scientific Revolution*. University of Chicago Press, Chicago.
- Smith, Pamela H., Meyers, Amy R.W., Cook, Harold J. (Eds.), 2014. *Ways of Making and Knowing: The Material Culture of Empirical Knowledge*. University of Michigan Press, Ann Arbor.
- Solmsen, F., 1963. Nature as craftsman in Greek thought. *J. History f Ideas* xxiv, 473–496.
- Soll, J., 2009a. *The Information Master: Jean-Baptiste Colbert's Secret State Intelligence System*. The University of Michigan Press, Ann Arbor.
- Soll, J., 2009b. Accounting for government: Holland and the rise of political economy in seventeenth-century Europe. *J. Interdisciplinary History* 40 (2), 215–238.
- Spencer, D.A., 2009. *The Political Economy of Work*. Routledge, London & New York.
- Storper, M., Scott, A.J., 2009. *Rethinking human capital, creativity and urban growth*. *J. Econ. Geogr.* 9, 147–167.
- Styles, J., 1993. *Manufacturing, consumption and design in 18th-century England*. In: Brewer, J., Porter, R. (Eds.), *Consumption and the World of Goods*. Routledge,

- London, pp. 527–554.
- Styles, J., 2000. Product innovation in early modern London. *Past and Present* 168, 124–170.
- Syson, L., Thornton, D., 2001. Objects of Virtue. *Art in Renaissance Italy*. J. Paul Getty Museum, Los Angeles.
- Trivellato, F., 2006. **Murano glass**, continuity and transformation (1400–1800). In: Lanaro, P. (Ed.), *At the Center of the Old World: Trade and Manufacturing in Venice and the Venetian Mainland*. Centre for Reformation and Renaissance Studies, Toronto, pp. 1400–1800.
- Ursell, G., 2000. Television production: issues of exploitation, commodification and subjectivity in UK television labour markets. *Media, Culture Soc.* 22 (6), 805–825.
- Valleriani, M., 2017a. The epistemology of practical knowledge. In: Valleriani, M. (Ed.), *The Structures of Practical Knowledge*. Springer, Cham, pp. 1–20.
- Valleriani, M. (Ed.), 2017. *The Structures of Practical Knowledge*. Springer, Cham.
- Van Der Wee, H., 1975. Structural changes and specialization in the industry of the Southern Netherlands, 1100–1600. *Econ. History Rev., New Series* 28 (2), 203–221.
- Van Damme, I., 2015. From a ‘knowledgeable’ salesman towards a ‘recognizable’ product? Questioning branding strategies before industrialization (Antwerp, seventeenth to nineteenth centuries). In: De Munck, B., Lyna, D. (Eds.), *Concepts of Value in European Material Culture, 1500–1900*. Ashgate, Aldershot, pp. 75–101.
- Van Zanden, J.L., 2009. *The Long Road to the Industrial Revolution. The European Economy in a Global Perspective*. Brill, Leiden.
- Vérin, H., 1998. La réduction en art et la science pratique au XVIIe siècle. In: Salais, R., Chatel, É., Rivaud-Danset, D. (Eds.), *Institutions et conventions: La réflexivité de l’action économique*. Editions EHESS, Paris, pp. 119–145.
- Vérin, H., 2002. Généalogie de la ‘réduction en art. Aux sources de la rationalité moderne. In: Gaudin, T., Hatchuel, A., (Eds.) *Les nouvelles raisons du savoir: vers une prospective de la connaissance*. Editions de l’aube, La Tour d’Aigues, pp. 29–41.
- Wallis, P., De Munck, B., Crowston, C., De Kerf, R., Hoogenboom, M., Kissane, C., Minns, C., Prak, M., 2015. Barriers to citizenship and trades in early modern Europe. Working paper for the project bEUcitizen: Barriers towards UE Citizenship.
- Zilsel, E., 2003. *The Social Origins of Modern science*. In: Raven, D., Krohn, W., Cohen, R. S. (Eds.), *Boston Studies in the Philosophy of Science*, Kluwer Academic Publishers, Dordrecht/Boston.