

Knowing to transform: Agricultural experts and the rise of agricultural economics in Italy¹

1. Introduction

In the wake of the dramatic transformation of rural life that had taken place in the previous two decades, Italian historians of the 1970s and 1980s turned their attention to the role of technocratic elites in agriculture. The studies of Leandra D'Antone and Arrigo Prampolini focused in particular on the figure of Arrigo Serpieri, a key influence on fascist agricultural policies, stressing continuities between the liberal, fascist, and republican periods.² Early twentieth century agricultural policy experts appeared as the immediate predecessors of the technocrats who engaged in the state-led development effort in the South of Italy after the Second World War, embodied by Manlio Rossi-Doria (D'Antone's research indeed extended into the development policies of the Republican period).³

More recently, historians have broadened the focus beyond Serpieri to highlight a tight, intergenerational group of experts – *tecnici agrari*, in Italian – who defined agrarian policies during the fascist and republican periods.⁴ To the scholarship that emphasised their technocratic role, we should add studies on individual influential agricultural economists (such as Ghino Valenti and Eugenio Azimonti, for instance)⁵ and research on the empirical tools of agricultural experts between the late nineteenth and early twentieth centuries.⁶ However, the rise to power of Italian agricultural

¹ The author acknowledges support from the European Research Council, Starting Grant 'Leading the first data revolution in European agriculture' (DATAREV, grant number 940722).

² Antonio Prampolini, "La formazione di Arrigo Serpieri e i problemi dell'agricoltura lombarda," *Studi storici* 17, no. 2 (1976): 171–209; Leandra D'Antone, "Politica e cultura agraria: Arrigo Serpieri," *Studi Storici* 20, no. 3 (1979): 609–42; Leandra D'Antone, "La modernizzazione dell'agricoltura italiana negli anni Trenta," *Studi storici* 22, no. 3 (1981): 603–29.

³ Leandra D'Antone, "Il Mezzogiorno di Manlio Rossi Doria," *Studi Storici* 24, no. 1/2 (1983): 291–302; Leandra D'Antone, "Tecnici e progetti. Il governo del territorio," *Meridiana*, 1990, 125–40; Leandra D'Antone, "Il governo dei tecnici. Specialismi e politica nell'Italia del Novecento," *Meridiana*, 2000, 101–25.

⁴ Simone Misiani, "'L'aziendalismo modernizzatore' lombardo nel regime fascista attraverso il percorso intellettuale e politico di Paolo Albertario," *Annali dell'Istituto Alcide Cervi* 1995 (1996): 193–222; Simone Misiani, *La via dei tecnici. Dalla RSI alla ricostruzione: il caso di Paolo Albertario* (Franco Angeli, 1998); Marco Zaganella, *Dal fascismo alla DC: Tassinari, Medici e la bonifica nell'Italia tra gli anni Trenta e Cinquanta* (Cantagalli, 2010).

⁵ Daniela Giaconi, "Dall'inchiesta agraria agli studi sulla proprietà: Le radici del pensiero di Ghino Valenti e l'affermazione di un metodo d'indagine," *Quaderni Fiorentini* XXXII (2003): 375–460; Luigi Musella, "Il Mezzogiorno agrario di Eugenio Azimonti," in *La Federconsorzi tra Stato liberale e fascismo*, ed. Severina Fontana (Laterza, 1995).

⁶ Federico D'Onofrio, *Observing Agriculture in Early Twentieth-Century Italy: Agricultural Economists and Statistics*, *Rural Worlds: Economic, Social and Cultural Histories of Agricultures and Rural Societies* (Routledge Taylor & Francis Group, 2016); Roberto Tolaini, "La ricerca sullo spopolamento montano nel contesto delle indagini dell'Inea di Arrigo Serpieri," *Via dalla montagna: lo spopolamento montano in Italia (1932-1938) e la ricerca sull'area friulana di Michele Gortani e Giacomo Pittoni*, 2019, 27–38.

economists should not be thought of in isolation; rather it reflects a pattern observed across Europe and North America from the late nineteenth century when national communities of agricultural policy experts began to connect through academia, agricultural interest groups, and the government. By the 1920s, for instance, the US agricultural expert Asher Hobson prepared a long list of “individuals and institutions in Europe actively engaged in teaching, research and extension work in agricultural economics” for the International Education Board (an organisation linked to the Rockefeller family), that represents clearly the consolidation of policy expertise across Europe.⁷

How did this specific form of expertise, the field of *Agrarpolitik*, emerge? While the historiography has thoroughly investigated the emergence of techno-scientific knowledge in agriculture,⁸ much less attention has been dedicated to the appearance of policy expertise, beyond the biographies of exceptionally influential individuals such as the Swiss agronomist Ernst Laur, German Max Sering, and Russian Aleksandr Chajanov.⁹ Experts of agricultural policy seem to have sprung fully formed and fully armed from the head of Zeus. In Italy also, the historiography on the professionalisation of agronomists concentrated on the rise of technoscientific knowledge.¹⁰ Despite the attention afforded to their role as technocrats, the toolbox of agricultural economists, which granted epistemological legitimation to their role within government, has not been the object of a great deal of study.¹¹

This chapter focuses on the emergence of a new type of agricultural expert, capable of shaping economic policy. Before the Second World War, this was a relatively small group. Historians have identified and studied the most influential figures—those who combined academic recognition with the ability to influence policymaking—such as Gaetano Cantoni, Vittorio Niccoli, and Ghino Valenti before the First World War, and Vittorio Alpe, Vittorio Peglion, Serpieri, Alessandro Brizi, and

⁷ Asher Hobson, Notes concerning individuals and institutions in Europe actively engaged in teaching, research and extension work in agricultural economics”, Agricultural Economics Centers of Europe – Study, 1924-1927; 1928, International Education Board Records, S.1.SS1.B17, Rockefeller Archive Center.

⁸ Frank Uekötter, *Die Wahrheit ist auf dem Feld: eine Wissensgeschichte der deutschen Landwirtschaft*, Umwelt und Gesellschaft, Bd. 1 (Vandenhoeck & Ruprecht, 2010); Tiago Saraiva, “Fascist Labscapes: Geneticists, Wheat, and the Landscapes of Fascism in Italy and Portugal,” *Historical Studies in the Natural Sciences* 40, no. 4 (2010): 457–98, <https://doi.org/10.1525/hsns.2010.40.4.457>; Tiago Saraiva, *Fascist Pigs: Technoscientific Organisms and the History of Fascism*, Inside Technology (MIT Press, 2016).

⁹ There are obviously various exceptions to this omission, most glaringly the studies of Russian imperial agricultural economists: Ilya V. Gerasimov, *Modernism and Public Reform in Late Imperial Russia: Rural Professionals and Self-Organization, 1905-30* (Palgrave Macmillan, 2009); Katja Bruisch, *Als das Dorf noch Zukunft war: Agrarismus und Expertise zwischen Zarenreich und Sowjetunion*, Beiträge zur Geschichte Osteuropas, Band 47 (Böhlau Verlag, 2014). On interwar Romanian sociology, see Raluca Muşat, “Making the Countryside Global: The Bucharest School of Sociology and International Networks of Knowledge,” *Contemporary European History* 28, no. 2 (2019): 205–19, <https://doi.org/10.1017/S0960777318000486>.

¹⁰ Rossano Pazzagli and Giuliana Biagioli, eds., *Agricoltura come manifattura : istruzione agraria, professionalizzazione e sviluppo agricolo nell'Ottocento*, 2 vols. (Olschki, 2004); Carlo Fumian, “Gli agronomi da ceto a mestiere,” in *Storia dell'agricoltura italiana in età contemporanea*, vol. 3, ed. Piero Bevilacqua (Marsilio, 1991).

¹¹ Exceptions are the books by Giancarlo Di Sandro and a few special histories, including my own work on statistics mentioned above, see Giancarlo Di Sandro, *Gli economisti agrari italiani tra Otto e Novecento*, vol. 6, Collana di economia applicata (CLUEB, 1995); Giancarlo Di Sandro and Aldino Monti, *Il papa laico: Arrigo Serpieri: fra storia, politica ed economia agraria: dalla contrattualistica agraria alla bonifica integrale* (Franco Angeli, 2020). In addition, Leandra D'Antone, “Cultura agraria e politica nazionale in Italia fra Otto e Novecento,” in *Agricoltura come manifattura : istruzione agraria, professionalizzazione e sviluppo agricolo nell'Ottocento*, vol. 2, ed. Rossano Pazzagli and Giuliana Biagioli (Olschki, 2004).

Tassinari between the 1910s and 1940s. This chapter does not retrace their careers. Instead, it seeks to reconstruct the components of their knowledge, as they coalesced in the discipline and practice of agricultural economics. Their discourse first emerged on the farm—a complex *dispositive* of control over nature and human labour—before extending to the entire agricultural sector.¹² It was thus akin to the discourse of engineers preaching, in the same period, a managerial approach to government.

In the last decades of the nineteenth century, the education of agronomists was institutionalised and formalised in a specific three-year curriculum, taught in the Scuole Superiori di Agricoltura and in a few universities. This degree distinguished agronomists (*dottori in agraria*, in Italian) from agricultural engineers (who graduated after a five-year course) and land agents who attended vocational schools. It was among the agronomists, rather than the agricultural engineers, that the expertise in agrarian economic policies crystallised.

The paper begins (section 1) with the distinction made by the agronomist Gaetano Cantoni (1866) between the science, art, and industry of agriculture. This is important because Cantoni, the first director of the Higher School of Agriculture in Milan, set the basic opposing principles (theory/practice; disinterested knowledge/profit) that dominated the discourse of agricultural economics, and fundamentally shaped the curriculum of tertiary education in agriculture. Rudiments of chemistry, botany, soil science, plant and animal physiology were deemed insufficient for agronomists. The curriculum of the Higher School of Agriculture was farm-centric, rather than purely technical (section 2). Expertise was meant to enhance control over land, people, and products. The activity of agronomists within the network of travelling chairs of agriculture (section 3) shows a key point where knowledge about farming acquired significance for the transformation of whole territories rather than individual businesses.

In section 4, I show how the importance of economic constraints in projects of agricultural improvement induced some agricultural technicians to specialise in agricultural economics. Costs and financial returns were inescapable constraints on any transformation. Accounting techniques, in particular, allowed agricultural experts to “mobilise” – to use Bruno Latour’s poignant metaphor – farms and farming techniques and make them the target of national policies, thus marking, at the same time, the epistemological and sociological transition of agricultural economists from place-based context dependent, local experts to government advisors.¹³

¹² In using the terms “discourse” and “control”, I am referring here to Michel Foucault’s idea that discourse originates in a specific *dispositive* of power, as he explained in connection with the rise of psychiatry and political economy, Michel Foucault, *Le pouvoir psychiatrique: cours au Collège de France ; (1973 - 1974)*, with Jacques Lagrange, Cours au Collège de France (Gallimard, 2003).

¹³ Bruno Latour, “Visualization and Cognition,” *Knowledge and Society* 6, no. 6 (1986): 1–40.

2. *The creation of the agronomic curriculum: science, art, and industry*

Historiography has discussed extensively the connections between agriculture and science, and the general “scientification” of agriculture, with the emergence of chemical fertilisers, machines, and, eventually, hybridisation. The historical literature on the education and professionalisation of agronomists in Italy has correspondingly focused on the technoscientific aspects of the profession. Agriculture though was no science, it was (and still is) a business. Across Europe, the most influential agricultural writers and educators of the eighteenth and early nineteenth century insisted, therefore, on the importance of well-kept financial accounts to organise production and keep costs under control.¹⁴ When institutions of agrarian education began to emerge, in the course of the 19th century, their curricula contained an important accountancy component. The farm, as the site of agricultural production and business, united and kept together techno-scientific knowledge of production and its business elements, and thus justified a comprehensive expertise, spanning over the natural sciences and business.

Gaetano Cantoni, one of the founders the Milan Higher School of Agriculture was particularly keen on underlining that profit was, in the end, the main measure of agricultural improvement. Cantoni graduated in medicine in 1837 and then studied botany in Pavia, but soon turned to the administration of the family estate. The Austrian government forced him into exile after the uprising of Milan in 1848 and he joined the insurrection leader Carlo Cattaneo at the Liceo cantonale in Lugano. When the unification of Italy recalled him to Lombardy, Cantoni taught at the newly created agricultural school of Corte Palasio until he was appointed to the Royal Industrial Museum of Turin. In 1870, he went back to Milan to become director of the Scuola Superiore d’Agricoltura in Milan, which was affiliated to the local Museum of Natural History and the Istituto Tecnico Superiore (a school for engineers).¹⁵

Over the years, Cantoni not only taught but also conducted research, and he claimed to have been the first—ahead of Pasteur—to discover a method for combatting pebrine, a disease affecting silkworms. He published numerous works, including textbooks and collections of experiments, and was among the founders of the Società Agraria di Lombardia, an association of agriculturalists whose statutory

¹⁴ The literature on this is now extensive, for individual cases see for instance Thomas Depecker and Nathalie Joly, “Agronomists and Accounting. The Beginnings of Capitalist Rationalisation on the Farm (1800-1850),” *Historia Agraria*, April 1, 2015, 75–94; Markus Lampe and Paul Sharp, “A Quest for Useful Knowledge: The Early Development of Agricultural Accounting in Denmark and Northern Germany,” *Accounting History Review* 27, no. 1 (2017): 73–99, <https://doi.org/10.1080/21552851.2016.1264985>; Daan Hendrikx and Oscar Gelderblom, “Accounting for Agricultural Development? The Case of the Netherlands, 1840–1940,” *Agricultural History Review* 70, no. 1 (2022): 23–48. For a broader discussion, see the Introduction and essays collected in Nathalie Joly and Federico D’Onofrio, eds., *Farm Accounts in Rural Europe, c. 1700–1914: “To Better Know One’s Own?”* (Boydell and Brewer, 2025).

¹⁵ Tommaso Maggiore, “Introduzione,” in *L’agricoltura in Italia*, by Gaetano Cantoni (Lampi di Stampa, 2010). It must be noticed that Cantoni and Cattaneo belonged to the so-called *democratic patriots*, in opposition to the so-called *liberal patriots*, among whom many large landowners. While the liberal landowners looked to English *high farming* as a model for agricultural development, the democrats were very interested in the Swiss pattern of landownership.

goal was to promote rational agriculture.¹⁶ He thus personified different aspects of agricultural expertise: the useful character of agricultural knowledge, its relationship with natural sciences, and its missionary zeal.

According to Cantoni, “agronomy consists of theory, i.e. the theoretical norms that it receives from natural sciences (physics, chemistry, mineralogy, botany, and zoology) which offer the general principles that will guide the agriculturalist in the choice of those transformations that are required by the specific and different conditions of climate and soil where his action takes place.”¹⁷ We see here the opposition between theory, relying on natural sciences and leading to general principles, and practice, the goal of which is transformation and which is affected by local specificities of climate, soil, etc. This binary opposition gave rise to a ternary distinction between agronomy, agriculture, and rural economics. While agronomy attained general principles, agriculture and rural economics referred to the sphere of practice:

Agriculture is the art of governing the land and the plants, on the basis of the special needs of the first and the latter, without concern for profit (*tornaconto*).¹⁸

Focussing on profit, transforms the *art* of agriculture into the *industry* of agriculture, which is the object of rural economics:

Rural economics covers the economic and administrative norms for a better management (*governo*) of soil and plants, in order to achieve from them the highest possible profit (*profitto*). This part is thus destined to lead agriculture to the condition of industry.¹⁹

Cantoni seems reminiscent of vaguely Aristotelian schemes of science (*episteme*), art (*tekhne*), and industry (*poiesis*). Agronomy simply states general laws or norms. Agriculture, the art, teaches instead what it takes to grow a specific crop, in a specific place, without concerns for profitability:

Agronomy hands the norms to agriculture, but it does not teach to the latter any special way of cultivating; Agriculture in turn teaches how to grow crops, without concern for profit, which means it could also teach us how to make losses.²⁰

For the art to become profitable, “in order for it to become an industry”, a further degree of contextualisation is needed, namely “it is necessary that the agriculturalist follows those economic principles that show him how to practice the art with the maximum possible advantage. Rural economy therefore teaches us how to carry out industry.”

¹⁶ *La Società agraria di Lombardia: la storia, l'anima* (Società agraria di Lombardia, 1998); Maria Malatesta, *I signori della terra: l'organizzazione degli interessi agrari padani (1860-1914)*, Collana dell'Istituto di studi storici Gaetano Salvemini di Torino 3 (F. Angeli, 1989).

¹⁷ Gaetano Cantoni, *Trattato Completo Teorico Pratico Di Agricoltura* (Vallardi, 1866), 1:6 my emphasis.

¹⁸ Cantoni, *Trattato Completo Teorico Pratico Di Agricoltura*, 1:6.

¹⁹ Cantoni, *Trattato Completo Teorico Pratico Di Agricoltura*, 1:6.

²⁰ Cantoni, *Trattato Completo Teorico Pratico Di Agricoltura*, vol. 1.

Cantoni was at the core of the movement for the improvement of sciences and technologies in Milan, with its characteristic emphasis on the useful (*utile*). He thus imagined the objection: could we learn from practice, and ignore the science of agriculture? Cantoni's answer was no. But he justified his negative answer not as a matter of principle, but of opportunity: too much time is needed to "make a complete man of industry"²¹ simply by means of practice. In contrast to the modern scientists described by science sociologist Brian Wynne, agricultural technicians such as Cantoni were not "ignoring the farmers' specialist knowledge and farming practices, including their adaptive decision-making idiom."²² The demarcation between experts and laypersons lay in the faster methods of the former, rather than in the content of knowledge.

For Cantoni, practice and theory shared the same experimental nature expressed by the Galileian motto "tentando e ritentando"²³, but theory reaches its conclusions faster and more safely. However, in the case of agriculture, discoveries are not a goal in themselves (as in science), and nor is production (as in art), since they are both aimed at profit (industry). Cantoni compared agricultural economics to medicine: just as medicine relies on physiology in order to preserve the physiological state of the body, agricultural economics subordinates the preservation of the physiological state of the plant to profit²⁴.

Once usefulness was established by Cantoni as the ultimate goal of agricultural disciplines and he took profit as the indicator of usefulness, accounting information became essential: agriculturalists needed to know "the value (*l'importare*) of raw materials, the cost of transformation, of management, and the sum of fixed and circulating capital, etc." Thus, they will know the cost, and the convenience of crops. "In order to make profit – Cantoni argues – it is not enough to grow crops well. In order to make money, you need a comprehensive knowledge of local economic conditions and to administer your farm so that you can account for any enterprise."²⁵

Accounting thus had a key role to play in rural economics. Money made different crops and geography ultimately comparable. It made explicit what profit could be expected out of any new undertaking and allowed an assessment of the agricultural routines (*rotina*) that too often farmers followed unreflectively. New and old systems of farming had to be evaluated on the basis of their economic results, as they appeared within the accounting framework. Examples of this pragmatic use of accounting methods were offered by Cantoni's own experiments as he assessed, for instance, the convenience of agricultural operations performed on mulberry trees or beetroot.²⁶ The expertise of

²¹ Cantoni, *Trattato Completo Teorico Pratico Di Agricoltura*, vol. 1.

²² Brian Wynne, "Misunderstood Misunderstanding: Social Identities and Public Uptake of Science," *Public Understanding of Science*, 1992, 297.

²³ "Trying and trying again", a Galileian motto quoted in Gaetano Cantoni, *L'agricoltura in Italia: dieci anni di sperienze agrarie eseguite presso la R. Scuola superiore di agricoltura di Milano* (U. Hoepli, 1885) Introduzione.

²⁴ Cantoni, *L'agricoltura in Italia*, vi.

²⁵ Cantoni, *Trattato Completo Teorico Pratico Di Agricoltura*, 1:10..

²⁶ see: Cantoni, *L'agricoltura in Italia. Coltivazione della barbabietola* and *Coltivazione del gelso*.

agricultural technicians thus prioritised natural sciences, agricultural techniques, economics and accounting, rather than over science, art, and industry. Maximising profit was its goal.

Cantoni, though, was also a consultant for the government. Rural economics, understood as the theory of profitable farming, contained *in nuce* elements of a theory of agricultural policy, and it certainly provided key tools for its design. Already by the 1860s, Cantoni had begun cooperating with the official Nicola Miraglia at the MAIC. For nine years, Cantoni and the ministry carried out an enquiry on agricultural trends, local products and techniques. The results of this painstaking work appeared in the four volumes of the *Relazione intorno alle condizioni dell'agricoltura*, which the MAIC published between 1876 and 1879. The hundreds of thousands of farms that made up Italian agriculture were grouped into twelve regions based on climate conditions, physical geography, and the long-term legacy of the pre-Unification Italian states.²⁷ The volumes contained not only one of the first assessments of Italian crop production,²⁸ but also detailed analyses of all the conditions that affected the farming business in the different regions: crops and their potential productivity, available technologies, infrastructure, capital markets, contracts and institutions. The expertise of fully-fledged agricultural experts focussed on the farm in general, but it could also extend to encompass the wide variety of farms and the productive capacity of the whole nation.

3. The farm at the centre of the epistemology of Italian agronomists

In the newly unified Kingdom of Italy, four institutions initially awarded degrees in agronomy: the *sezioni agrarie* at the universities of Pisa (established before unification by Cosimo Ridolfi) and Padua, the Scuola Superiore di Agricoltura in Milan, founded in 1870 under the leadership of Gaetano Cantoni, and, from 1872, the Scuola Superiore di Agricoltura in Portici.²⁹ A fifth institution was added in 1896 with the creation of the Istituto Agrario Sperimentale in Perugia.³⁰ At first, these schools were intended to educate future landowners. However, they struggled to attract students. As Italo Giglioli, director of the School in Portici, explained during the 1894 parliamentary debate, among those who actually sent their children to secondary and tertiary education, wealthy landowners preferred to send their sons to study law; middle-class families favoured agricultural engineering; and poorer agriculturalists were satisfied with vocational training.

²⁷ direzione dell'agricoltura Ministero di agricoltura, industria e commercio, *Relazione intorno alle condizioni dell'agricoltura in Italia* (Tipographia Barbèra, 1876), 1:31. See D'Onofrio, *Observing Agriculture in Early Twentieth-Century Italy*, 74.

²⁸ The quality of these figures is broadly discussed by Giovanni Federico, "Per una valutazione critica delle statistiche della produzione agricola italiana dopo l'Unità (1860-1913)," *Società e Storia* 15, no. 2 (1982).

²⁹ These cases have been widely studied in the historiography. On Ridolfi, in particular, see Rossano Pazzagli, "Scuole d'agricoltura e poderi sperimentali: agronomia, istruzione e progresso tecnico nella prima metà dell'800" (EUI PhD theses, 1989); Alessandro Volpi, "Il mito di Meleto. Tracce dal carteggio ridolfiano," *Rivista di Storia dell'Agricoltura* 45, no. 1 (2005): 93–120, <https://doi.org/10.35948/0557-1359/2005.369>. See also, D'Onofrio, *Observing Agriculture in Early Twentieth-Century Italy*, 28–29.

³⁰ X., "Le scuole superiori di agricoltura e l'ambiente agrario," *L'Italia agricola giornale di agricoltura* 37, no. 9 (1899): 193–95.

The curriculum followed a scheme consistent with Cantoni's view of rural economics. Teaching concentrated on issues related to the botany and zoology of useful plants, chemistry, hydrology, rural architecture, husbandry and hygiene for farm animals, and the study of crop rotations, etc. The core courses offered the scientific foundations of agriculture and introduced the students to the related sciences, such as chemistry, botany, physiology etc. Courses on farm management, the choice of techniques, and the technologies available completed the curriculum with notions of the art of agriculture. Courses in *economia agraria* included appraisal and accounting and concluded with fundamental notions of agricultural industry. The practical, profit-oriented, character of this training was underlined by the fact that agricultural schools were under the Ministry of Agriculture, Industry and Commerce (MAIC).³¹ The Scuole Superiori, thus, were closely linked with an institution, the Ministry, whose mission was to foster economic activity, rather than pure science.

In addition, no training was considered complete without the direct experience of agriculture. Agronomists needed what economic historian Stephan R. Epstein used to call experiential knowledge, a combination of tacit (non-propositional, nonlinear) and explicit (propositional and linear) knowledge.³² Experimental fields and farms not only offered teachers the possibility of carrying on research, but also gave students the opportunity to practice and learn different techniques, as well as to experiment in order to make new discoveries. A well-functioning agricultural school included experimental fields and, in most cases, had a stock of agricultural machines at its disposal for demonstration purposes: Marquis Cosimo Ridolfi, who established the agricultural school of Pisa in the first half of the 19th century, requested two experimental farms from the Grand-ducal government as a precondition for accepting his post at the University of Pisa.³³ Conversely, Cantoni left his school at Corte Palasio when it lost its experimental fields in 1865, before moving to the newly established Scuola Superiore di Agricoltura in 1870.³⁴

However, because of its artificial and controlled character, the experience acquired in experimental fields was considered insufficient for forming good agronomists. Until well into the 20th century, experience of farming in practice was deemed necessary for teachers and students. The farm – the *azienda agraria* – was indeed central to the kind of knowledge taught in the Scuole Superiori: not only was it the site where new, “rational” techniques and technologies were applied, but also where production had to be organised and profit was made. The economic aspects of the curriculum, which

³¹ The Sezione Agraria in Pisa, which was part of the faculty of Natural Science at the local university, was an exception.

³² Stephan R. Epstein, “Transferring Technical Knowledge and Innovating in Europe, c.1200-c.1800,” *Economic History Working Papers*, Economic History Working Papers, May 2005, 22547, <https://ideas.repec.org/p/ehl/wpaper/22547.html>. quoted in Peter Howlett and Aashish Velkar, “Technology Transfer and Travelling Facts: A Perspective from Indian Agriculture,” in *How Well Do Facts Travel?: The Dissemination of Reliable Knowledge*, ed. Mary S. Morgan and Peter Howlett (Cambridge University Press, 2010), 280, <https://doi.org/10.1017/CBO9780511762154.014>.

³³ On Ridolfi and his schools in Melegnano and Pisa, see Rossano Pazzagli, “Istruzione e nuova agricoltura in Italia : la fortuna del modello di Cosimo Ridolfi,” in *Agricoltura come manifattura : istruzione agraria, professionalizzazione e sviluppo agricolo nell'Ottocento*, vol. 1, ed. Rossano Pazzagli and Giuliana Biagioli (Olschki, 2004); Pazzagli, “Scuole d'agricoltura e poderi sperimentali: agronomia, istruzione e progresso tecnico nella prima metà dell'800.”

³⁴ Maggiore, “Introduzione.”

were discussed in the courses of agricultural economics, were thus also related primarily to the farm. Agricultural economics, therefore, was fundamentally private economics or business organisation, and it was therefore considered imperative that the schools found a connection with the business world. In parliament, Senator Gabriele Luigi Pecile from Frioul argued that neither Milan nor Portici were good locations for agricultural schools, as agriculture did not play a significant economic role there. These schools, he claimed, had to be abolished. Paolo Boselli, who was Minister of Agriculture in 1894, instead argued that the existing schools had to be relocated in Perugia because a large estate had been made available to the government that could be run by the school itself. Without a direct connection with an operating farm, the minister argued, there was no utility to the schools and young graduates were completely unprepared for their tasks. While a new school was eventually established in Perugia – the *Istituto agrario sperimentale* mentioned above – the deans of Milan and Portici managed to defend their institutions. Overtime, the number of enrolled students increased, but mostly because they could now find employment in the growing number of governmental and non-governmental agricultural organisations.

The focus on the farm is reflected in the occupational figures of early graduates of the agricultural schools. In Ridolfi's school of Colle Meleto, in the 1840s, many graduates moved from schools to farms and followed careers as farm administrators (in some cases, in the course of practical internships on farms during their years of education), and thus completed their experience while at the same time helping to "spread rational agriculture."³⁵ Increasingly though, agronomists became assistants to the *cattedre ambulanti di agricoltura*, Italy's extension offices, and served their apprenticeship there, as advisers not to a specific estate-holder, but to a whole agricultural community.³⁶ This move coincided with a change in theoretical focus from large estates to peasant holdings.³⁷ The *cattedra* was not in service to a specific farm or estate, but of a territory. It was a connecting belt between (national or local) policies and farmers.

4. A territory made of farms: the *cattedre d'agricoltura*

The contribution of *cattedre* to the technological and managerial improvement of Italian agriculture is generally recognised.³⁸ They were the product of a collaboration between local agricultural

³⁵ A list of the graduates from Ridolfi's school in Meleto in the 1840s with their occupation appears in Pazzagli, "Istruzione e nuova agricoltura in Italia: la fortuna del modello di Cosimo Ridolfi," 280–82..

³⁶ D'Antone 1991 includes statistics of the occupational patterns of graduates from the SSdA of Milan, Perugia, and Naples (Portici) in 1908-1909, p. 411. According to D'Antone's data 13,1% of graduates found employment in travelling chairs

³⁷ Bruisch remarks this very same switch in Russia at about the same time: "The representatives of Russian agricultural science had until the mid-19th century concentrated their attention on the estates of the landed [...], considered to be rational and progressive. After the discovery of the peasantry in the emancipation period, scholars of Russian agriculture increasingly became interested in the farming methods of the 'people'," Bruisch, *Als das Dorf noch Zukunft war*, 4.

³⁸ See Mario Zucchini, *Le cattedre ambulanti di agricoltura* (G. Volpe, 1970). On Lombardy, see also Osvaldo Failla et al., eds., *Gli agronomi in Lombardia: dalle cattedre ambulanti ad oggi* (FrancoAngeli, 2006).

societies, *comizi agrari*, and municipal or provincial authorities. The first *cattedra* was probably established in Ascoli Piceno, in the 1860s, by the provincial administration, under the influence of the then famous farmer and agricultural writer, Antonio Giuseppe Ottavi, who believed every district should have an agronomist, just as it had its own doctor.³⁹ However, he lamented the scarcity of appropriately educated agronomists, a problem which the Scuole Superiori d'Agricoltura set out to solve.

Each *cattedra* was staffed with a permanent director, with the title of professor, and a varying number of assistants (often 2 or 3). By the 1900s, directors and assistants were usually graduates from the Scuole Superiori. They were funded by agricultural societies, provincial administrations, savings banks, and other local institutions cooperating together, although they also received special contributions from the central state as a reward for the services they rendered (for instance, to the statistical office).⁴⁰ Indeed, they offered the Ministry a channel through which to gather information on various regions and territories.

Agronomists employed by the *cattedre* took part in efforts to ensure the knowledge acquired in school was useful to farmers. They saw it at work, they verified its validity, and they struggled with its limitations. They also specialised in a specific territory or crop. While the science learned in universities remained abstract, assistants and directors of travelling chairs faced the daily problems and needs of real farmers. Expertise and experience entered into a sort of mutually reinforcing spiral. This also strengthened the dynamic distinction between science and “empirical practice” (It. *empiria*). While farmers without a formal education farmed according to “metodi empiricissimi” by seeding randomly, using fertiliser in arbitrary proportions, and persisting in suboptimal crop rotations, etc, the agricultural technicians helped them manage their farms according to the latest scientific findings, they “unite[d] and catechise[d] the smallholders”⁴¹. As the director of the *cattedra* of Amelia expressed himself, the *cattedra* carried out an “agricultural apostolate.”⁴²

Directors and assistants of the travelling chairs spread their catechism in lectures, booklets, practical demonstrations, consultations to farmers, and journals. The *cattedra* in Milan, for instance, with its two detached sections in Gallarate and Lodi, was one of the most active. In 1908, its director, Professor Giuseppe Soresi and the two young graduates who assisted him gave 167 lectures on topics ranging from the fight against phyloxera to bookkeeping and life insurance. To this we must add 44 courses given on winter evenings on the same topics, 13 classes of sericulture held at the girls’ school of Niguarda, 127 days spent in the markets of Codogno, Casalpusterlengo, Sant’Angelo Lodigiano,

³⁹ Giuliano De Angelis, *Storia della Cattedra Ambulante di Agricoltura di Ascoli Piceno 1862-1915 con un’appendice di documenti* (s.n., s.d.).

⁴⁰ The schools and *cattedre* absorbed a very large share of the total expenditure of MAIC; see Giuseppe Orlando, *Storia della politica agraria in Italia dal 1848 a oggi* (Laterza, 1984).

⁴¹ Cattedra di Agricoltura per la Provincia di Milano 1904, p.11: “unire e catechizzare i piccoli agricoltori”.

⁴² Segarelli 1921. Umberto Segarelli, “Editoriale,” *Agricoltore del Nera, periodico quindicinale, organo della Cattedra Ambulante di Agricoltura, del Comizio Agrario e del Consorzio agrario cooperativo per il Circondario di Terni*, October 1, 1921.

Lodi, Melegnano, Melzo, Abbiategrasso and Monza for offering consultations, 604 days spent in the countryside for “the whole complex work of assistance in first establishing and then the good management of experimental fields, for the organisation of demonstrations of agricultural machines, for consultations on the spot, to assist effectively agricultural cooperatives, to prepare exhibitions, and, in a word, for all that fine-grained activity of propaganda that the travelling chair carries out.”⁴³ Attendance at the conferences was used by agronomists as a measure of the impact of their “propaganda” and to witness the appreciation given by farmers to their teachings.

The experimental fields and experimental farms that the travelling chairs helped to establish and manage were intended to “persuade by force of an uninterrupted example, by the evidence of facts, the tenants of Upper Milanese to change their methods.”⁴⁴ In the experimental fields, farmers tried new crop varieties, new pesticides, and fertilisers, thus allowing the experimental farms to show “all the beneficial consequences that follow [from the introduction of new crop ordering and management methods] for all enterprises in the course of crop rotation.”⁴⁵ Experimental fields and farms not only demonstrated to farmers the effectiveness of the new technologies, as Soresi and his assistants also continually verified the profitability of crops, machines, fertilisers, and crop rotations that had been devised elsewhere, all under the conditions of the soil and climate that prevailed in Lombardy.

All the risk was on the shoulders of generous landowners who funded the experiments. Their trust and confidence in the goals of the *cattedra* were therefore essential. Sometimes experiments did end in failure, such as in the case of the unfortunate landowners who agreed to use cannel coal (It. *ampelite*) against phylloxera, or who planted tobacco in experimental fields. Tobacco, though successful in Apulia, turned out to be catastrophically unprofitable in Lombardy. In these cases, the *Annuario della Cattedra* could only express the gratitude of the Chair for those who had at least ventured into the idea of experimentation.

Travelling chairs, in Milan and elsewhere, also promoted the creation of cooperatives of farmers, especially dairy cooperatives and agricultural savings banks. All these initiatives projected the small-scale assistance to individual farms on a larger scale and required some kind of knowledge of economic phenomena and markets and considerable managerial ability.

The great number of initiatives and undertakings in which the *cattedra* of Milan took part in was reflected in the positions that the director and his assistants occupied in society.⁴⁶ The case of the *cattedra* of Milan, which operated in a very reactive economic environment, is certainly peculiar, but it gives an idea of the variety of tasks assigned to such institutions and their employees. In 1908, Soresi was a member of an incredibly large number of commissions, juries, and committees, which

⁴³ Cattedra di Agricoltura per la Provincia di Milano 1909, p. 12.

⁴⁴ Cattedra di Agricoltura per la Provincia di Milano 1909, p.12.

⁴⁵ Cattedra di Agricoltura per la Provincia di Milano 1909, p.16.

⁴⁶ The combination of heterogeneous social roles has been regarded as typical by Katja Bruisch, “25 Years ‘Face to the Village’. Agricultural Experts in Early Twentieth-Century Russia,” in *Scientists’ Expertise as Performance. Between State and Society, 1860-1960*, ed. Kaat Wils et al. (Pickering & Chatto, 2015).

shows how public authorities and private associations alike deferred to his expertise. He was involved in the initiatives of the farmers' union Società Agraria di Lombardia, in the activities organised by the powerful Federazione Italiana Consorzi Agrari of Piacenza, and cooperated with the Prefect of Milan, the local representative of the central government, in the fight against illness in peasants and livestock. In 1911, on behalf of the Società Agraria di Lombardia, Soresi also served as Provincial Commissioner for Agricultural Statistics and compiled the agricultural statistics concerning the province of Milan for the Ministry of Agriculture. When Serpieri, then a young professor of agricultural economics at the Higher School of Agriculture, began his enquiry on farmers in Upper Lombardy, he turned to Soresi for help in collecting information.

The war though, marked a turning point. The younger collaborators of the *cattedra* were sent to the frontline, and Soresi was left to face familiar and new tasks alone. To contribute to the war effort, the *cattedra* promoted urban kitchen gardens and arranged special competitions for the training of women in heavy agricultural work. Its most important tasks, however, related to ensuring the supply of food and horsepower for troops, which soured the relationship between Soresi and the farmers.

The case of Milan was indeed peculiar, because of the extraordinarily rich funding the *cattedra* received. Yet, this case is interesting precisely because the *cattedra* fully engaged in activities and interactions that elsewhere were attempted with less success. Basilicata and Calabria, provinces of the far South, reveal a deep contrast. In these areas, travelling chairs were created by the central state in order to foster economic development. After travelling to Basilicata in 1902, Prime Minister Giuseppe Zanardelli and his aide Edmondo Teulada di Sanjust concluded that government intervention was needed to foster agricultural improvement. They believed that land in Basilicata was not properly exploited and should be transformed according to rational methods of farming.⁴⁷ This transformation had to begin with the farmers, and so new farmers, skilled in more advanced agricultural techniques were introduced from other more developed areas (*colonizzazione interna*, as it was called⁴⁸), therefore allowing local farmers guaranteed access to new techniques. Sanjust received assurances by many of the people he interviewed for his report that the farmers in Basilicata did not lack the will, but simply the know-how to embrace ploughs of metal and chemical fertiliser, and that the state had to provide as much training as possible. Know-how and assistance were to be provided by the *cattedre ambulanti*, which had proved so useful in the North. Due to the absence of strong agricultural associations and universities, such *cattedre* had to be funded by the government.⁴⁹

The lack of supportive organisations within civil society made the new *cattedre* somewhat foreign to the territory. In the first years of activity, the exploration of the physical geography of Basilicata and Calabria ran parallel with the establishment of strong relationships with farmers in order to establish

⁴⁷ Paola Corti, *Inchiesta Zanardelli sulla Basilicata*, Piccola biblioteca Einaudi (Einaudi, 1976).

⁴⁸ The “settlers” came mostly from areas where sharecropping prevailed, such as Umbria or the Marche, because, as autonomous entrepreneurs, they combined a variety of skills.

⁴⁹ *Relazione Sanjust*, in Corti, *Inchiesta Zanardelli sulla Basilicata*, 118–20. See, also Legge 31 Marzo 1904, n. 140.

mutual trust.⁵⁰ This work proved to be very difficult, with chairholders in Potenza and Lagonegro lamenting the hardship of travelling on non-existent roads, and the long trips undertaken in order to inspect a field and advise isolated farmers. Silvio Laureti of Crotona (*cattedra* of Catanzaro) stated that he rarely had the opportunity of meeting the same farmer twice in a year, due to the isolation of villages and having to travel such long journeys to reach them. As soon as he did arrive in a village, he collected information from locals on the deficiencies of the agriculture there, held a conference in the evening and answered all questions, and then spent the following days visiting the plots of farmers who sought advice.

Due to moral and geographical isolation, the activities of the *cattedre* in the South was by necessity more unilateral and less specific to the necessities of farmers than in places such as Milan. Bartolucci claimed that “the *cattedra*’s propaganda [i.e., the lectures, experimental fields, etc.], because of the lack of roads, the lack of a workforce, and the moral prostration of the population, was confined to the distribution of seeds and fertiliser...”: lectures were excluded. But even those who were more successful in establishing contact with farmers, such as Oddo Romani in Potenza, acknowledged that lectures and classes were relatively rare (69 in 1908 compared to the 167 given by the *cattedra* of Milan in the same year), and classes only possible “where the environment was more favourable and allowed a more abundant *use of words*.”⁵¹

Dispatched to remote areas and often dealing with destitute peasants, agricultural technicians intended to act as a transmission belt between the natural sciences and agricultural improvement. The social and cultural distance gave the *cattedre* a more distinctively top-down character in the South. However, agricultural experts, regardless of the place or proximity, saw their job as the dissemination of advanced techniques into often neglected corners of the country: “The professor of the *cattedra ambulante* accomplishes a pioneering task, wherever the word of science, for a number of recent or remote reasons, has not yet penetrated, there he is the pioneer of agriculture. He prepares the environment, he looks – as a friend and a counsellor – after the farmer and he suggests things to him that he would otherwise never know.”⁵² The professor of the *cattedra* and his assistants were pioneers, missionaries, friends, and counsellors.

But such word of science would have been meaningless without the work done to adapt it to local contingencies and local practices. Adaptation involved experiments with crops or fertilisers, i.e., experiences, as they were called, but it also involved the selection of the best local practices. An anonymous director of a *cattedra*, for instance, gave a decidedly bottom-up interpretation of his teaching: “What else should we teach within our *cattedre*, if not the best of what we have learned

⁵⁰ On trust in Southern Italy, although for a different historical period, see: Anthony Pagden, “The Destruction of Trust and Its Economic Consequences in the Case of Eighteenth-Century Naples,” in *Trust: Making and Breaking Cooperative Relations*, ed. Diego Gambetta (B. Blackwell, 1990).

⁵¹ Ministero di agricoltura, industria e commercio, *Attività delle regie cattedre ambulanti di agricoltura della Basilicata e Calabria durante il 1908* (Tipografia nazionale di G. Bertero, 1910), 9 my emphasis.

⁵² Patrizi, “La discussione sul bilancio dell’Agricoltura,” *Bollettino dell’Associazione delle Cattedre ambulanti di agricoltura*, June 1910. Patrizi 1910.

(from the farmers)?”⁵³. The *cattedre* acquired over time an essential knowledge of the territory that they operated in, of its farmers and their habits, while also preserving the ability to interact with the nationwide community of agricultural experts.

This action, however, could not take place within a vacuum. It was aimed at engaging local forces in the process of improvement. Even the creation of savings banks and cooperatives of producers for the purchase of fertilisers, seeds, and machines, required not only that farmers more or less passively enrol, but also that they changed their systems of farm management to incorporate the technologies made available by the cooperative. The success of the *cattedre* depended on a connection based on trust between agricultural experts and farmers. Only trust enabled the technology to be transferred. This trust had different components. First, it depended on the effectiveness of the technologies advertised by the *cattedra*. When a farmer used the fertilisers that the *cattedra* provided without following the instructions that came with them, and was disappointed by the results, he lost confidence and spread diffidence amongst his neighbours. As the assistant to the *cattedra* of Aquila lamented, “those people were an obstacle to agricultural progress”⁵⁴.

Secondly, trust depended on the attitude of the *cattedra* itself. As long as its staff showed solidarity with the community of farmers, trust was accorded to their proposals. The social tension that multiplied after 1909 and exploded after 1918 saw a violent polarisation of the relationships between landlords, large tenants, and the government on the one side, and smallholders, daily labourers and sharecroppers on the other.⁵⁵ In the areas of sharecropping, above all, an institution such as the *cattedre*, financed by landlords and eminently intended to assist sharecroppers, became a victim of the political climate.

Concentrating on technical progress within the existing social structure, chairs were unable to answer the demands of rebellious farmers who asked for a change in their contracts and in the structure of property. The war often deepened the rift between agricultural experts and farmers, and it seems that the *cattedre* came to be seen in the countryside as agents of the upper classes. In part, this tension was due to the role of the *cattedre* in organising the requisitions of draft animals for the war effort. In Lombardy, the effort by Soresi in making the requisition of horses and other livestock as rational as possible, preserving the best breeds, did not prevent a loss of trust in the institution of the *cattedre* in general. Farmers felt betrayed by the agricultural technicians who sided with the state against them.

⁵³ Quot. in Ernesto Marengi, *Lezioni di contabilità agraria* (Politecnica, 1922).

⁵⁴ ACS, Giunta parlamentare d’inchiesta sulle condizioni dei contadini nelle Provincie Meridionali nella Sicilia, witness of Giuseppe Bellisari, b.5, f 6/3, verbale del 7 Ottobre 1907.

⁵⁵ On the Società degli Agricoltori Italiani, see Sandro Rogari, “La Società Degli Agricoltori Italiani,” in *Studi Sull’agricoltura Italiana: Società Rurale e Modernizzazione*, ed. P. P. D’Atorre and A. D. Bernardi (Fondazione Giangiacomo Feltrinelli, 1994); Sandro Rogari, *Proprietà Fondiaria e Modernizzazione: La Società Degli Agricoltori Italiani, 1895-1920* (F. Angeli, 1994). On SAL in Lombardy, Malatesta, *I signori della terra*. On Società Agraria di Bologna, see Anthony L. Cardoza, *Agrarian Elites and Italian Fascism: The Province of Bologna, 1901-1926* (Princeton University Press, 1982).

By the end of the war, for this and other reasons, the *cattedre* had probably lost a great deal of their appeal amongst farmers.

But the war had heightened social tensions between landless peasants, smallholders, and sharecroppers on the one hand, and landlords on the other, with frequent strikes and occupations of land.⁵⁶ In the thorny climate that preceded the Fascist take-over of 1922, Umberto Segarelli, the director of the *cattedra* in Terni, an area where sharecropping prevailed, recalled the sharp criticism of a peasant after one of his conferences: “Dear Professor – the peasant said – I listened to your words from first to last, but I don’t like you, because you have talked always about us peasants, and never about the masters, because they pay you...”⁵⁷

In the quest for a new legitimisation, the *cattedre* increased their dependence on the government. The Fascist regime centralised the *cattedre*, regimented the agricultural experts in the Federation of Agricultural Technicians, and in 1935 the chairs were finally absorbed by the Ministry of National Economy and transformed into Provincial Inspectorates of Agriculture.⁵⁸ This was but the last step of the progressive bureaucratisation of local agricultural experts that went hand in hand with the polarisation of social relationships within the countryside.

5. Appraising the transformation

The previous section shows how the *cattedre* were one of the sites where the discourse on local agriculture formed, in other words where expertise about territories and agriculture appeared. The previous section also highlighted the importance of economic constraints in shaping the epistemology of agronomists. The accounting framework, with its estimates of costs and profits, provided the means to evaluate the productive specialisations of different territories and plan for improvements at both the farm and at regional levels. Oreste Bordiga, who had studied with Cantoni in Milan,⁵⁹ defined agricultural economics as “the science of agricultural improvements under the constraints of economic opportunity.”⁶⁰ Agricultural economics took the definitions and principles of “pure” economics and transferred them into the fields, for the design and management of farm improvements.

⁵⁶ Pablo Martinelli Lasheras and Jordi Domènech Feliu have even described the effect of land occupations and social unrest in the countryside as a “spontaneous land reform”, Pablo Martinelli Lasheras and Jordi Domènech Feliu, “«Red fear» and a «spontaneous land reform» in post-Great War Italy,” *Rivista di storia economica*, no. 2 (2024): 153–94, <https://doi.org/10.1410/114648>.

⁵⁷ *L'Agricoltore del Nera*, anno I, n. 17, 16 Settembre 1921.

⁵⁸ Carlo Desideri, *L'amministrazione dell'Agricoltura (1910-1980)*, vol. 9, Paperback/Officina (Officina, 1981), chap. 2.

⁵⁹ Luigi Musella, “Oreste Bordiga e l'agricoltura meridionale, 1884-1914,” in *Studi sull'agricoltura italiana: società rurale e modernizzazione*, ed. P. P. D'Atorre and A. D. Bernardi (Fondazione Giangiacomo Feltrinelli, 1994). Musella 1994.

⁶⁰ Oreste Bordiga, *Trattato di economia rurale: i fattori della produzione agraria* (Vallardi, 1888).

In order to design improved farms, agricultural technicians faced problems of two kinds. The first was the relationship between farm and markets, a connection that was characterised by product prices (for inputs and outputs) and interest rates. The second was the analysis of costs and returns of different managerial solutions. These two aspects intersected both at the level of the farm's private economy and at the level of the political economy of agriculture, that is of the economic analysis of the agricultural economy of a given region or nation. In both cases, the knowledge required was not limited to "general principles", but it included a great deal of local, particular information.

Vittorio Niccoli's two communications to the National Agricultural Congress in June 1906 made the approach of agricultural experts to economics very clear. Niccoli was a Tuscan agricultural engineer who spent most of his life teaching agricultural economics and appraisal, first in Milan and then in Pisa.⁶¹ In his first communication, Niccoli tackled the broad topic of agricultural transformation. The issue was controversial, with very significant political implications: when and how was it profitable to make extensive cultivation more intensive? The North/South divide was often interpreted according to the categories of intensive versus extensive agriculture.

The degree of intensity was measured by the ratio of labour and capital to land. Niccoli began by analysing in very abstract terms the fundamental economic concepts of labour, land, and capital. His question was, however, how to reorganise production, whether to prioritise labour-intensive or capital-intensive transformation, given local market conditions. The choice depended on the relative abundance or scarcity of economic factors.⁶² Niccoli discussed two examples that he said were taken from his experience in designing estates.

The first involved an estate that, after the building of farm extensions and the purchase of machines and livestock, incorporated land, farm extensions, and working capitals for a total of 2300 lire. As a result of the improvements, the return per unit of capital was 8%. In this property situated in the scarcely populated area surrounding Rome, the intensification was based on an increase of capital, since labour was the scarce factor there. Niccoli compared this case to another he had overseen in Tuscany. This time, the intensification involved an increase in the quantity of labour invested, but the final return achieved was the same (8%).⁶³

His conclusion was pragmatic: "it is meaningless to discuss alternatives in the abstract; in the field of economics, either in the agricultural sector or in any other business, the fundamental laws are imposed by profit"⁶⁴. The key indicator of success is the return on the capital invested as a whole, in land, machines, labour, fertiliser etc.

⁶¹ Niccoli occupied the chair of agricultural economics, accounting and appraisal at the Scuola Superiore di Agricoltura in Milan. He was succeeded by Serpieri in 1906, and soon afterward by Ernesto Marengi. On Marengi's fortune, CESET 1995. On the teaching of agricultural economics, Di Sandro 2006

⁶² Vittorio Niccoli, *Bullettino dell'Agricoltura milanese* numero 26 del 29 Giugno 1906

⁶³ Niccoli, *Bullettino dell'Agricoltura milanese* numero 27 del 8 Luglio 1906.

⁶⁴ (28, 13 luglio).

In his second contribution to the Agricultural Congress, Niccoli discussed the case of Sardinia, where agricultural changes were discussed to address widespread poverty, as in the case of Basilicata.⁶⁵ The transformation of the island would be accomplished by improving the economic viability of individual farms, according to local conditions. Manifestly, Niccoli conceived the economy of the island and of public economy in general, as an aggregate of private economies.

Niccoli's two contributions help us clarify different aspects. They display a progressive shift from technical concerns and methods to agricultural economics, from the farm to a territory. The first and most obvious step went from the management and design of an individual farm in terms of cultivation and agricultural improvements, to the analysis of the economic factors involved (cost of factors and returns on investment). The second step moved from the analysis of costs and returns at farm level to its consequences for the economic development of whole regions: political economy was analysed in terms of private economy. Agricultural economics thus evolved from a very practical, concrete expertise (farm management), into something with wider regional and national consequences.

The premise for the application of economic concepts in agriculture was through appraisal and accountancy. The farm, with its crop rotation, its pesticides and fertilisers ("the art of agriculture") and the leasing contract binding the tenant and the landlord (a matter of law), etc., were transformed into the figures of a balance sheet, in such a way that they could be ascribed to the three overarching categories of land, capital and labour. Bruno Latour proposed the category of mobilisation to define the process by which knowledge emerges and stabilises in centres of calculation remote from the original sites of production of information.⁶⁶ Accounting provided the metrics for the mobilisation of the countryside for policy purposes.

Although, this "mobilisation" still relied on context-dependent knowledge and on the will of farmers to disclose private data, they made farming legible to agricultural economists, reducing the variety of individual farming experiences to a few manageable categories.⁶⁷ Niccoli's *Manuale dell'agricoltore e dell'ingegnere agronomo* sketched the outlines of a geography of Italy's farms according to the combination of inputs and the return on investment. Niccoli's successor on the Milan chair of Economics and Land Appraisal, Arrigo Serpieri, further detached himself from the practical concerns of farm management to become a fully-fledged economist and policy maker.

Serpieri added to the legacy of Niccoli, as he himself declared, a broader interest in economic theory. Serpieri studied Alfred Marshall, Vilfredo Pareto, and above all Maffeo Pantaleoni.⁶⁸ His early works

⁶⁵ Niccoli e Clerici, *Bullettino dell'Agricoltura milanese* numero 29.

⁶⁶ Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Harvard Univ. Press, 1987), 223.

⁶⁷ See F. D'Onofrio, "Making Variety Simple: Agricultural Economists in Southern Italy, 1906-9," *History of Political Economy* 44, no. Supplement 1 (2012): 93–113, <https://doi.org/10.1215/00182702-1631797>.

⁶⁸ Dario Perini, *Risultati economici di aziende agrarie*, vol. 1, Risultati economici di aziende agrarie (INEA, 1932), Prefazione. On the influences on Serpieri's economics, see most recently Gaetano Sabatini and Valerio Torreggiani, "Agrarian Interests, Economic Institutions and the Role of the State. Fascist Land Reclamation Projects and the Intellectual Trajectories of Arrigo Serpieri and Giuseppe Tassinari," *The Journal of European Economic History* 47,

on farm appraisal were inspired by their ideas.⁶⁹ His “conversion” from agronomy to agricultural economics contributed to its development in many ways, giving it the prestige of a self-standing discipline remote from the humble “industry” that Cantoni had praised.

Serpieri’s pupils regarded him as the founder of a “truly” Italian national school of agricultural economics,⁷⁰ especially after the establishment of the National Institute for Agricultural Economics (INEA) in 1928, which became the reference point for all professionals in the field, as well as its regional Observatories.⁷¹ For the fascist government, Serpieri drafted the complete land reclamation policy (It. *bonifica integrale*), a huge project that the regime publicised worldwide as the sign of the demiurgic capacity of Mussolini. During this time, as historian Orlando has pointed out, the budget of the Ministry of Agriculture, the main source of funding for agricultural extension up until the First World War, was redirected towards huge capital investments.⁷²

This trajectory—from the farm to policy-making—was already implicit in Cantoni’s own involvement in government activities and his role as a collector and synthesiser of agricultural information. However, the political significance of individual agricultural experts—graduates in agronomy—only increased over time. One of Cantoni’s students and collaborators, Vittorio Alpe, exemplified this evolution by combining his academic career with multiple leadership roles in farmers’ organisations. Alpe succeeded Cantoni in 1888 as chair of the Scuola Superiore in Milan. He also served as president of the *cattedra*, overseeing Soresi’s work. Between 1907 and 1918, he presided over the Società Agricola di Lombardia (SAL), the most important farmers’ association in one of Italy’s largest and wealthiest regions. Until 1926, he also led the *Federazione Italiana Consorzi Agrari* (Federconsorzi), the national federation of farm cooperatives. Internationally, he was a prominent representative of Italy in the *Commission Internationale d’Agriculture*.⁷³ Alpe’s extensive and overlapping roles illustrate how agricultural experts became integral to the fabric of local, national, and transnational agrarian elites.

Moreover, while his primary teaching activity, like Cantoni’s, focused on experimental fields, Alpe actively promoted the development of research in agricultural economics at both Federconsorzi and SAL. He played a key role in advancing Serpieri’s emergence as an expert in agricultural policy. In

no. 3 (2018): 87–111.

⁶⁹ Arrigo Serpieri, *Sui metodi di determinazione del profitto nelle imprese rurali. Analisi di stima e conti colturali* (tipolitografia agraria, 1901); Arrigo Serpieri, “Il metodo di stima dei beni fondiari,” *Annali del R. Ist. Superiore Forestale Nazionale II* (1916).

⁷⁰ Joosep Nõu, *Studies in the Development of Agricultural Economics in Europe* (Almqvist & Wiksell, 1967), /z-wcorg/; Di Sandro, *Gli economisti agrari italiani tra Otto e Novecento*, vol. 6. This role was not uncontested, see: Zaganella, *Dal fascismo alla DC*.

⁷¹ D’Onofrio, *Observing Agriculture in Early Twentieth-Century Italy*, 113.

⁷² On the recasting of agricultural expertise, Misiani, *La via dei “tecnici”. Dalla RSI alla ricostruzione: il caso di Paolo Albertario*; Zaganella, *Dal fascismo alla DC*, 15–27.

⁷³ Marcel Rieul Paisant, *La Commission internationale d’agriculture (Union internationale des associations agricoles): Et son rôle dans l’économie européenne* (FeniXX, 1936). On the Commission, see Gilbert Noël, “La solidarité agricole européenne: des congrès d’agriculture à la politique agricole commune,” in *Sociétés rurales du 20. siècle: France, Italie et Espagne*, ed. J. Canal et al. (École Française de Rome, 2004).

1905, when Alpe was vice-president of the society, SAL commissioned Serpieri to design an improved model for land lease contracts.⁷⁴ This research culminated with a report submitted to the Ministry of Agriculture, Industry and Commerce (MAIC) in 1911 on the compensation of tenants for improvements made to leased land.⁷⁵ That same year, the committee investigating peasant unrest in Romagna sought Serpieri's expert opinion on sharecropping contracts and the use of threshing machines.⁷⁶ This marked the beginning of Serpieri's long-standing engagement with tenancy contracts which, in the aftermath of the First World War, led to his official enquiry for the Ministry of Agriculture on tenancy and cooperative tenancy arrangements (*affittanze collettive*).⁷⁷ During the war, Serpieri was also appointed to the research committee of Federconsorzi.⁷⁸ His work on farm enterprises and contracts regulating income distribution between capital owners, managers, and labourers underscored the need for reliable accounting data. Consequently, in the early 1920s, Federconsorzi funded Giuseppe Tassinari's research on farm income.⁷⁹ The establishment of the Institute for Agricultural Economics and Statistics in 1923, and eventually of the National Institute of Agricultural Economics responded to this same need for data, and especially accountancy data. In general, accounting information was a crucial tool for the new approach to policy, as claimed by Sargiacomo *et alii* in their discussion of Serpieri's land reclamation strategy.⁸⁰

Serpieri's ability to combine politics and science is well established in the historiography and he was exceptionally successful. Yet, his path is also representative – in many ways – of the generation of policy experts that the literature had broadly lumped under the definition of “tecnici agrari”: influential figures such as Alessandro Brizi, or Serpieri's pupil Tassinari. Like Serpieri's, their expertise was doubly rooted, at the same time in the curriculum of Higher School of Economics – a curriculum which centred around the farm business, in terms of its connection with natural resources, technical operations, and managerial aspects – and in a set of institutions – the schools, the local associations, and the *cattedre* – linking the highest echelons of politics with the territories.

⁷⁴ Maria Malatesta, “Les fermiers de la Lombardie (XIXe et XXe siècle),” in *Exploiter la terre: les contrats agraires de l'Antiquité à nos jours ; actes du colloque international tenu à Caen du 10 au 13 septembre 1997*, ed. Gérard Béaur et al., Bibliothèque d'histoire rurale 7 (Association d'Histoire des Sociétés Rurales, 2003), 484.

⁷⁵ Ministero di agricoltura, industria e commercio, *Annali di agricoltura* (Roma, 1912).

⁷⁶ Sandro Rogari, *Rappresentanza corporazione conflitto: ceti e figure dell'Italia rurale fra otto e novecento*, Politica e testi 52 (Centro ed. Toscano, 1998), 157.

⁷⁷ Arrigo Serpieri, *Studi sui contratti agrari* (Zanichelli, 1920); Arrigo Serpieri, “I nuovi rapporti fra conduttori e lavoratori della terra e l'agricoltura,” *L'Italia agricola* 59, no. 5 (1922): 137–56.

⁷⁸ Salvatore Adorno, “L'Italia agricola e il suo avvenire,” in *La Federconsorzi tra stato liberale e fascismo*, ed. Severina Fontana, Biblioteca di cultura moderna 1084 (Laterza, 1995).

⁷⁹ Giuseppe Tassinari, *La distribuzione del reddito nell'agricoltura italiana* (Federazione italiana dei consorzi agrari, 1931); Giuseppe Tassinari, *Le vicende del reddito dell'agricoltura dal 1925 al 1932*, Istituto nazionale di economia agraria 23 ([s.n.], 1935). Tassinari had studied with Serpieri in Florence, Zaganella, *Dal fascismo alla DC*, 41.

⁸⁰ Massimo Sargiacomo et al., “Accounting and the Government of the Agricultural Economy: Arrigo Serpieri and the Reclamation Consortia,” *Accounting History Review* 26, no. 3 (2016): 307–31, <https://doi.org/10.1080/21552851.2016.1239710>.

6. Conclusions: Observing and transforming

The goal of this chapter was to study the rise of experts in agricultural economic policy. The formation of a group of specialised policy consultants for agricultural economics mirrors the consolidation of the role of economists in society more in general.⁸¹ The peculiarities of their discipline, though, set them apart from economists. Graduates in agricultural sciences (*dottori agronomi*) were the bearers of an eminently practical knowledge whose function was to bring about transformation of the land, of the crops, of cultivation and management methods, and of market relations (through cooperatives and savings banks). This knowledge was made up of a theoretical, scientific, or “universal” component; and of an applied, experiential, or local component, which could be tacit or explicit. At the core of this knowledge lay the farms as the site where labour, soil, and genetic material were harnessed for profit. Agricultural policy experts extended the expertise about the farm to a whole sector that was essentially understood as a collection of farms on which governments could intervene.

The knowledge of techniques and technologies was an obvious part of the experts’ education. But the basic tools of agricultural experts included accounting and appraisal. These disciplines were essential for allowing agricultural experts to assess the economic viability of the changes that they designed or advised. They offered a fundamental framework of analysis. They stood for both managerial technologies and techniques of observation, thanks to their embeddedness in the local social fabric. At the same time, accounting and appraisal enabled agricultural economists to free their expertise from its dependence on the context, in order to make knowledge of agriculture politically relevant for governments.

My discussion of Cantoni’s ideas on the relationship between the science, art, and industry of agriculture intended to expose how the epistemology of the profession initially rested on three elements: the confidence in science, the importance of adapting a disembodied science by means of practice, and the weight of constraints if science and art had to be useful. Transforming reality, rather than knowledge *per se*, was the goal of this eminently practical discipline. Art and science were made useful either in the private estates that graduates in agricultural sciences went to administer, or spread through the *cattedre*, the travelling chairs of agriculture. Policy required a few further steps.

I have outlined the activity of the *cattedre* because I wanted to give a full idea of the practice of agricultural experts. They were in charge of a territory. The *cattedre* were therefore also sites for observation and analysis that accumulated information on the agricultural life of their area of operation.⁸² The discussion of the *cattedre* has highlighted two additional items: a. the *cattedre* demonstrated a switch from thinking in terms of farms, to thinking in terms of a population of farmers or a territory – that is from business to policies; b. agricultural experts, especially in the early decades

⁸¹ Giovanni Pavanelli and Giulia Bianchi, “The Italian Economists as Legislators and Policymakers during the Fascist Regime,” in *An Institutional History of Italian Economics in the Interwar Period*, Volume II: The Economics Profession and Fascist Institutions, ed. Massimo M. Augello (Springer, 2020).

⁸² D’Onofrio 2012 and D’Onofrio 2013

of the twentieth century, owed their influence on policy to their participation in local elite networks, of which the *cattedra* was an example, alongside academia, agricultural associations, and cooperatives.

However, post-war discussions on land reform and land reclamation showed agricultural experts the full potential of central government, as an agent independent from the polarised social groups of the countryside, endowed with huge means for large scale transformation. Unsurprisingly, many of the most brilliant agricultural experts wholeheartedly welcomed and supported the regime.⁸³ In retrospectively assessing this experience, Luigi Einaudi distinguished the practices of agricultural experts before the Fascist takeover from the alleged “rational exploitation” of land imposed by the regime after the 1930s. According to him, before Fascism, agricultural experts “never taught the “rational exploitation of land”: they always examined local crops, local customs and local economic possibilities, pushing farmers to perfect their local and consuetudinary systems.”⁸⁴ Einaudi believed that rational planning and the oppression of the most active agriculturalists were a direct result of the centralisation of agricultural assistance, which had been imposed by the fascist regime.

In fact, what I have highlighted here is an epistemic continuity from nineteenth century scholars and their emphasis on making science useful, to the rise of a class of influential experts of agricultural policy. This expertise was fundamentally based on economic and accounting concepts used to assess the feasibility and effects of technological, social, and legal change. It preceded the regime. While this chapter concentrated on the case of Italy and on its idiosyncratic institutions, similar developments can probably be retraced elsewhere in Europe and in North America where agricultural economists emerged as the experts on agricultural policy-making.

⁸³ On Serpieri’s ideological evolution, and on the debate of government economic intervention, Sabatini and Torreggiani, “Agrarian Interests, Economic Institutions and the Role of the State. Fascist Land Reclamation Projects and the Intellectual Trajectories of Arrigo Serpieri and Giuseppe Tassinari.”

⁸⁴ Einaudi, *Esame degli emendamenti agli articoli del Titolo terzo Parte prima del progetto di Costituzione*, held on May, 13 1947.