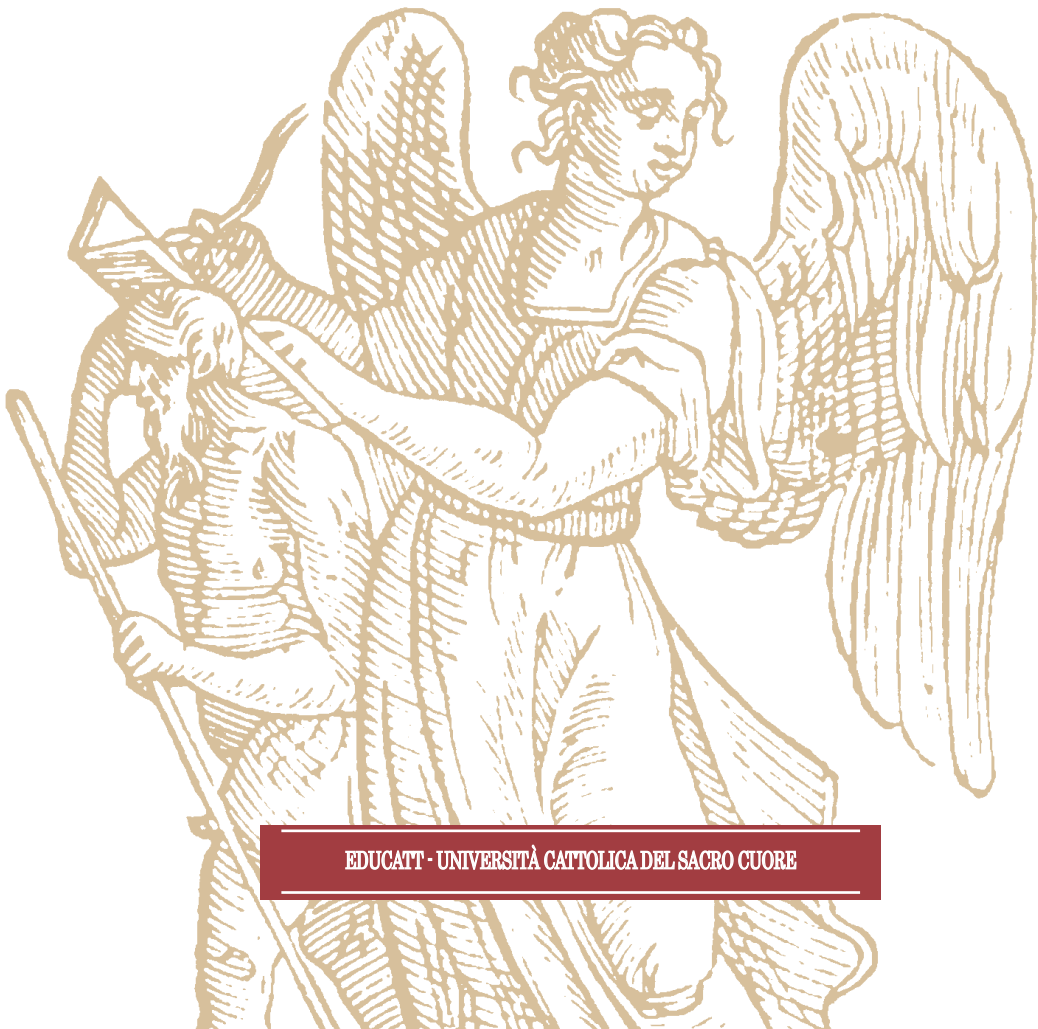


ANNALI DI STORIA MODERNA E CONTEMPORANEA

DIPARTIMENTO DI STORIA MODERNA E CONTEMPORANEA
UNIVERSITÀ CATTOLICA DEL SACRO CUORE

5-6

NUOVA SERIE - ANNO V-VI 2017-2018



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INDICE

Nota editoriale 5

MATTEO MORO

L'uso "politico" di cerimoniali e trattamenti
nell'ambasciata milanese del marchese di Caraglio,
inviato straordinario del duca Vittorio Amedeo II di Savoia
presso la corte dell'arciduca Carlo d'Asburgo (1711) 7

GIACOMO LORANDI

La circulation de la célébrité médicale entre Suisse et Allemagne.
Le cas Théodore Tronchin (1709-1781) 27

MARIA IMMACOLATA CONDEMI

Anatomia della perizia medico-legale. Scienza e sapere medico
nella Verona della Restaurazione 45

RICCARDO SEMERARO

The Italian Gun-making District from a Long-term Perspective:
Roots, Turning Points, Evolutionary Factors 91

GILIOLA BARBERO

Gian Vincenzo Pinelli, biblioteche private
e database: un ordine recuperabile 119

IL PRINCIPE E LA SOVRANA: I LUOGHI, GLI AFFETTI, LA CORTE

Presentazione 141

MATTHIAS SCHNETTGER

In controluce. Maria Teresa e la storiografia tedesca 145

CINZIA CREMONINI

Il principe e la sovrana: Trivulzio e Maria Teresa,
storia di un legame politico e dei suoi sviluppi 157

MARINO VIGANÒ <i>Per li rami: i Trivulzio dal XIII al XXI secolo</i>	185
GIUSEPPE CIRILLO Al servizio degli Asburgo: i Gallio d'Alvito tra Napoli, Roma, Milano e Madrid	201
ANNAMARIA BARDAZZA «...e con ciò porre in perpetuo silenzio le loro questioni...»: il matrimonio di Antonio Tolomeo Gallio Trivulzio e Maria Gaetana Archinto	233
ANDREA TERRENI «Addio teatro, addio divertimenti». Il principe Trivulzio, i medici, i malanni e le cure	261
CRISTINA CENEDELLA Le stanze del principe. Breve storia materiale del palazzo Trivulzio in via della Signora	279
GIULIANA RICCI «Non molto nuova di pianta, ma nuova di aspetto e di vita.» La trasformazione di Milano nell'età di Maria Teresa (e di Giuseppe II)	297
MARIA TERESA SILLANO Le carte del Principe tra archivistica e liti familiari	315

The Italian Gun-making District from a Long-term Perspective: Roots, Turning Points, Evolutionary Factors

RICCARDO SEMERARO*

Il saggio ricostruisce le vicende e le trasformazioni del distretto armiero italiano in una prospettiva di lungo periodo. Lo studio analizza e reinterpretava successi e vicissitudini della specializzazione produttiva locale alla luce di contributi e generalizzazioni che la ricerca storico-economica ha apportato al dibattito scientifico sui percorsi evolutivi dei distretti industriali. L'articolo prende in considerazione i fattori di localizzazione, i punti di svolta e i protagonisti del sistema produttivo locale al fine di indagare i molteplici elementi che ne influenzarono performance e processi di adattamento al mutare del contesto istituzionale e delle condizioni di mercato; ad emergere è il ruolo cruciale giocato nelle dinamiche distrettuali dalla cultura artigiana di mestiere in età moderna e da specifiche fabbriche nella transizione verso l'industrializzazione. Da ultimo, nel saggio vengono identificate e proposte possibili piste di ricerca da sviluppare in futuri studi.

This paper analyzes from a long-term perspective the evolutionary process of the Italian gun-making district. The study reinterprets and explains the successes and vicissitudes of this production specialization in light of the contributions and generalizations provided by economic historians to the debate on the evolutionary paths of industrial districts. The article focuses on location factors, turning points, and the most relevant actors of the local production system in order to depict the multiple elements that crucially influenced its transformations and adaptations to the challenges of the market. The paper highlights the fundamental role played by the craft culture in the early modern period, and specific factories in the transition towards industrialization. Finally, the study identifies possible future lines of research.

Parole chiave: armi, distretto industriale, corporazione, sistema di fabbrica, Gardone Val Trompia (Italia)

Keywords: firearms, industrial district, guild, factory system, Gardone Val Trompia (Italy)

1. *Introduction*

At the feet of Your Excellency, most worthy representative of the Public Majesty, the craftsmen of Gardone bow down. Born among the mountains, suckled on iron, raised in the smithies, from all of which they draw the sustenance that maintains them, bronzed by the endless heat of the fires, they can earn their living only by laboring with heavy hammers on the anvils. If this work is lacking, then they are deprived of life itself¹.

This quotation from Giovanni Antonio Beretta (20 April 1683) is evidence of the strong ties and identification of the inhabitants of Val Trompia² with ironworking and the gun-making industry. In this area, since the fifteenth century, the production of barrels and components, and their assembly, has been more than a simple way to make a living. The earliest historical document on this activity in the valley is a dispatch dated 21 April 1459 sent by the Senate of the Venetian Republic to the Rectors of Brescia: an order to the local master gunsmiths for «fifty bombards for the galleys, ten breech-loading rampart guns with two breech chambers each, twenty-five wall-pieces, fifty guns and fifty thousand iron-tipped crossbow quarrels»³. Since the early modern period, the development of this industry has had its point of reference in Gardone Val Trompia (Gardone hereafter), with a highly-fragmented structure of the production process based on a pronounced phase specialization. Along the centuries, the local production of civilian and military firearms has undergone periods of great prestige and utter neglect⁴.

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¹ ARCHIVIO DI STATO DI VENEZIA (ASV), *Senato, Dispacci Rettori Brescia*, Filza 91, *ad diem*. Original version: «Ai piedi di Vostra Eccellenza, dignitissimo Rappresentante della pubblica Maestà, s'humilia la Maestranza di Gardone. Questa, che nata fra monti, nudrita tra il ferro, allevata nelle fucine, da queste pure ricava quel sostenimento che la mantiene, e soltanto che a forza di pesanti martelli travagliando sopra le incudini, abbronzita dal continuo calor de gli accesi carboni, vaglia per campar la vita. Se questo questo lavorerio gli manca, gli manca per conseguenza la vita stessa».

² Val Trompia is a valley (slightly more than 50 km long) in the province of Brescia, northern Italy. It is the valley of the river Mella, north of the city of Brescia, and is located between other two important valleys of the province (Val Camonica and Val Sabbia).

³ ASV, *Senato, Deliberazioni Terra*, Reg. 4, Fol. 104r. Original version: «Facere debent bombardas quinquafinta a galea, decem a reparo cum duabus caudis pro qualibet, spingardas XXV, sclopetos quinquaginta et quinquaginta millaria ferrorum veretonorum».

⁴ G. FOCCOLI, *La cittadella delle armi*, in G. ZUCCA (ed.), *Antologia gardonese*, Brescia, Apollonio, 1969, pp. 170-187; CAMERA DI COMMERCIO INDUSTRIA ARTIGIANATO AGRICOLTURA DI BRESCIA, *Brescia e le sue armi*, «Quaderni di documentazione e analisi», 1 (1982);

The extraordinary success achieved by this local production specialization in the second half of the twentieth century led scholars to take an interest in its historical, economic and social dynamics. Looking at the large number of small and medium-sized enterprises (SMES), the highly fragmented production process, and the widespread subcontracting practices⁵, some researchers have identified Gardone as the center of an industrial district⁶. The aim of this study is to reconstruct and reinterpret the roots and evolution of this industrial district. Focusing on the phases that preceded the postwar development, the intention is to analyze the multiple key social and economic factors that crucially influenced the evolutionary process of the local production system. The case study is considered from a long-term perspective and its characterizing evolutionary factors are analyzed in the light of contributions by economic historians on the origins and developments of industrial districts. This perspective has a long-established tradition in the scientific literature and its relevance is widely recognized⁷.

The paper is structured as follows: the second section reviews the contributions of economic historians on the roots and evolutionary paths of industrial districts; the third and fourth sections respectively analyze the role of preindustrial forms of production organization, and factories in the case of Gardone; the fifth section provides some conclusions and identifies new lines of research.

Id., *Brescia e le sue armi*, «Aggiornamento ai Quaderni di documentazione e analisi», 1 (1984); The high degree of product recognition is discussed at length in three major publications: A. GAIBI, *Le armi da fuoco portatili italiane dalle origini al Risorgimento*, Milano, Bramante, 1968; M. MORIN, *Le armi da fuoco*, in L.G. BOCCIA, *Armi e armature lombarde*, Milano, Electa, 1980; R. BELINDA, *The magnificent guns of Brescia*, s.l., s.n., 1990.

⁵ In 1968, in Gardone alone (without considering neighboring municipalities), the gun-making sector could count on: 84 companies of various sizes with a public safety license for production and trade of hunting or defense weapons; 35 firms for the production or assembling of arms parts; 120 single workers – registered as craft businesses – who dedicated themselves to one or few specific phases of the fragmented production process. See: G. FOCCOLI, *La cittadella delle armi*, cit., p. 183.

⁶ C. TOMBOLA, *Il distretto armiero bresciano*, «Storia Urbana», 93 (2000), pp. 31-63; M. DEL BARBA, *Storia del distretto armiero gardonese. Il caso della Vincenzo Bernardelli (1865-1997)*, Brescia, Fondazione Luigi Micheletti, 2008; S. FONTANA, *Una valle mineraria e tre distretti industriali. Storia della Val Trompia dal 1945 ad oggi*, Venezia, Marsilio, 2009.

⁷ F. SFORZI, *Rethinking the Industrial District: 35 Years Later*, «Investigaciones Regionales – Journal of Regional Research», 32 (2015), pp. 22-23.

2. *Roots and evolutionary paths of industrial districts*

The concept of industrial district dates back to Alfred Marshall who described and analyzed industrial agglomerations of SMEs in industrializing England⁸. In the 1980s, the theoretical framework was revived and extended by the Italian scholars Giacomo Becattini⁹, Sebastiano Brusco¹⁰ and Arnaldo Bagnasco¹¹ «to capture the extraordinary efflorescence of similar industrial complexes across the central and northeastern regions of their own country. Economist, geographers, sociologists, political scientists, and business scholars quickly discovered a broad array of analogous local and regional production systems scattered across Western Europe, North America and East Asia»¹².

These geographical agglomerations of firms distinguished themselves for excellent results in terms of economic performance, as measured by new firm formation, employment, and exports; their capacity for endogenous development; and their ability to sustain high relative wages and labor standards in the face of international competition. No less remarkable, however, were the districts' flexibility in adapting to changing markets and demand patterns; their capacity for generating and diffusing technological competition and cooperation among local actors. Owing to these results and features, industrial districts became a significant alternative to the Fordist model and attracted the attention of numerous

⁸ A. MARSHALL, *Industry and Trade*, London, Macmillan, 1919; A. POPP – J.F. WILSON, *The emergence and development of industrial districts in industrializing England, 1750-1914*, in G. BECATTINI – M. BELLANDI – L. DE PROPRIIS (eds.), *A Handbook of Industrial Districts*, Cheltenham, Edward Elgar, 2009, pp. 43-57.

⁹ G. BECATTINI, *Dal "settore industriale" al "distretto industriale". Alcune riflessioni sull'unità di indagine nell'economia industriale*, «Rivista di Economia e Politica Industriale», 1 (1979) 1, pp. 7-21; ID., *Mercato e forze locali: il distretto industriale*, Bologna, 1987; ID., *Riflessioni sul distretto industriale marshalliano come concetto socioeconomico*, «Stato e mercato», 25 (1989) 1, pp. 111-128.

¹⁰ S. BRUSCO, *The Emilian Model: Productive Decentralisation and Social Integration*, «Cambridge Journal of Economics», 6 (1982), pp. 167-184; ID., *Piccole imprese e distretti industriali*, Torino, Rosenberg & Sellier, 1989.

¹¹ A. BAGNASCO, *Tre Italie. La problematica territoriale dello sviluppo italiano*, Bologna, il Mulino, 1977; ID., *Ancora sul modello delle tre Italie*, «Economia e Politica Internazionale», 22 (1979); ID., *La costruzione sociale del mercato: studi sullo sviluppo di piccola impresa in Italia*, Bologna, il Mulino, 1988.

¹² J. ZEITLIN, *Industrial Districts and Regional Clusters*, in G. JONES – J. ZEITLIN (eds.), *The Oxford Handbook of Business History*, Oxford, Oxford University Press, 2007, pp. 219-220. On the Italian case see: G. BECATTINI, *Il Bruco e la farfalla. Prato: una storia esemplare dell'Italia dei distretti*, Firenze, Le Monnier, 2000.

scholars, including economic historians, who began to investigate their historical roots and transformations¹³.

Sabel and Zeitlin were among the first to focus on this model of industrial development¹⁴. They highlighted three features of the institutional set-up at the basis of the competitiveness of the district:

a local – ‘municipal’ – governance of the production system, a paternalistic vision of industrial development and a network of family-run businesses. Such a set-up ensured the stability of the productive system itself, guaranteeing its sustainability both in social and economic terms by disbursing unemployment subsidies with the aim of avoiding dispersion of the human capital of the district, supervising prices and salaries with the intent of warding off damage due to excess competition, building or funding highly-indivisible resources available to the whole production community, safeguarding the brand that identified the typical products of the district, creating professional training schools, and activating a chain of bodies that could supply assistance¹⁵.

Although renewed and revised according to changed contexts, these are practices that are anything but innovative. As a matter of fact, they are direct descendants of that organizational culture that grew up in urban Europe around the institutions which for centuries represented the prevalent form of regulation of craft activity: the craft guild. In light of this, the search for the roots and continuity of the relationship between the early modern craft heritage and industrial districts became a hot research topic for economic historians, triggering a series of case studies¹⁶.

From a historical perspective, the central problem became the process of constitution of the so-called industrial atmosphere, which Marshall and Becattini identified as a decisive factor in the district model¹⁷. Starting from the cases of central Italy they approached, Becattini and

¹³ J. ZEITLIN, *Industrial Districts and Regional Clusters*, cit., p. 220.

¹⁴ C.F. SABEL, – J. ZEITLIN, *Historical Alternatives to Mass Production: Politics, Markets and Technology: in Nineteenth-Century Industrialization*, «Past and Present», 108 (1985), pp. 133-176.

¹⁵ C.M. BELFANTI, *The Genesis of a Hybrid: Early Industrial Districts between Craft Culture and Factory Training*, in G. BECATTINI – M. BELLANDI – L. DE PROPRIIS (eds.), *A Handbook of Industrial Districts*, cit., p. 11.

¹⁶ A. GUENZI, *Early Industrial Districts. Introduction*, in *Ibid.*, pp. 3-9.

¹⁷ On the concept of industrial atmosphere Becattini states: «It is not simply an organizational form of the production process of a particular category of goods, but a social environment where human relations, inside and outside production sites [...] and the inclinations towards work, savings, risk etc. have a particular nature» (translation from Italian). See: G. BECATTINI, *Il distretto industriale marshalliano: cronaca di un ritrovamento*, in G. BECATTINI (ed.), *Mercato e forze locali: il distretto industriale*, cit., p. 8.

Brusco had already proposed reflections on the entrepreneurial genesis of the industrial district. The two scholars identified the sharecropper as a fundamental protagonist. In their opinion, the experience acquired by the head of the sharecropping family in organizing the work of family members and employees, as well as in the management of the farm's accounting, allowed for the accumulation of a managerial know-how which transformed the sharecropper into a small entrepreneur when, in the post-war period, the sharecropping system started to disappear¹⁸.

However, economic history research demonstrated that in other districts, for example in the Lombardy region, the same relationship with the sharecropping system could not be verified. More generally, studies showed that the social origin of the entrepreneur does not represent the common element of the genesis of industrial districts in different areas. Sharecroppers, self-made men, peasants-artisans, ex-workers were the actors who, depending on the situation, abandoned their previous life to start up SMES: different social figures, active in different contexts, who, in different moments, developed a similar entrepreneurial choice. As a result, historians have increasingly focused on the conditions and prerequisites that lie at the basis of this choice¹⁹.

Alongside the increase in research on the early modern transformations which further highlighted the role of guilds and demonstrated the relevance of craftsmanship experiences also in rural areas²⁰, scholars focused on three main situations: 1) familiarity with commercial and non-commercial relations, particularly in the international arena; 2) the role of local credit institutions; 3) the role of factories. A large number of case studies were addressed to verify the recurrence and significance of these factors in different districts²¹.

In regard to the intense relationship with the international market and the familiarity with the export trade, it is possible to state that they represent features which belong to the "genetic heritage" of industrial

¹⁸ ID., *Riflessioni sullo sviluppo economico-sociale della Toscana in questo dopoguerra*, in G. MORI (eds.), *Annali di Storia d'Italia. La Toscana*, Torino, Einaudi, 1986; S. BRUSCO, *Piccole imprese e distretti industriali: l'esperienza italiana*, in ID., *Piccole imprese e distretti industriali*, Torino, Rosenberg & Sellier, 1989.

¹⁹ A. GRANDI, *Tessuti compatti. Distretti e istituzioni intermedie nello sviluppo italiano*, Rosenberg & Sellier, Torino, pp. 48-49.

²⁰ C.M. BELFANTI, *The Genesis of a Hybrid*, cit., pp. 14-15; A. GUENZI, *Cutlery trade: le origini corporative dei distretti industriali in Europa (secoli XV-XX)*, Torino, Rosenberg & Sellier, 2014.

²¹ C.M. BELFANTI, *Mezzadri, artigiani, operai: personaggi in cerca d'autore alle origini del distretto industriale*, in ID. - T. MACCABELLI (eds.), *Un paradigma per i distretti industriali*, Brescia, Grafo, 1997, pp. 33-34.

districts. At the roots of the local entrepreneurial culture we can find experiences of intensive and fruitful relations with the market. This can be considered a sort of prerequisite, almost a necessary condition, though not sufficient, in district “genetics”²².

On the existence of local credit institutions, it has been highlighted how the presence of rural and popular banks, or other institutions granting loans, contributed to the development of the system of institutions and rules in the local community that lies at the basis of the industrial district. These financial entities – established by local initiative and therefore well integrated in the socio-economic community – played a role of primary importance in the debut of small entrepreneurs. They provided financial support in a climate of greater informality and confidence compared to relationships with banks in normal contexts²³.

Finally, regarding the factory system, studies have shown the relevance of this factor in particular phases of the history of certain districts. In several cases, centralized industrial settlements played a specific role in specific moments, especially for the acquisition of technical and professional skills by the local labor force. This apprenticeship represented a crucial step in the history of the local production system and in its potential to transform itself²⁴.

On the basis of these reflections on the recurrent elements in the history of district areas, economic historians have stressed the role of primary importance held by the central and intermediate institutions²⁵. Considering the endogenous factors of growth, it is necessary to analyze the institutional body and its role in the evolutionary process of industrial districts. Institutions support the productive system: they are part of the district society, its set of values, implicit rules, and widespread competences. In many cases, the joint intervention of central and intermediate institutions affected, at least partially, the development paths of industrial sectors, and significantly influenced the articulation and the

²² *Ibid.*, p. 33.

²³ *Ibid.*, p. 34

²⁴ C.M. BELFANTI, *The Genesis of a Hybrid*, cit., pp. 15-16.

²⁵ Intermediate institutions are «collective bodies and rule systems aimed at the locally differentiated provision of public and categorical goods, i.e. intended for specific entities or categories of economic entities, with the effect of changing the relative prices of specific local resources. These are, for example, local interest organizations, peripheral public administrations, educational structures, non-temporary consortium organizations and explicit or customary rules governing their relations». Translated from Italian: A. ARRIGHETTI – G. SERAVALLI, *Istituzioni e dualismo dimensionale dell'industria italiana*, in F. BARCA (ed.), *Storia del capitalismo italiano: dal dopoguerra a oggi*, Roma, Donzelli, 2010, pp. 338-340.

differentiation of the districts²⁶. In other words, according to economic historiography, successful industrial districts – those capable of handling the challenges of change – can usually count on a solid institutional structure to allocate the appropriate share of wealth produced by economic growth to the accumulation of social capital²⁷. With the aim of analyzing this solid institutional structure and its role in the long-term trajectories of local development, historians have defined a comparable analytical framework based on four institutional variables: vocational training, local financial institutions, entrepreneurial associations, and local authorities²⁸.

Lastly, research on the conditions that can foster the emergence of industrial districts led several scholars to investigate the possibility of modeling the process of birth and transformation of these realities. A particularly significant example is the interpretative framework of Viesti. According to this, districts emerge in the presence of certain elements: combination of local production factors, adequate technology, stimulus of one or more companies, sufficient market demand, appropriate functioning of local institutions, achievement of adequate competitiveness.²⁹ Other models were elaborated by Press, Belussi and Sedita, Menze and Fornahl, who tried to frame the genesis and evolution of local production systems on the basis of the concept of “district/cluster life cycle”³⁰.

In the following pages, the paper analyzes and rereads the history of the industrial district of Gardone in light of the results of economic historiography. The article focuses on factors which were crucial for the

²⁶ C.M. BELFANTI – S. ONGER, *Mercato e istituzioni nella storia dei distretti industriali*, in G. PROVASI (ed.), *Le istituzioni dello sviluppo. I distretti industriali tra storia, sociologia ed economia*, Roma, Donzelli, 2002, pp. 252-256.

²⁷ On the concept of social capital see: F. SABATINI, *Il concetto di capitale sociale. Una rassegna della letteratura economica, sociologica e politologica*, «Studi e note di economia», 2 (2004), pp. 91-123.

²⁸ A. GRANDI, *Tessuti Compatti*, cit., pp. 67-70. See also: A. GUENZI, *Istituzioni intermedie e sviluppo locale: un approccio di storia economica*, in A. ARRIGHETTI – G. SERAVALLI (eds.), *Istituzioni intermedie e sviluppo locale*, Roma, Donzelli, 1999, pp. 67-92.

²⁹ G. VIESTI, *Come nascono i distretti industriali*, Roma-Bari, Laterza, 2000.

³⁰ K. PRESS, *A Life Cycle for Clusters? The Dynamics of Agglomeration, Change, and Adaptation*, Heidelberg, Physica-Verlag, 2006; F. BELUSSI – S.R. SEDITA, *Life Cycle vs. Multiple Path Dependency in Industrial Districts*, «European Planning Studies», 17 (2009) 4, pp. 505-528; M.P. MENZEL – D. FORNAHL, *Cluster life cycles – dimensions and rationales of cluster evolution*, «Industrial and Corporate Change», 19 (2010) 1, pp. 205-238. See also: E.M. BERGMAN, *Cluster life-cycles: an emerging synthesis*, in C. KARLSSON (ed.), *Handbook of Research on Cluster Theory*, Cheltenham – Northampton, Edward Elgar, 2008, pp. 114-132; F. BELUSSI – J.L. HERVÁS-OLIVER, *Unfolding cluster evolution*, London, Routledge, 2017.

case study and common to other local production systems. The objective is to verify generalizations on the evolutionary process of industrial districts, as well as to identify possible future lines of research.

3. *Origins of the production system: location factors and craft culture*

All kinds of guns are made, muskets with all their mounts, crossbows, cannon balls, weapons of every kind, as well as tools of tempered steel, and all kinds of cutlery, farm implements, and nails. Every year the said valley produces XXV thousand shotguns that are fetched off by merchants into foreign lands. Iron ore abounds in this valley, because all the mountains are full of it and out of fifty pits, or shaft mines, they dig enough to keep XV refining furnaces busy³¹.

As stated in the introduction, the vocation for gun-making in Val Trompia was first recorded in the mid-fifteenth century. Instead, the quotation above is from a letter from the *podestà* Paolo Partua to the Senate of the Venetian Republic in 1562. He describes the first localization factors giving rise to the production specialization. Because of the hurdles in developing agriculture and as a result of the abundance of iron ore, wood and water, the valley specialized in the production of ferrous items from the Middle Ages, if not earlier.

In 1341, the first statute for the exploitation of mining sites was promulgated in Bovegno: it focused on property and the use of mining facilities, as well as on the legal recognition of the workforce. The raw material extracted from the upper zone was sent to Gardone and other villages in the central valley where it was worked in furnaces to produce different types of tools, in particular blades, armor and spearheads known as *Dardi Gardoni*. In 1406, the so-called *Privilegio Malatestiano* gave stability to the production of armor and cold weapons, no longer making it a seasonal activity. Under Venetian rule (1433-1797), the con-

³¹ Asv, *Collegio, Relazioni*, b. 37, fol. 35rv. Original version: «Si fanno schioppi d'ogni sorte, Moschetti con tutti i suoi fornimenti, balestre, balle d'Artigliaria, arme di tutte le sorte, stromenti da fuoco, et di qualunque sorte da taglio et da Agricoltura, et chioderie. Si traggono di detta Valle ogni anno XXV mila schioppi che sono condotti da mercanti in stati alieni. È copiosa questa Valle in vena da ferro, perché tutti questi monti ne sono pieni, et se ne cavano più di cinquanta busi, ovveramente fori di continuo, talmente che ne forniscono XV forni».

tents of the *Privilegio* were substantially confirmed in the *Statuto di Valtrompia* comprising 23 chapters³².

Scholars identify the wars of the second half of the sixteenth century as the triggering factors for local specialization in gun manufacturing. During these conflicts, firearms were used on a large scale for the first time, and iron replaced bronze for the production of cannons based on the local know-how in processing the mineral³³. Since the end of the fifteenth century, the organization of the iron manufacturing assumed the configuration of the disseminated manufacturing³⁴: about sixty thousand people were employed in the sector, with smelting furnaces managed by families and associations of co-owners³⁵. However, this type of production organization acquired further strength when gun-making became the core business. As described by Belfanti,

the firearms production cycle resembled a long chain rooted along the Mella river and in the city of Brescia. In this chain each craftsman held a

³² C. SIMONI, *La via del ferro e delle miniere in Valtrompia. Un itinerario nel passato produttivo e nel patrimonio storico-industriale di un territorio minerario e siderurgico*, Gardone Val Trompia, Comunità Montana di Valle Trompia, 2010, pp. 17-20. On these aspects see also: P. BONETTI – V. RIZZINELLI, *L'estrazione del Ferro in Valtrompia: amministrazione, normativa e proprietà*, in AA.Vv., *Atlante valtrumplino. Uomini, vicende e paesi delle valli del Mella e del Gobbio*, Brescia, Grafo, 1982; G. ONGARO, *Il commercio del ferro nel distretto bresciano (secc. XVI-XVII): un approccio istituzionale*, «RiSES – Ricerche di Storia Economica e Sociale», 3 (2017) 1-2, pp. 95-118. For the Statutes of Bovegno see: *Statuti di Bovegno*, in B. NOGARA – R. CESSI – G. BONELLI (eds.), *Statuti rurali bresciani del secolo XIV (Bovegno, Cimmo ed Orzinuovi)*, Milano, 1927. For an anastatic copy of the Statute of Valtrompia see: *Statuto di Valtrompia con due tavole, una delle rubriche de i capitoli; et l'altra di trovar le materie per ordine di alfabeto*, Gardone Valtrompia, Comunità Montana di Valle Trompia, 1976.

³³ M. MORIN – R. HELD, *Beretta*, cit., p. 180; M. DEL BARBA, *Storia del distretto armiero gardonese*, cit., p. 13. On the adoption of firearms for military purposes and the “Military Revolution” see: M. ROBERTS, *The Military Revolution, 1560-1660, an inaugural lecture delivered before the Queen's University of Belfast*, Belfast, 1956; G. PARKER, *The Military Revolution, 1500-1800: Military Innovation and the Rise of the West*, Cambridge, Cambridge University Press, 1988, pp. 16-24; J. BLACK, *A military revolution? Military Change and European Society 1550-1800*, Atlantic Highlands, Humanities Press, 1991; C. ROGERS, *The military revolution debate: readings on the military transformation on early modern Europe*, Boulder, Westview Press, 1995; C.M. CIPOLLA, *Vele e cannoni*, Bologna, il Mulino, 2001; L. PEZZOLO, *La rivoluzione militare: una prospettiva italiana 1400-1700*, in A. DATTERO, S. LEVATI (eds.), *Militari in età moderna. La centralità di un tema di confine*, Milano, Cisalpino, 2006, pp. 15-62.

³⁴ F. BRAUDEL, *Civilization and Capitalism, 15th- 18th Century. II. The Wheels of Commerce*, London, Book Club Associates, 1983, p. 303.

³⁵ D. MONTANARI, *Produzione d'armi da guerra su commessa pubblica. La vicenda di Gardone Val Trompia nei secoli XVI-XIX*, in AA.Vv., *Atlante valtrumplino*, cit., p. 175.

specific task³⁶, although some phases of the manufacture required more sophisticated techniques and more complex tools than others. At the apex of the craft hierarchy, there were the masters who forged the gun barrel, who in general owned a forge able to exploit water power. [...] While the various phases of gun barrel production were exclusively located in Gardone Val Trompia (the forges, the plants and the workshops being distributed in fact over the territory of that small town) the manufacture of the firing mechanism was, instead, the prerogative of other villages in the valley. For example, a large number of the inhabitants of Marcheno, Sarezzo and Lumezzane were employed in the construction of gunlocks to be mounted on firearms. [...] In other places along the valley, scattered forges and cottage industry, organized under a putting-out system, produced bayonets, firing rods, powder horn, munitions and other accessories for firearms. Finally, in the city itself, there were the craft workshops whose principal task was to serve the “good taste” of wealthy clients: it was in fact thanks to the artistic ability and to the loving attention to detail paid by engravers and etchers that butts and gun barrels were made more precious for these civilian clients³⁷.

Information regarding the production structure in Gardone is provided also by Morin and Held on the basis of a precious dispatch sent by the local rectors to the Venetian Senate in 1643. According to this source,

thirty “fires”, thirty-three masters and sixty-six workmen could forge and extract from the fire two hundred and thirty-six muskets barrels a day, or

³⁶ This long chain of craftsmen is described in detail in: A. GAIBI, *Le Armi da Fuoco*, in AA.Vv., *Storia di Brescia*, Brescia, Morcelliana, 1964; C.M. BELFANTI, *A Chain of Skills*, cit., pp. 268-269. 1) *bollitori*: the masters of the barrels based in Gardone, the head of the chain, responsible for forging, the most important part of the manufacturing process; 2) *trivellatori*: they smoothed down the inside of the barrel; 3) *livellatori*: grinders using drills and filing the inside of the barrel; 4) *fondellieri*: who ‘finished’ the barrel with large screws to close the breech; 5) *molatori*: responsible for the external surfaces of the barrel; 6) *brunitori*: burnishers; 7) *fornitori*: applied the sights and appliances for the firing mechanism; 8) *azzalinieri*: for the production of locks, especially flint gunlocks; 9) *incasatori*: makers of wooden blocks; 10) *ferradori*: producers of iron parts to fix the butt to the other components of the gun; 10) *lissadori*: had the task to inlay and polish the wood 11) *camuzzadori*: engravers of the metal parts.

³⁷ C.M. BELFANTI, *A Chain of Skills: the Production Cycle of Firearms Manufacture in the Brescia Area from the Sixteenth to the Eighteenth Centuries*, in A. GUENZI – P. MASSA – F. PIOLA CASELLI (eds.), *Guilds, Markets and Work Regulations in Italy, 16th-19th Centuries*, London, Routledge, 1998, pp. 269-270. See also: G. DA LEZZE, *Il Catastico bresciano di Giovanni da Lezze (1609-1610)*, Brescia, Apollonio, 1969-1973, pp. 360-366; A. FRUMENTO, *Le Repubbliche Cisalpina e Italiana con particolare riguardo a siderurgia, armamenti, economia ed agli antichi luoghi lombardi del ferro, 1796-1805*, Milano, Banca Commerciale Italiana, 1985, pp. 183-184.

three hundred carbine barrels, six hundred pistol barrels, or two hundred and twenty-four hunting-gun barrels. Fifteen master borers, assisted by thirty journeymen drilled the bores; sixteen master straighteners with thirty-two journeymen straightened them; seven master breech-plug fitters with ten helpers added their labor; twenty-seven master filers with ten assistants struck up and polished them; twenty-nine master furnishers with eighty-seven assistants attached flashpans, sights and other fittings; and twenty master burnishers with five assistants gave the final shape. Overall, three hundred and ninety men were involved. Besides these, there were also twenty-three workshops with around fifty men who made iron furniture for the weapons, the main furnace which reduced the ore, eight great fires which refined the iron and made the sheets, and a great number of charcoal-burners and other workers³⁸.

Another characterizing feature of the production system were the long and fierce fights between craftsmen and merchants. Towards the end of the sixteenth century the territories of the Serenissima Republic were involved in a social and economic revolution which had begun in northern and central Europe more than a century earlier. Craft production was hit by the rise of the merchant class which gradually reduced the craftsman-producer to a salaried workman. Marketing of the products, procurement of raw materials and the associated credit were monopolized more and more by merchants who aimed to make labor as cheap and as maneuverable as possible, without distinguishing between a workshop's master-artisan owner and assistant journey-man³⁹.

In the case in question, the conflict between the two groups was particularly fierce and long due to the resistance of the masters and, in particular, because of their strategic role. The dynamics of this conflict and its effects on the local production system were mediated and influenced by the interests of the government authority. Well aware of the importance of the craftsmen's know-how, the Venetian Republic had two primary objectives. On the one hand, the Serenissima aimed at preserving such a strategic asset from the negative effects of the cyclical stagnation of firearms demand and of masters-merchants fights; on the other, it sought to prevent rival powers from benefitting from the local gun-making industry. The measures adopted mainly consisted in exportation bans, the creation of a "centralized warehouse" in the sixteenth

³⁸ M. MORIN – R. HELD, *Beretta*, cit., pp. 94, 96. See also: ASV, *Senato, Dispacci Rettori Brescia*, Filza 45, 16.IX.1643, *ad diem*.

³⁹ M. MORIN – R. HELD, *Beretta*, cit., pp. 52-54.

century, and support for the creation of craft guilds in the seventeenth and eighteenth centuries⁴⁰.

In 1588, the warehouse was established and leased out to a merchant, who had two duties: 1) distributing iron at regulated prices; 2) buying – by means of money partially lent without interest by Venice – stocks of gun barrels produced in Val Trompia in order to ensure regular absorption of the production and constant earnings for the craftsmen⁴¹. In 1619, the *Corpo delle maestranze di canne* was founded in Gardone and joined by all gun barrel makers. The guild – soon followed by several others created by differently skilled craftsmen – fought fiercely in defense of the craftsmen's privileges and a fair distribution of orders. Specific rules were adopted for the quality and organization of production, a rigid system of affiliation was imposed according to family ties – non-natives were excluded from the profession –, and craftsmen were not allowed to expatriate⁴².

In the eighteenth century, due to the poor results obtained, the craft class further strengthened the institutions that regulated relationships between the various links of the production chain. Backed by the Venetian government, local masters created a series of prescriptive barriers to defend their status, reorganizing the structure of trade guilds. In 1715 an ordinance issued by Girolamo Diedo (then *capitano*) confirmed the rights of the masters to share out the public orders for weapons, gave to the guild of Gardone the monopoly on the gun barrel production in the Venetian Republic, and established a maximum number of forges which could be active in Gardone⁴³.

Despite the direct intervention of the government authority, these measures were progressively overcome by the merchants. First of all, by using their political influence, they took control of the warehouse. Secondly, in 1726, they created the *Società de padroni de fuoghi della terra di Gardone* and obtained the monopoly on sales of gun barrels from the Venetian administration⁴⁴. Due to the continuous fights between craftsmen and merchants and the failure of government's interventions, local arms manufacturing lost ground in favor of other gun-making centers, and important transformations took place in the ownership of the forg-

⁴⁰ *Ibid.*, pp. 55-56; L. MOCARELLI – G. ONGARO, *Weapons' production in the Republic of Venice in the Early Modern period: the manufacturing centre of Brescia between military needs and economic equilibrium*, «Scandinavian Economic History Review», 65 (2017) 3, 231-242.

⁴¹ D. MONTANARI, *Produzione d'armi*, cit., p. 169.

⁴² *Ibid.*, pp. 175-176.

⁴³ C.M. BELFANTI, *A Chain of Skills*, cit., pp. 276-277.

⁴⁴ *Ibid.*, p. 282.

es⁴⁵. Information on this latter aspect can be found in the *registri degli estimi* available at the State Archives of Brescia⁴⁶.

In 1657, besides the forges identified by their location name, there was a good number of production facilities named after their owners or their founders (Acquisti, Bertarini, Manenti, Moretti, Mutti, Rampinelli). These were probably families of craftsmen, as evidenced by both the presence of their surnames on the barrels, and the strong fragmentation of forge ownership. Although some families (Acquisti, Chinelli, Moretti, Rampinelli) owned a considerable production potential, the small owners (13) still retained a significant share of the plants (just less than half)⁴⁷.

Less than 30 years later, in 1683, the situation appeared significantly changed. Some families (Acquisti, Chinelli, Francino, Moretti) from the craft world maintained both the control of their forges and a large participation in others, but other families of similar origin disappeared or were about to (Bertolio, Dafino, Gatello). The weakest operators were probably suffering from the economic crisis and local feuds. In this period the phenomenon of ownership concentration began: five families (Acquisti, Chinelli, Francino, Moretti, Rampinelli) controlled about 75% of the forges. Concurrently, merchants were gaining a foothold in the production system and the dissociation between the production cycle and the marketing of the product was about to become more evident. In 1688, only two (Francino, Rampinelli) of the six most important merchants belonged to families that owned forges, other two (Bertarini, Signorino) were small owners and the last two (Belli, Beretta) did not own any production facilities⁴⁸.

The situation became even clearer in the censuses of the eighteenth century. In 1723, the system was experiencing a deep crisis: ownership was undergoing a progressive process of fragmentation and, unlike the previous century, six important merchants (Bertarini, Dafino, Moretti, Mutti Rampinelli, Zambonetti) were strengthening their role as forge owners⁴⁹. In 1763, all the production facilities were owned by those families (Moretti, Beretta, Rampinelli, Zambonetti) that just few decades before concentrated their interests in the trade field. All these families – some of

⁴⁵ M. MORIN – R. HELD, *Beretta*, cit., pp. 178-179.

⁴⁶ For an extensive analysis of these sources see F. ROSSI, *Fucine gardonesi*, Brescia, Ateneo di Brescia – Camera di Commercio Industria Artigianato e Agricoltura di Brescia, 1981.

⁴⁷ ARCHIVIO DI STATO DI BRESCIA (ASB), *Catasto antico*, Reg. 1013.

⁴⁸ *Ibid.*, Reg. 1014.

⁴⁹ F. ROSSI, *Fucine gardonesi*, cit., pp. 39-40.

which without a craft background – controlled all the production phases of gun barrels in several forges and could fulfil orders autonomously⁵⁰.

Despite the processes of regulation and institutionalization of local gunsmithery initiated by the spread of craft guilds – processes which consolidated the relationship between the production specialization and the local socio-economic context – the new merchant class gradually prevailed, as a result of its ability to influence political power and its control over capital goods. Belfanti dates the end of the conflict between the two groups to 1784, when «an agreement stipulated that the group of merchants should guarantee the craftsmen “constant work for the decade to come on ten thousand gun barrels per annum”. Finally, the workforce saw a concrete prospect of regular orders, but, in exchange for such assurances, [craftsmen] had to accept the merchants’ conditions of a reduction in the rates of pay»⁵¹.

4. Coordination and industrialization through centralization: arsenal and factories

At the end of the eighteenth century, with the arrival of the armies of revolutionary France in Italy, a long period of wars was inaugurated in Europe. During this period, the demand of firearms significantly increased and the arms industry in Brescia benefited from substantial orders. With the intention of exploiting the skills of the local population in gunsmithery and, at the same time, relaunching the production specialization, the French decided to open an arsenal with seats in Brescia and Gardone⁵². However, the strategic choice of opening a coordination and control

⁵⁰ ASB, *Catasto antico*, Reg. 1016.

⁵¹ C.M. BELFANTI, *A Chain of Skills*, cit., p. 282.

⁵² L. MOCARELLI, *Le “industrie” bresciane nel Settecento*, Milano, CUESP, 1995, pp. 171-174; D. MONTANARI, *Produzione d’armi*, cit., p. 176; G. MARCHESI, *Quei laboriosi valligiani. Economia e società nella montagna bresciana tra il tardo Settecento e gli anni postunitari*, Brescia, Comunità Montana di Valle Sabbia – Grafo, 2003, pp. 161-162. On the arsenal see: D. MONTANARI, *La Fabbrica d’Armi di Gardone Val Trompia: Analisi di un trend tra pace e guerra*, in AA.VV., *Aspetti della società bresciana nel Settecento: catalogo della mostra*, Brescia, Comune di Brescia, 1981; ID., *Nato con Napoleone, chiuso con il ritorno degli austriaci, riaperto dopo l’Unità*, in AA.VV., *La Banca Credito Agrario Bresciano e un secolo di sviluppo*, Brescia, Credito Agrario Bresciano, 1983a; ID., *Le armi della Repubblica. Le Fabbriche militari bresciane dalla Serenissima all’Italia napoleonica*, in D. MONTANARI – S. ONGER – M. PEGRARI (eds.), *1797. Il Punto di svolta. Brescia e la Lombardia veneta da Venezia a Vienna (1780-1830)*, Brescia, Morcelliana, 1999. On the role of the arsenals in military procurement see F. DEGLI ESPOSTI, *Stabilimenti industriali o falansteri? La lunga parabola degli arsenali*, in N. LABANCA, – P.P. POGGIO (eds.), *Storie di armi*, Milano, Unicopli, 2009.

center for military orders was able to contribute to the transformation of local production only in the second half of the century. As a matter of fact, in 1815, due to the return of peace and the Austrian lack of interest for the local arms industry, a period of deep decline started for the Italian gun-making district. In 1843 a gunlock factory was opened in Vienna to satisfy government orders and in 1857 the Habsburg administration suspended the production of military weapons by closing the arsenal in Brescia⁵³.

A real turning point for the local arms production occurred in 1859 with the annexation of Lombardy to the Kingdom of Sardinia (future Kingdom of Italy). The Savoy administration reopened the arsenal seats of Gardone and Brescia – reorganized under a single direction with the name *Reale Fabbrica d'armi* – and production resumed. Between 1859 and 1860 the government established new rules for the organization of production according to the model of the arsenal of Turin. In Gardone, workshops in privately rented forges were set up for the production of barrels: each manufacturer worked on his own civilian weapons, while military guns were produced by a society composed of most of the forges' owners. The government authorities also introduced some innovations: lathes to rough out the barrel in the transition from the leveler to the grinder, French machinery for rifling, and iron from Piedmont as raw material⁵⁴.

In this phase, eleven production facilities were active in Gardone, they employed 287 workers and their main owners were the Beretta, Bertarini, Mutti, Franzini, and Paris families⁵⁵. Besides these, there were numerous other workshops scattered around the villages of Inzino⁵⁶,

⁵³ D. MONTANARI, *Produzione d'armi*, cit., pp. 178-180.

⁵⁴ ARCHIVIO STORICO DI GARDONE VAL TROMPIA (ASG), *Comune di Gardone Val Trompia*, b. 69, f. 1, «Prospetto della Fabbrica d'armi da fuoco in Gardone», 1860.

⁵⁵ *Ibid.* On Franzini see: *Franzini o Francino o Francini o de Francinis* in A. FAPPANI, *Enciclopedia Bresciana*, URL: <<https://bit.ly/2KHwApc>> [last accessed on 8 June 2019]. On Paris see: S. ONGER, *Verso la modernità: i bresciani e le esposizioni industriali, 1800-1915*, Milano, FrancoAngeli, 2010, pp. 118-119.

⁵⁶ ASG, *Comune di Gardone Val Trompia*, b. 69, f. 1, «Prospetto degli Edifici a Fucina esistenti in questo Comune atti a convertirsi ad uso lavoriero d'armi», 9 March 1860.

Magno⁵⁷, Marcheno⁵⁸, Lumezzane Pieve⁵⁹, Lumezzane Sant'Apollonio⁶⁰. In the district, in addition to several other small manufacturers, there were 15 main gun barrel producers which manufactured components for both military and civilian weapons. In 1861, 31,196 barrels for war rifles, 2,326 double barrels, 6,709 bare barrels, and 750 guns were produced for a total value of 542,165 lire⁶¹.

The late nineteenth century and the advent of mechanization caused a definitive break with the preindustrial system⁶². Three factors marked the change of pace of the local gun industry: 1) ability of local producers to attract state orders; 2) progressive dissociation from the ancient location factors; 3) investments in the American system of manufacturing (ASM hereafter).

The reopening of the arsenal in 1859 represented just the first step in the building of a solid relationship with government authorities. As a matter of fact, after the Italian Unification, local entrepreneurs' expectations were partly disappointed; only with the advent to the government of the Historical Left and the constant interest of Giuseppe Zanardelli, were local producers able to obtain substantial orders for the army. At the beginning of the 1870s, as a consequence of an intense lobby activity, the state plant was enlarged and modernized, and local businesses were able to increase their sales⁶³. The arsenal became the main center

⁵⁷ *Ibid.*, «Prospetto degli individui addetti al lavoro d'armi nella qualità di acciarinai si di monizione che mercantili del Comune di Magno», 9 March 1860. See also: *Ibid.*, *Comune di Magno*, b. 28, ff. 1-15, «Prospetto degli operaj addetti alla fabbrica d'armi del Comune di Magno», 1860.

⁵⁸ *Ibid.*, *Comune di Gardone Val Trompia*, b. 69, f. 1, «Prospetto nominativo di tutte le officine pel lavoro d'armi esistenti nel Comune di Marcheno e nome e cognome degli operai in esse occupati», 1860.

⁵⁹ *Ibid.*, «Prospetto delle Officine, degli Operaj ed Applicati per lavoro d'Armi in Lumezzane Pieve», 7 March 1860.

⁶⁰ *Ibid.*, «Prospetto riassuntivo delle Notizie sul numero delle officine per lavoro d'armi esistenti nel Comune di Lumezzane Sant'Apollonio», 10 March 1860.

⁶¹ *Ibid.*, b. 180, f. 1, «Prospetto di Statistica della Industria Manifattrice nell'Anno 1861 nel Comune di Gardone».

⁶² On the nineteenth century and the advent of industrialization in Val Trompia see G. BOCCINGHER, *Il contesto storico-economico tra '800 e '900: una difficile transizione*, in F. BOSSINI (ed.), *Valtrompia nell'economia*, Roccafranca, La Compagnia della Stampa Massetti Rodella, 2008, pp. 165-209; P. BONETTI – P. PAGANI, *Il movimento operaio in Valtrompia: dal 1860 all'avvento del fascismo*, Brescia, Squassina, 1987, pp. 13-53. Details regarding the local production of firearms in this century can be found in G. ZANARDELLI, *Sulla Esposizione bresciana. Lettere di Giuseppe Zanardelli*, Milano, Valentini, 1857, pp. 89-101.

⁶³ D. MONTANARI, *Giuseppe Zanardelli e il decollo dell'industria bresciana: il caso dell'arsenale di Brescia e di Gardone Valtrompia*, in M. CATTINI – M.A. ROMANI (eds.), *Maestri e imprenditori*

for the distribution of military orders in the valley, and a crucial factor for the development of the production specialization, at least until the second half of the following century⁶⁴.

The second element of novelty was the end of the age-old relationship with the upper valley and its mines. Substantial improvements in the wire drawing of metal and the introduction of electricity created new procurement systems for raw materials. In the second half of the nineteenth century, when the local steel industry was undergoing restructuring, the local iron and charcoal resources were gradually replaced by imported semi-finished steel products and coke. Furthermore, the most influential gun producers tackled the energy issue by investing in hydro-electricity. First, they replaced water wheels with turbines, then adopted electrical generators to transform mechanical energy into electricity. This became systemic over the following years when a consortium was set up for the management of the water of the Mella river⁶⁵.

Finally, the third big change was the decision to invest in the mass production of firearms. The first step on this path was taken by Fabbrica d'Armi Pietro Beretta (Beretta hereafter)⁶⁶. This choice allowed

ditori. Un secolo di trasformazioni nell'industria a Brescia, Brescia, Credito Agrario Bresciano, 1985; ID., *L'arsenale della nazione. Zanardelli e il decollo dell'industria armiera bresciana*, in S. ONGER (ed.), *Brescia 1849. Il popolo in rivolta*, Brescia, Morcelliana, 2002. For a biography of Giuseppe Zanardelli see: R. CHIARINI, *Zanardelli: grande bresciano, grande italiano. La biografia*, Roccafranca, La Compagnia della Stampa Massetti Rodella, 2004.

⁶⁴ E. FILANDRO, *Perché la R. Fabbrica d'Armi di Gardone V.T. sia sempre ricordata*, in AA.VV., *La Valle Trompia*, Brescia, Apollonio, 1930, pp. 27-33; AA.VV., *Atlante Valtrumplino*, cit., p. 10.

⁶⁵ M. DEL BARBA, *Storia del distretto armiero gardonese*, cit., pp. 36-43; P. BONETTI, *I canali industriali di Gardone Val Trompia. Storia del Consorzio sponda destra del Mella*, Roccafranca, La Compagnia della Stampa Massetti Rodella, 2004. It is worth noting that in Gardone the first plant for public lighting was established by the Arsenal in 1889. On the iron, steel and mechanical engineering industries in the province of Brescia in this period: CAMERA DI COMMERCIO ED ARTI DELLA PROVINCIA DI BRESCIA, *Relazione della Camera di Commercio ed Arti della Provincia di Brescia a S.E. il Ministro d'Agricoltura, Industria e Commercio, sopra la statistica e l'andamento industriale e commerciale del proprio distretto per l'anno 1869*, Brescia, Apollonio, 1870, p. 52; AA.VV., *Supplemento perenne alla nuova enciclopedia popolare italiana 1870-1871*, Napoli-Roma, Unione Tipografica Editrice Torinese, 1872, pp. 300-303; A. GNAGA, *La provincia di Brescia e la sua esposizione 1904*, Brescia, Geroldi, 1905, pp. 127-156. For a long-term analysis on ironworking in the area see: L. MOCARELLI, *La lavorazione del ferro nel bresciano tra continuità e mutamento (1750-1914)*, in G.L. FONTANA (ed.), *Le vie dell'industrializzazione europea. Sistemi a confronto*, Bologna, il Mulino, 1997, pp. 721-760.

⁶⁶ On Beretta see: M. MORIN – R. HELD, *Beretta*, cit.; S. ONGER – I. PARIS, *Giuseppe Beretta: una lunga storia dentro un secolo breve (1906-1993)*, in A. PORTERI (ed.), *Cultura, ricerca e società. Da Giuseppe Beretta (1906-1993) all'intervento delle fondazioni*, Roma-Bari,

the historic company to keep the pace of international competitors and increase its production capacity when hunting and target-shooting were becoming widespread sports activities. Soon, firms fell into two groups: large businesses and small craft workshops. The former operated both in the markets of military and civilian products; the latter specialized in the manufacturing of high-quality firearms for private customers or in the supply of parts for the leaders of the sector⁶⁷.

In this framework the leading role was taken over by three companies: Beretta, Officina Metallurgica Francesco Glisenti (Glisenti hereafter) and Società Anonima Vincenzo Bernardelli (Bernardelli hereafter)⁶⁸. These family businesses introduced new machinery and progressively enlarged their plants, where they integrated all the production phases. They pursued strategies based on concentration of production factors and economies of scale, acquiring a leading position on the industrial as well as social level.

Glisenti organized its production within different plants in the Valley and became the first “integrated steel group” of the province. It developed a strong relationship with Giuseppe Zanardelli and exploiting political ties obtained significant orders from the Italian army: in the late nineteenth century Glisenti represented the major contractor of State procurements in the area⁶⁹. Beretta – besides its strategic investments in

Laterza, 2012, pp. 25-178. R.L. WILSON, *Il mondo Beretta: una leggenda internazionale*, Milano, Sperling and Kupfer, 2001; G. BRUNI – B. CAMPEDELLI – P. ROFFIA (eds.), *Saggi storici di ragioneria. Ricerche e analisi di imprese longeve. Vol. I. Pietro Beretta fabbrica d’armi*, Verona, Università di Verona, 1997; A. CATTURICH, «Beretta»: storia di una famiglia e di una industria, in G. ZUCCA (ed.), *Antologia gardonese*, cit., pp. 188-192; T. O’HARA WILLIAM, *Centuries of Success. Lessons from the world’s most enduring family businesses*, Avon, Adam Media, 2004, pp. 49-62; C. TOMBOLA, *I bilanci del gruppo Beretta e delle altre società bresciane del settore armiero*, in AA.VV., *Il peso delle armi leggere: analisi scientifica della realtà italiana*, Bologna, EMI, 2007. Further details on Giuseppe Beretta in E. ZANOTTI, *Giuseppe Beretta. Imprenditore di umanesimo e modernità*, Brescia, Fondazione CAB, 2010.

⁶⁷ S. ONGER – I. PARIS, *Giuseppe Beretta*, cit., pp. 31-32. These specializations were also highlighted by L. SEGRETO, *Marte e Mercurio. Industria bellica e sviluppo economico in Italia (1861-1940)*, Milano, FrancoAngeli, 1997, p. 23.

⁶⁸ F. FACCHINI, *Alle origini di Brescia industriale: insediamenti produttivi e composizione di classe dall’Unità al 1911*, Brescia, Fondazione Luigi Micheletti, 1980, pp. 13-14.

⁶⁹ S. ONGER, *L’Industria privata di armi da guerra. Il caso della Glisenti (1859-1907)*, in N. LABANCA – P.P. POGGIO (eds.), *Storie di armi*, Milano, Unicopli, 2009; D. MONTANARI, *Miniere, forni e officine meccaniche: da Bovegno a Carcina il patriota Francesco Glisenti costruisce con tenacia il primo gruppo ‘integrato’ della storia industriale bresciana*, in AA.VV., *La Banca Credito Agrario Bresciano e un secolo di sviluppo*, Brescia, Credito Agrario Bresciano, 1983. On the Glisenti family and its different entrepreneurial initiatives see AA.VV., *I Glisenti. Cinquecento anni di storia*, Brescia, Negri, 2004; V. VARINI – S.

the ASM – was at the frontline of lobbying by gun producers to ask for tariff reductions and for the establishment of a National Proof House⁷⁰. The Beretta family clearly adopted a paternalistic approach as shown by the numerous initiatives in favor of the labor force, Gardone and its community: they opened a holiday home and factory shop for their workers, built a hotel, theatre, and kindergarten, and played a role in social housing through the establishment of the Cooperativa Triumplina Casa del Popolo⁷¹. Bernardelli built ties with the parish of Gardone and became a prominent figure in provincial Catholic society. Pietro Bernardelli wanted his company to represent the catholic alternative for the management of industrial relations, which at the time were dominated by Pietro Beretta, the leading liberal⁷².

These firms led the industrial district also in the first half of the twentieth century. Their role was particularly relevant during the World Wars when the production system could bypass its limits benefitting from massive state orders. Despite the recovery process started with the Italian Unification, the first decades of the century were hard for local producers. The superiority of foreign competitors⁷³ determined by national

ONGER *Cultura imprenditoriale e sviluppo economico lombardo: la famiglia Glisenti tra Otto e Novecento*, «Imprese e Storia», 32 (2005), pp. 245-283; S. ONGER, *Glisenti*, in *Treccani. Dizionario Biografico degli Italiani*, 57 (2017), URL: <<https://bit.ly/31m5R7C>> [last accessed on 09 June 2019]; *Glisenti o Glisenti famiglia*, in A. FAPPANI, *Enciclopedia Bresciana*, URL: <<https://bit.ly/2WpFvy6>> [last accessed on 09 June 2019].

⁷⁰ On the National Proof House see: G. MORONE, *Il Banco Nazionale di prova delle armi da fuoco portatili*, in AA.VV., *La Valle Trompia*, cit., pp. 53-62; C. BERNARDELLI, (ed.), *Gardone Valtrompia e le sue armi. Un po' di storia sul Banco di Prova e i suoi fabbricanti d'armi*, s.l., s.n., 1990; C. TOMBOLA, *Il Banco Nazionale di Prova di Gardone Val Trompia*, in AA.VV., *Il peso delle armi leggere: analisi scientifica della realtà italiana*, Bologna, EMI, 2007; M. PAGANI – C. CAMARLINGHI, *Cento anni di prove. One hundred years of proofing*, Gardone Val Trompia, Banco Nazionale di Prova per le Armi da Fuoco Portatili e per le Munizioni Commerciali, 2010.

⁷¹ S. ONGER – I. PARIS, *Giuseppe Beretta*, cit., pp. 47-55.

⁷² M. DEL BARBA, *Storia del distretto armiero gardonese*, cit., pp. 67-104. On industrial relations in Val Trompia in this period see: P. BONETTI – P. PAGANI, *Il movimento operaio in Valtrompia*, cit.

⁷³ In the 1920s, high production costs represented the most urgent problem for the Italian gun industry. The local manufacturers obtained the increase of tariffs on foreign products, but the revaluation of the Lira, as well as legal and tax regulations frustrated this protectionist strategy. See: CAMERA DI COMMERCIO E INDUSTRIA DI BRESCIA, *L'industria delle armi da fuoco portatili ed i trattati di commercio*, Brescia, Pea, 1922; S. ONGER – I. PARIS, *Giuseppe Beretta*, cit., pp. 51-53. On foreign competitors see P. ROFFIA, *La Pietro Beretta fabbrica d'armi e l'egemonia dei paesi nord-europei nella produzione di armi*, in G. BRUNI – B. CAMPEDELLI – P. ROFFIA (eds.), *Saggi storici di ragioneria*, cit., pp. 135-176. In Europe, other gun-making districts were Liège in Belgium, Saint-Étienne in France,

economic events and poor levels of investment, together with the consequences of the Great Depression, represented the main problems for local producers⁷⁴. Military procurements were, once again, crucial and they became almost the only survival source in the years of the two World Wars. The production system underwent immense growth during the conflicts only to dramatically plunge at their end. In periods characterized by an arms race, the arsenal and large businesses were crucial for the entire valley, channeling state procurements and increasing workforce⁷⁵.

Eibar in Spain, and Birmingham in the UK. On Liège see: *Fabrique Nationale d'Armes de Guerre S.A. Herstal. Belgique. 1889-1964*, Liege, F.N., 1965; C. GAIER, *Four Centuries of Liège Gunmaking*, Liège, Eugène Wahle, 1985; A. FRANCOITTE – C. GAIER, *FN-Browning. 100 ans d'armes de chasse et de guerre*, Bruxelles, Didier Hatier, 1989; G. GADISSEUR – M. DUART, *Le qui est qui de l'armurerie liégeoise, 1800-1950*, Biarritz, Éditions du Pécari, 2005. On Saint-Étienne see: M. FORISSIER, *L'armurerie de Saint-Étienne au XXe siècle*, La Tour du Pin, Editions du Portail, 2005. On Eibar see: I. GOÑI MENDIZABAL, *Evolución de la industria armera vasca (1876 y 1969): un enfoque a largo plazo*, in P. PASCUAL DOMÈNECH – P. FERNÁNDEZ PÉREZ (eds.), *Del metal al motor. Innovación y atraso en la historia de la industria metal-mecánica española*, Barcelona, Fundación BBVA, 2007, pp. 385-432; ID., *Imitación, innovación y apoyo institucional. Estrategias de penetración en los mercados internacionales de las empresas vascas durante el siglo XX*, «Revista de la Historia de la Economía y de la Empresa», 2 (2008), pp. 207-236; ID., *La internacionalización de la industria armera vasca 1867-1970. El distrito industrial de Eibar y sus empresas*, «Información Comercial Española», 849 (2009), pp. 79-95; ID., *De Esperanza y Unceta a Astra-Unceta y Cia., Una empresa armera ante el mercado internacional*, «Revista de Historia Industrial», 40 (2009), pp. 40-51; ID., *Eibar y la industria armera: evidencias de un distrito industrial*, «Investigaciones de Historia Económica», 6 (2009) 16, pp. 101-133; ID., *Brands in the Basque Gun Making Industry: The Case of ASTRA-Unceta y Cia.*, «Business History», 60 (2018) 8, pp. 1196-1226; E. CATALÁN MARTINEZ – I. GOÑI MENDIZABAL – I. MUGARTEGUI EGUÍA, *Business Networks and Social Capital in Basque Industrialization (1886-1925)*, «Journal of Evolutionary Studies in Business», 2 (2017) 1, pp. 88-127. On Birmingham see: K. DUNHAM, *The Gun Trade of Birmingham. A Short Historical Note of the More Interesting Features of a Long-Established Industry*, Birmingham, The City of Birmingham Museum and Art Gallery, 1955; R.I. FRIES, *British Response to the American System: The Case of the Small-Arms Industry after 1850*, «Technology and Culture», 16 (1975) 3, pp. 377-403; D.W. BAILEY – A.N. DOUGLAS, *English Gunmakers. The Birmingham and Provincial Gun Trade in the 18th and 19th Century*, London-Melbourne, Arms and Armour Press, 1978; H. WHITE – R. TRUDGEON, *Birmingham's Gun Quarter: A Skilled Trade in Decline*, «Oral History», 11 (1983) 2, pp. 69-83; C. BEHAGG, *Mass Production Without the Factory: Craft Producers, Guns and Small Firm Innovation, 1790-1815*, «Business History», 40 (1998) 3, pp. 1-15; D. WILLIAMS, *The Birmingham Gun Trade*, Stroud, The History Press, 2009.

⁷⁴ On the difficult conditions of the gun-making district in the first decades of the twentieth century and attempts of locals to avoid the arsenal's closure see the correspondence in ASG, *Comune di Gardone Val Trompia*, b. 382, f. 9.1.

⁷⁵ C.M. BELFANTI, *Due secoli di storia del distretto di Lumezzane*, in G. RUMI – G. MEZZANOTTE – A. COVA (eds.), *Brescia e il suo territorio*, Milano, Cariplo, 1996, pp. 521 and 526.

The mobilization for WWI took place on the basis of a strong impulse to the activity of the *Reale Fabbrica d'armi*, which had already been partially relaunched in the years of the invasion of Libya. In addition to impressive results in terms of employment (190 workers in 1911, 920 in 1915, 2,220 in 1916, 3,790 in 1917), the arsenal recorded a strong increase also in terms of output. The manufacturing activity was mainly dedicated to weapon parts, 149- and 75-mm bullets and, above all, 1891 muskets: the royal factory produced more than 2,000 muskets per month in the period of maximum war effort⁷⁶. The plant could achieve such results on the basis of significant investments: it was enlarged both in terms of size (from 18 thousand to 100 thousand square meters of surface) and equipment (it was provided with railways, a wide range of machinery, and new turbines powered by hydraulic energy or a diesel plant)⁷⁷.

In 1939, at the eve of WWII, the state factory could count on a workforce of 2,200 units, Beretta on 2,000 and Bernardelli on 1,000. These figures further increased in the following years, when military firearms, internalization of the production process and reduction of the craft entrepreneurial network represented the driving factors of the local system. Details regarding the social and economic environment of Gardone in this period are available in the form of direct testimony by two Beretta workers: Guido Baglioni and Gian Battista Sabatti⁷⁸.

Baglioni and Sabatti describe Gardone as a town entirely based on the mechanical engineering sector. In addition to the gun industry, another large company, Redaelli, was active in the sector of ironworks and

⁷⁶ E. FILANDRO, *Perché la R. Fabbrica d'Armi di Gardone V.T. sia sempre ricordata*, cit., p. 30; G. SIMONE – R. BELOGI – A. GRIMALDI, *Il 91*, Milano, Ravizza, 1970, p. 57.

⁷⁷ P. BONETTI, *I canali industriali di Gardone*, cit., p. 82; A. ALBESIO, *Dall'arsenale alla S.F.A.E.*, in G. ZUCCA (ed.), *Antologia gardonese*, cit., pp. 236-237. On the role of the provincial firearms industry in WWI see: M. ZANE, *Grande Guerra e industria bresciana*, Brescia, Fondazione Luigi Micheletti, 2015.

⁷⁸ Archivio di Etnografia e Storia Sociale di Regione Lombardia (AESS), Mondo operaio in Valle Trompia: intervista all'ex operaio Beretta Gian Battista Sabatti, De Virgiliis Ruggero (director) – Fausti Carla (researcher) – Trani Daniele (cameraman), Gardone Val Trompia (Bs), 26 November 2004; G. BAGLIONI, *Economia e società a Gardone Val Trompia negli anni '40: una testimonianza*, «Storia Urbana», 135 (2012), pp. 43-63; R. CUCCHINI, *I ricordi di 'Popi'. Appunti di vita di Giovan Battista Sabatti tra lavoro, impegno politico e militanza sindacale*, in R. CUCCHINI – M. RUZZENENTI (eds.), *Memorie resistenti*, Rudiano, GAM, 2005. Regarding Gardone, its factories, and resistance movement during WWII see: *Testimonianze sulla Resistenza alla Om di Gardone V.T.*, Gardone V.T., CELBiB, 1987; *Testimonianze sulla Resistenza alla Beretta e alla Bernardelli di Gardone V.T.*, Gardone V.T., CELBiB, 1988.

wire drawing⁷⁹. Local inhabitants saw these firms as their natural employment destinations, providing them with a secure future and safe social environment, and encouraged the younger generations to find a job in the field of firearms. In addition to this, there was the high regard for the work and its value. Laziness and absenteeism were the object of strong social disapproval, whereas self-sacrifice, effort, technical precision and professional prestige were praised. Employment had a crucial influence on individuals, families, social relationships, and the broader social milieu, comprising almost the sole element of identity for the individual and the reputation of the family⁸⁰. Workers, almost all men, fell into two groups: the trained and untrained. The first group, which could count on technical skills acquired in the local vocational school⁸¹ and honed by long apprenticeships, was fully involved in the life of the factory and saw its own future as one and the same as that of the plant. The second group carried out more menial tasks, subordinated to the first.

On the basis of this industrial and social heritage, a new season for the district started in the second post-war period. Due to the lack of military orders, the arsenal and leading businesses had to deal with unavoidable downsizing. Through the reduction of their workforce, these plants determined the umpteenth transformation of the history of the production system. Many of those who lost their jobs decided to reinvest their skills by starting up gun-making craft workshops. As observed in other districts⁸², after having played a crucial role in the transition from a pre-industrial production system to an industrial one, the factories became incubators for SMES⁸³.

⁷⁹ On Redaelli see: *L'industria metallurgica in Valtrompia e gli stabilimenti della Società Anonima Giuseppe e Fratello Redaelli*, in AA.VV., *La Valle Trompia*, Brescia, Apollonio, 1930, pp. 139-150.

⁸⁰ On these aspects see also M. ABBIATICO, *Fra la mia gente*, Gardone Val Trompia, Edizioni Artistiche Italiane, 1984.

⁸¹ On the local vocational school see: ID., *Fra la Mia Gente*, cit., pp. 65-69; A. MARANTA – P. SOTGIU, *L'Istituto Professionale di Stato per l'Industria e l'Artigianato 'G. Zanardelli'. Uno spaccato dell'evoluzione economica, sociale e culturale attraverso le carte dell'archivio storico*, in F. BOSSINI (ed.), *Valtrompia nell'altra storia. Donne, uomini, comunità, tradizioni*, Roccafranca, La Compagnia della Stampa Massetti Rodella, 2010, pp. 354-359.

⁸² C.M. BELFANTI, *The Genesis of a Hybrid*, cit., pp. 15-16.

⁸³ See the curricula of numerous entrepreneurs reconstructed by M. ABBIATICO, *Fra la mia gente*, cit. For example, see the working group set up in the 1920s by Beretta in the field of engraving – a group that influenced the following generation of engravers – see: *Ibid.*, pp. 148-149, 155-162. On firearms engraving see: ID., *Grandi Incisioni su Armi d'Oggi*, Firenze, Olimpia, 1976; ID., *Modern Firearm Engravings*, Gardone Val Trompia, Edizioni Artistiche Italiane, 1980.

5. Conclusion

This paper provides an extensive analysis from a long-term perspective on the evolutionary process of the gun-making industry in Val Trompia, centered on the municipality of Gardone. First of all, a review of the main results achieved by economic historiography on industrial districts was carried out. Secondly, roots, turning points, crucial factors, and protagonists of the transformations and development of the local production system were identified and analyzed.

Overall, the study confirms the importance of coordination and governance mechanisms within districts, reaffirming their crucial role in the prevention, management and resolution of conflicts and problems⁸⁴. In this sense, the paper highlights the relevance of two factors in the evolutionary dynamics of the case study: guild and factory systems (whose role has already been underlined in the analysis of the evolutionary process of other Italian and European districts⁸⁵). Guilds allowed the producers to consolidate and defend their position in the local production system in the early modern period, reaffirming principles of moral economy and establishing precise quantitative and qualitative criteria for the functioning of the production process. Some factories were fundamental in the period of transition from craftsmanship to industrialization. Particularly significant was the role played by the government arsenal – a sorting and control center for military procurement – and some private firms: these plants allowed the introduction of important innovations, the training of workforce and the consolidation of subcontracting practices.

Besides the abovementioned formal and informal governance factors, another aspect highlighted by the study is the great impact of government authorities. This is certainly due to the particular strategic nature of arms production, but we cannot ignore that it also represents a significant element in other districts⁸⁶. In the case of Gardone, government intervention was decisive for both the establishment of guilds and of the arsenal, however it was often extemporaneous and contradictory. In several occasions, government authorities were unable to follow up on their own initiatives and, probably, they were more oriented towards

⁸⁴ J. ZEITLIN, *Industrial Districts and Regional Clusters*, cit., pp. 225-227; ID., *Industrial Districts and Local Economic Regeneration: Overview and Comment*, in F. PYKE – G. BECATTINI – W. SENGENBERGER (eds.), *Industrial Districts and Inter-Firm Co-operation in Italy*, Genève, International Institute for Labour Studies, 1992, pp. 179-194.

⁸⁵ C.M. BELFANTI, *The Genesis of a Hybrid*, cit., pp. 10-17.

⁸⁶ J. ZEITLIN, *Industrial Districts and Regional Clusters*, cit., pp. 227-231.

short-termism than an efficient and effective development of the local production system.

Finally, on the basis of what has emerged from the analysis, it is possible to try to make some considerations about possible future research lines grounded on the Italian gun-making district. In particular, three topics seem worthy of attention: 1) the intermediate institutions of the district, 2) the comparison of the Italian case with foreign gun-making centers, 3) the district structure and the interpretation of its transformations in light of rigorous frameworks and models.

On several occasions, economic historiography has emphasized the importance of the role played by intermediate institutions⁸⁷. However, to date, among studies on these bodies in the Italian gun-making district, we only have introductory or celebratory publications. No contribution is available on the role played by the local vocational school, the National Proof House and the local administration in the development of the so-called local «productive chorality»⁸⁸. In particular, five aspects seem worthy of further investigation: a) the role of the local vocational school in the production of human capital⁸⁹; b) the lobby activity played by the local administration – for example in favor of the enlargement of the arsenal in the 1870s⁹⁰, in occasion of labor disputes, and against the introduction of new taxes in the postwar period⁹¹; c) the impact of the National Proof House on production, its quality and standards⁹²; d) the

⁸⁷ A. GRANDI, *Tessuti compatti*, cit., pp. 63-92.

⁸⁸ On the concept of “productive chorality” see G. BECATTINI, *Beyond Geo-Sectoriality: the Productive Chorality of Places*, «Investigaciones Regionales – Journal of Regional Research», 32 (2015), pp. 31-41.

⁸⁹ The archive of the vocational school is held by the local mountain community in Gardone (Comunità Montana di Valle Trompia), see: <<https://bit.ly/2XpYBFC>> [last accessed on 28 May 2019]; <<https://bit.ly/316jO9E>> [last accessed on 28 May 2019]. On vocational schools within industrial districts see: E. MERLO, *Apprenticeship and technical schools in the formation of industrial districts*, in G. BECATTINI – M. BELLANDI – L. DE PROPRIIS (eds.), *A Handbook of Industrial Districts*, cit., pp. 32-42.

⁹⁰ A preliminary study on this topic was carried out in a graduation thesis: M. GUIZZETTI, *La produzione armiera nell'economia valtrumpina tra il 1825 e il 1875*, Università degli Studi di Brescia, Facoltà di Economia e Commercio, Tesi di laurea, a.a. 1994-1995.

⁹¹ Information on the role played by the local administration in these occasions can be found in AA.VV., *Angelo Grazioli. Il Sindaco*, Brescia, Squassina, 1988. The archive of the municipality is held by the local mountain community in Gardone, see: <<https://bit.ly/2KCnyK6>> [last accessed on 28 May 2019].

⁹² Conflicts between producers emerged in the early twentieth century regarding the production and its quality: poor quality products had a negative impact on all the district. For this reason, a group of gun-makers led by Beretta asked the government the establishment of a National Proof House to set minimum standards of quality. It would

reasons of the frequent vicissitudes faced by business associations within the district of Gardone⁹³.

A second line of research which could contribute to the historiography on local production systems should pivot around an international comparison. Within the paper, cases of gun-making districts – apparently similar to the Italian one – were repeatedly mentioned. Birmingham, Eibar, Liège, Saint Etienne could represent terms of comparison for studying the emergence of governance mechanisms and the propulsive role played by specific companies within districts, the evolutions of the various national arms sectors, as well as the government intervention in a strategic field such as that of military production. A concrete example could be a research on the role played, in the second half of the nineteenth century, by factories and government authorities in the introduction of the ASM in industrial districts which were totally founded on craftsmanship and reluctant to innovation⁹⁴.

Lastly, as emerged from this paper, there are several studies that reconstruct the history of arms manufacturers in the Brescia area, however, to date there is no rigorous analysis of the gun-making district and its structure on the basis of the frameworks by Becattini⁹⁵, Porter⁹⁶ and

be significant to investigate the effects of the National Proof House on these conflicts and the local production. See: S. ONGER – I. PARIS, *Giuseppe Beretta*, cit., pp. 47-48.

⁹³ Business associations in the Italian gun-making district were repeatedly established and closed quickly due to contrasts between associates. See: M. ABBIATICO, *Fra la mia gente*, cit., pp. 265-271.

⁹⁴ On the role of American arsenals in this field see: M.R. SMITH, *Harpers Ferry Armory and the New Technology: The Challenge of Change*, Ithaca, Cornell University Press, 1977; ID., *Army Ordnance and the 'American system' of Manufacturing, 1815-1861*, in ID. (ed.), *Military Enterprise and Technological Change: Perspectives on the American Experience*, Cambridge, The MIT Press, 1985. On Birmingham see: R. LUMLEY, 'The American System of Manufactures' in *Birmingham: Production Methods at the Birmingham Small Arms Co. in the Nineteenth Century*, «Business History», 31 (1989) 1, pp. 29-43. On Liege see: C. GAIER, *Four Centuries of Liège Gunmaking*, cit., pp. 117-126. On Saint Etienne see: J.L. VIRET, *L'industrie des armes portatives à Saint-Étienne, 1777-1810. L'inévitable mécanisation?*, «Revue d'Histoire Moderne et Contemporaine», 54 (2007) 1, pp. 171-192; B. BACHER – J.F. BRUN – É. PERRIN, *La manufacture d'armes de Saint-Étienne: la révolution des machines, 1850-1870*, Clermont-Ferrand, Un, Deux... Quatre. Editions culturelles, 2014. On Beretta see: R. JAIKUMAR, *From Filing and Fitting to Flexible Manufacturing: A Study in the Evolution of Process Control*, «Foundations and Trends in Technology, Information and Operations Management», 1 (2005) 1, pp. 1-120; S. ONGER – I. PARIS, *Giuseppe Beretta*, cit., pp. 36-37.

⁹⁵ G. BECATTINI, *Industrial Districts: A New Approach to Industrial Change*, Cheltenham – Northampton, Edward Elgar, 2004.

⁹⁶ M.E. PORTER, *The Competitive Advantage of Nations*, New York, Free Press, 1990; ID. – C. KETELS, *Clusters and Industrial Districts: Common Roots, Different Perspectives*, in

Markusen⁹⁷. In particular, scientific research could be carried out to investigate the following four aspects: a) the geographical boundaries of the industrial district, often not distinguished from or seen as subordinated to the one of Lumezzane⁹⁸; b) the new production chain and the specific roles played by firms inside of it in the second half of the twentieth century⁹⁹; c) the concept of resilience¹⁰⁰, proposing a reflection on the factors and protagonists that allowed the district to recover after the numerous crises it went through; d) the impact of exogenous factors on the evolutionary path of the production system to offer new perspectives on “cluster life cycle” models¹⁰¹.

G. BECATTINI – M. BELLANDI – L. DE PROPRIIS (eds), *A Handbook of Industrial Districts*, cit., pp. 172-183.

⁹⁷ A. MARKUSEN, *Sticky Places in Slippery Space: a Typology of Industrial Districts*, «Economic Geography», 72 (1996), pp. 293-313.

⁹⁸ On the industrial district of Lumezzane see: AA.VV., *Lumezzane. Terra di imprenditori*, Bornato in Franciacorta, Camera di commercio industria artigianato e agricoltura di Brescia – Sardini, 1996.

⁹⁹ In addition to the publications mentioned in the footnotes n. 4 and 5, information and data on the district and firearms industry in this period can be found in I. PICCOLI, *Il settore delle armi civili. Scelte di sviluppo e riconversione*, Milano, FrancoAngeli, 1981; F. BATTISTELLI, *Armi: nuovo modello di sviluppo?*, Torino, Einaudi, 1980; S. ONGER – I. PARIS, *Giuseppe Beretta*, cit., pp. 63-109.

¹⁰⁰ R. MARTIN, *Regional economic resilience, hysteresis and recessionary shocks*, «Journal of Economic Geography», 12 (2012), pp. 1-32.

¹⁰¹ The “life cycle” approach is well-established in research on clusters. However, concerns have been raised over its inherent determinism and tendencies to focus exclusively on cluster internal dynamics while neglecting the role of external factors and socio-economic contingencies. On these concerns see: R. MARTIN – P. SUNLEY, *Conceptualizing Cluster Evolution: Beyond the Life Cycle Model?*, «Regional Studies», 45 (2011) 10, pp. 1299-1318; M. TRIPPL – M. GRILLITSCH – A. ISAKSEN – T. SINOZIC, *Perspectives on cluster evolution: Critical review and future research issues*, «European Planning Studies», 23 (2015) 10, pp. 2028-2044; G. CARLI – A. MORRISON, *On the evolution of the Castel Goffredo hosiery cluster: a life cycle perspective*, «European Planning Studies», 26 (2018) 5, pp. 915-932.



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