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Between Village, Utopian Settlement, and Garden City

Urban Agriculture in the Company Housing Project of Eisenheim (Founded in 1844) in Historical Context

Abstract: Eisenheim was founded in 1844 near Oberhausen in the Ruhr by the mining company Gutehoffnungshütte as one of the earliest company housing projects in Germany. Like the later "colonies" by Krupp, BASF, or Farbwerke Höchst, the settlement was intended to attract workers from other regions by providing affordable housing and usually also access to land for gardening.
The paper contributes to a historical contextualisation of today's discourse on urban agriculture by first examining urban gardening and agricultural facilities in the mining company settlement of Eisenheim and then placing this case study within the broader development of urban agriculture from the eighteenth to the twentieth centuries. Eisenheim is then compared to four other "model villages" which, while representing a wide range of ideological motivations and socio-economic backgrounds, faced similar challenges in their agricultural aspirations. The main reference points of this analysis are: first, how access to land was organised, what property regimes were put in place, and how this affected the long-term preservation of agricultural land use. Second, what impact subsistence agriculture had on the residents' food resilience, quality of diet, and household income formation. Third, how subsistence gardening and agriculture and the spatial organisation of the settlements' green areas contributed to the residents' community life.

Key Words: Eisenheim, subsistence gardening, urban agriculture, food security, model village, company housing

Introduction

In the past ten to 15 years, a vibrant urban gardening movement has both built on and sparked renewed academic interest in the role of subsistence production in modern economies. The World Bank's 2008 *Global Report on Agriculture* and the UNCTAD's 2013 *Trade and Environment Report* have been milestones in the collection and public discussion of scientific evidence for the importance of small-scale, subsistence, and part-time farming and gardening for food production worldwide.[1] Since the 1970s, numerous case studies have shown that

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1 Beverly D. McIntyre et al. (eds.), Agriculture at a Crossroads. International Assessment of Agricultural Knowledge, Science and Technology for Development. Global Report, Washington 2008, https://www.globalagriculture.

practices of subsistence food production play a fundamental role in the livelihoods not only of rural, but also of large parts of city populations in the Global South, and that they are not at all mutually exclusive with wage labour or market-oriented commercial activities; in the light of these findings Marcel van der Linden has proposed a fundamental re-evaluation of the history of subsistence and wage labour.[2] In a similar vein, Elisabeth Meyer-Renschhausen compares global urban gardening practices to the mixed incomes ("Mischökonomie") large parts of the population in nineteenth-century Europe relied on.[3] Yves Segers and Leen van Molle retrace urban allotment gardens as far back as the fourteenth century, seeing them therefore as a "tried and tested recipe" enabling solutions for a greener future of cities worldwide.[4]

While the "back to the land" movement in the 1960s to 80s operated largely within the framework of a dichotomous divide between "rural" and "urban",[5] sustainable living has increasingly been viewed as a combination of characteristics of both over the past decades, with urban gardening or agriculture often being a central feature in larger concepts like the transition town movement, permaculture, or the eco-village movement.[6] Promoting local and ecologically sustainable food production and securing food sovereignty or food resilience both for low-income populations and in case of macro-economic crises are among the foremost aspirations of twenty-first-century urban agriculture initiatives. Most proponents also emphasise its community-building potential. In permaculture concepts, both community and urban gardening are similarly viewed as conducive to sustainable land use ("permanent agriculture").[7] Establishing community in otherwise anonymous neighbourhoods and forging

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org/ (last visited in Sept. 2019). Research commissioned by UNCTAD came to similar results: United Nations Conference on Trade and Development (ed.), Trade and Environment Review 2013. Wake up before it is too late. Make Agriculture truly sustainable now for Food Security in a changing climate, https://unctad.org/en/PublicationsLibrary/ditcted2012d3_en.pdf (last visited in Sept. 2019).

2 Marcel van der Linden, Workers of the World. Essays toward a Global Labor History, Leiden et al. 2008, 319–337.

3 Elisabeth Meyer-Renschhausen, Die Gärten der Frauen, in: Veronika Bennholdt-Thomsen et al. (eds.), Das Subsistenzhandbuch. Widerstandskulturen in Europa, Asien und Lateinamerika, Vienna 1999, 120–136, 120. For the term "Mischökonomie" in the context of European history, see: Gunter Mahlerwein, Mischökonomie, in: Enzyklopädie der Neuzeit Online, http://dx.doi.org/10.1163/2352-0248_edn_a2765000 (last visited in Sept. 2019).

4 Yves Segers/Leen Van Molle, Workers' Gardens and Urban Agriculture. The Belgian Allotment Movement within a Global Perspective (from the Nineteenth to the Twenty-First Century), in: Zeitschrift für Agrargeschichte und Agrarsoziologie 62/2 (2014), 80–94, 93.

5 Dona Brown, Back to the Land: The Enduring Dream of Self-Sufficiency in Modern America, Madison, WI 2011, 132, speaks of a "Dante-esque image of the industrial city" motivating the movement. Yet, roots of the present urban gardening movement go back to 1970s New York: Elisabeth Meyer-Renschhausen, Von der Allmende zur urban agriculture: Kleinstlandwirtschaft und Gärten als weibliche Ökonomie, in: L'Homme Z.F.G. 27/2 (2016), 73–91, 74–77.

6 Amanda Smith, The Transition Town Network. A Review of Current Evolutions and Renaissance, in: Social Movement Studies 10/1 (2011), 99–105; Rob Hopkins et al., Peak Oil and Transition Towns, in: Architectural Design 82/4 (2012), 72–77; Bill Mollison, Handbuch der Permakultur-Gestaltung, Graz 2010 (orig.: Permaculture: A Designer's Manual, Sisters Creek 1988), 77–79; Bill Metcalf/Diana Christian, Intentional Community, in: Encyclopedia of Community: From the Village to the Virtual World, vol. 2, London 2003, 70–76; Albert K. Bates, Ecovillages, in: ibid., 423–425; Global Ecovillage Network (GEN), https://ecovillage.org/global-ecovillage-network/about-gen/ (last visited in May 2019).

7 Mollison, Handbuch, 564–565, 581–585, 601–602.

cross-ethnic relationships are goals often cited by urban gardening initiatives,[8] which in turn often utilise permaculture concepts and methods.

Realisation of these aspirations, however, depends on a number of preconditions. Marcel van der Linden names access to land, seeds, tools, and livestock as necessary "resources of subsistence labor" and points to a problem which can be especially pressing in some urban contexts: when high population density increases the scarcity of these resources, those with the lowest monetary income will also be the ones who most likely will be lacking access to subsistence activities.[9] Based on similar considerations, Stephan Barthel and his co-authors specify two main conditions for increasing food resilience through urban agriculture: the protection of green spaces against profit-driven land use and the existence of sufficient gardening knowledge.[10]

Central aims of today's urban gardening movement, like the establishment of ecologically sustainable forms of local food production and the fostering of a village-like density of social relations, were also prominent in the garden city and life reform movements around 1900; where the challenges of gaining and preserving access to land are concerned, there likewise seem to be considerable continuities. But many of today's approaches to urban agriculture are formulating an agenda of progressive democratisation and cultural modernisation that is not at all nostalgic and can only to some degree be seen in continuity with older concepts of cooperative self-organisation. Another discontinuity may be seen in the contrast between the sheer necessity of subsistence food production for many nineteenth- and early twentieth-century urban gardeners and the affluence of many of their twenty-first-century successors – although this difference seems far less absolute when considering the involvement of middle classes and cultural avantgardes in the garden city and life reform movements on the one hand, and the deep roots of today's urban gardening movement in practices and initiatives from impoverished city districts in the USA and the Global South on the other.

This paper aims at contributing to a historical contextualisation of today's discourse on urban agriculture by first examining urban gardening and agricultural facilities in the mining company settlement of Eisenheim and then placing this case study within the broader development of urban agriculture from the eighteenth to the twentieth centuries. In order to provide a background not only in terms of theoretical discourse, but also some source-based discussion of comparable practical solutions in other settlements, this will include comparing Eisenheim to four other model villages which, while representing a wide range of ideological motivations and socio-economic backgrounds, faced some similar challenges in their agricultural aspirations. The main reference points of this analysis will be: first, how access to land was organised, what property regimes were put in place, and how this affected the long-term preservation of agricultural land use. Second, what impact subsistence agriculture had on

8 Karen Meyer-Rebentisch, Das ist urban gardening! Die neuen Stadtgärtner und ihre kreativen Projekte, Munich 2013, devotes an entire chapter (56–77) to intercultural city gardens, to name just one example of popular literature on urban gardening emphasising this aspect; see also Monica White, Sisters of the Soil: Urban Gardening as Resistance in Detroit, in: Multidisciplinary Global Contexts 5/1 (2011), 13–28, for an introduction to academic research on the connections between urban gardening and community building across ethnic or racial divisions.

9 Van der Linden, Workers, 330–331.

10 Stephan Barthel et al., Food and Green Space in Cities. A Resilience Lens on Gardens and Urban Environmental Movements, in: Urban Studies 52/7 (2015), 1321–1338.

the residents' food resilience, quality of diet, and household income formation. Third, how subsistence gardening and agriculture and the spatial organisation of the settlements' green areas contributed to the residents' community life.

The organisation of urban agriculture in Eisenheim

Eisenheim was founded in 1844 by a steelworks and mining company, "Hüttengewerkschaft und Handlung Jacobi, Haniel & Huyssen" (JHH), later known as Gutehoffnungshütte. It is the German Ruhr's oldest surviving company housing project.[11] Like the later "workers' colonies" established by Krupp, BASF, or Farbwerke Höchst, the settlement was intended to attract migrants primarily from rural regions by providing affordable housing and access to land for gardening and small livestock.

In the nineteenth century, Eisenheim was administratively part of the rural commune of Osterfeld, whose village centre was located some two kilometres away, in what was then the Prussian province of Westphalia. Since 1929, Osterfeld has been a district of the city of Oberhausen, now in North Rhine-Westphalia.[12] In the 1970s, residents formed a citizens' initiative against the planned destruction of the settlement; they were assisted by a project group from the University of Applied Sciences Bielefeld's design department, which initiated a broad academic effort to research industrial workers' cultures and preserve their historical sites.[13] Although Eisenheim was granted the status of a protected heritage site in 1973, the plans for demolition were not completely abandoned until 1978. In 2012, Eisenheim became a candidate for World Cultural Heritage status together with other settlements in the Ruhr.[14]

The foundation of Eisenheim can be mainly credited to the firm's principal manager, Wilhelm Lueg (1792–1864).[15] He was greatly influenced by a journey to England in 1829, where he had studied technological developments as well as observing some of the social consequences of rapid industrialisation. Lueg's aim in founding Eisenheim was to bind skilled workers to the company by providing them with housing and access to land in addition to their wages. Only half of the first Eisenheim residents came from the region, while the rest were recruited from other traditional iron-producing areas in western Germany – like

11 The company's full name was changed to "Actienverein für Bergbau und Hüttenbetrieb Gutehoffnungshütte" (GHH) in 1872. The company was founded in 1808/1810 through a merger of three eighteenth-century ironworks enterprises and soon began producing steam engines, rails, locomotives, steamboats, bridges, and many other iron and steel products. During the 1850s it also entered the mining business, extracting ore as well as coal; Die Gutehoffnungshütte, Oberhausen, Rheinland. Zur Erinnerung an das 100jährige Bestehen 1810–1910, Oberhausen 1910; Dorit Grollmann, "… für tüchtige Meister und Arbeiter rechter Art". Eisenheim – Die älteste Arbeitersiedlung im Ruhrgebiet macht Geschichte, Cologne et al. 1996, 8–24. After the Gutehoffnungshütte's divestiture in 1953, Eisenheim first belonged to the Hüttenwerke Oberhausen, then to Thyssen from 1969 to 1986, then to MAN. Today the settlement is owned by the real estate company Vivawest: Roland Günter/Janne Günter, Die Arbeitersiedlung Eisenheim in Oberhausen: Die älteste Arbeitersiedlung im Ruhrgebiet, Cologne 2013, 25.

12 Grollmann, Eisenheim, 26.

13 By 1975, a network of 50 citizens' initiatives was fighting for historical workers' settlements in the Ruhr; for a detailed account, see Günter/Günter, Arbeitersiedlung, 20–25.

14 Ibid., 25.

15 Bodo Herzog, Wilhelm Lueg, in: Neue Deutsche Biographie, vol. 15, Berlin 1987, 460–462.

Siegerland, Bergisches Land or Eifel – and from Belgium and France; four specialists in the production of rails had been brought from England in 1845.[16] In the later building phases of Eisenheim, most immigrants came from regions further to the east: Silesia, the Habsburg lands, Prussia, and Eastern Europe.

When Lueg began planning the settlement in the 1830s, only foremen (*Meister*) and their families were supposed to receive gardens and barns.[17] It was not uncommon for the employment contracts of factory clerks and technicians to include housing, light, firewood and a garden[18] – in short, the means to establish a complete household. The first seven semi-detached houses in Provinzialstraße,[19] which were built in 1846 and resembled English cottages, were reserved for this class of residents. But in the same year, Lueg would change his mind and decide to likewise endow ordinary workers and their families not only with housing, but with gardens and barns. The first apartment buildings for workers were two-storey blocks of flats along the streets called Kasernenstraße and Wesselkampstraße that followed the more urban model of housing for Prussian soldiers and their families.[20] While the barns of the *Meisterhäuser* were directly attached to the houses, the barns and gardens of these *Kasernenhäuser* were located separately.

Starting with the second phase of construction (1865/66), the specific Eisenheim layout was established. Rows of houses with four apartments each lined the streets, with every apartment featuring a downstairs kitchen and living room, two upstairs bedrooms, a cellar and a separate entrance. This house type followed a model first employed in Mühlhausen/Mulhouse in Alsace in 1853 which had been highly influential ever since it was shown at the World's Fair of 1855.[21] From 1872 onwards, the four entrances of these Eisenheim *Kreuzgrundriss* houses faced in separate directions so that each apartment had one of the house's façades to itself. A small decorative garden, located either in the gaps between houses or between the barns, belonged to each flat. The barns formed a second row of buildings parallel to the houses and separated by a path called Hofweg, and were usually used for pigs and other livestock like goats, sheep, chickens, ducks, and geese.[22] Many workers also kept carrier pigeons under the barn roofs as a hobby. Toilets were located within the barns, as there were no bathrooms in the houses. As in many villages of the time, all water had to be fetched from public pumps, which was considered women's work.[23]

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16 Grollmann, Eisenheim, 38. The company had begun the production of rails in 1842 following its first locomotive in 1839; Die Gutehoffnungshütte, vi.

17 Grollmann, Eisenheim, 24.

18 Ibid.

19 For a detailed description of Eisenheim's construction, see Günter/Günter, Arbeitersiedlung, 9–25.

20 Grollmann, Eisenheim, 28.

21 The *cité ouvrière* in Mulhouse became an important model for company housing projects by BASF, Farbwerke Höchst, Ruhr mining companies and others; Michael Honhart, Company Housing as Urban Planning in Germany, 1870–1940, in: Central European History 23/1 (1990), 3–21, 7; Garyfalia Palaiologou/Fani Kostourou, Long-Term Challenges in Urban Housing: In the Search for Intersections between Design and Policy Regulations, in: Kirsten Day (ed.), AMPS Proceedings Series 7: Future Housing: Global Cities and Regional Problems, Melbourne 2016, 39–58, 48–52.

22 Janne Günter, Leben in Eisenheim: Arbeit, Kommunikation und Sozialisation in einer Arbeitersiedlung, Weinheim 1980, 137–138.

23 Günter/Günter, Arbeitersiedlung, 18.

Figure 1: Eisenheim: *Kreuzgrundriss* houses, barns, and gardens

Source: Photo by Rainer Halama, Creative Commons Attribution ShareAlike 3.0 Unported, https://commons.wikimedia.org/wiki/File:Eisenheim5884.jpg.

Beyond the barns lay the kitchen gardens, with the ample space between the streets divided into plots of about 220 m² for each family.[24] What was grown on these plots during the nineteenth and early twentieth century can only be extrapolated from interviews with twentieth-century residents, as no gardening records were kept in the Gutehoffnungshütte's historical archive. When Eisenheimers were systematically interviewed in the early 1970s,[25] many of them reported first-hand or second-hand memories reaching back to the turn of the century. They recalled not only potatoes and cabbage, but a broad range of vegetables being grown, and even the decorative gardens being used for planting berry bushes and fruit trees.[26] According to these reminiscences, most of the garden work was done by women.[27] Addi-

24 Günter, Leben, 103. The Stiftung Rheinisch-Westfälisches Wirtschaftsarchiv (RWWA), which took over the former Gutehoffnungshütte's historical archive in 1995, holds a number of contemporary maps detailing the building process as well as the layout of plots: 1846: RWWA 130-2307-0; 1856: RWWA 130-2307-1; 1866: RWWA 130-2307-2; 1897: RWWA 130-33014-8 1897; 1903: RWWA 130-33014-8. The Feld was newly parcelled around 1900, so that the plots on maps before and after that time do not correspond; another deviation between older and more recent maps results from the renaming of the former Koloniestraße to Werrastraße in 1929; Günter/Günter, Arbeitersiedlung, 11. In its early years, Eisenheim had no street names at all.

25 These interviews were conducted in the context of an early oral history project; some of their results are published in Janne Günter/Roland Günter, "Sprechende Straßen" in Eisenheim. Konzept und Texte sämtlicher Tafeln in der ältesten Siedlung (1846/1901) im Ruhrgebiet, Essen 1999; Roland Günter, Im Tal der Könige. Ein Reisebuch zu Emscher, Rhein und Ruhr, Essen 1994; Günter, Leben.

26 Günter/Günter, Sprechende Straßen, 59–60, 64, 102–105.

27 Günter/Günter, Arbeitersiedlung, 7; Günter, Tal der Könige, 146. This fits with broader analyses of nineteenth- and early twentieth-century gardening as predominantly women's work: Meyer-Renschhausen, Allmende;

tionally, residents could lease further strips of arable land from the company to grow more potatoes or even grain, although tending to these entailed a considerable amount of extra work. Anton Stoike, for example, born in 1881, recalled how he used to work on his leased field of a quarter *Morgen* (around 600 m²) after coming home already tired from the coal mine in the early 1900s.[28] Interviewees told of a wide circulation of homegrown food among residents in the form of presents, festivities, swaps, and mutual aid; I have found no evidence of Eisenheimers selling produce on outside markets.

The layout of the settlement was well thought-out in that it was a far more economical regime of land use than detached houses with individual gardens would have been, yet it provided residents with similar advantages. Each apartment resembled a small house, as it combined private upstairs space where a worker on night shift could sleep during the day, easily accessible downstairs space, a storage cellar for coal as well as potatoes, vegetables and fruit, and the relative privacy of its own entrance and staircase. On the other hand, the system made for a far less condensed neighbourhood than many working-class areas in contemporary Manchester, for instance, where rows of brick houses were built directly adjacent to each other in order to maximise profits for investors. The planners of Eisenheim dedicated a comparably very generous portion of the premises to gardening and livestock husbandry; the organisation of the available green areas into a rational grid of plots, paths and buildings helped to make use of their full potential.

The land on which Eisenheim was built had been purchased by the company in 1844 from the farmer (*Kolon*) Theodor Rübekamp. It consisted chiefly of a piece of arable land called Wesselkamp, whose area is specified as *32 Morgen, 59 Ruthen und 42 Fuß* in the purchase contract.[29] Assuming that this can be read as Prussian *Morgen*, it would translate into slightly more than eight hectares. As the field was wet, the contract specifically noted that the right to drain water onto a neighbouring farmer's premises, which Rübekamp had won in an 1838 lawsuit, would pass to the new owners. In the following years, the JHH additionally bought part of Rübekamp's and other farmers' shares of the newly enclosed Osterfeld commons, which was sandy heath land (*Heide*).[30] The immediate sale of newly enclosed common land was a decision made by many small farmers in the region, chiefly because they lacked resources to invest into the amelioration necessary to make the land arable.[31]

Gisela Mettele, Wieviel Garten braucht die Gartenstadt? Leben im Grünen als genossenschaftliches Reformprojekt, in: Mark Häberlein/Robert Zink (eds.), Städtische Gartenkulturen im historischen Wandel, Ostfildern 2015, 193–212, 208–209.

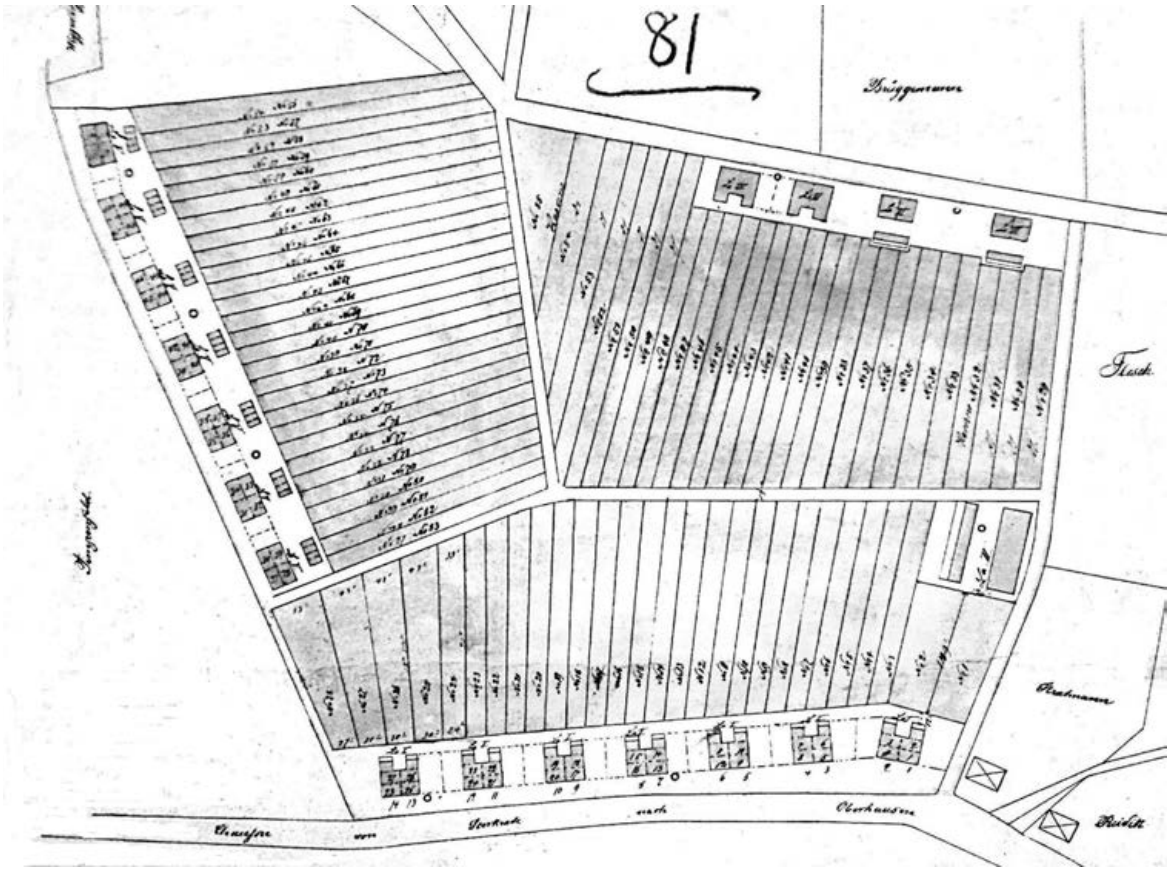
28 Günter/Günter, Sprechende Straßen, 57–58, 103.

29 The contract is dated 6 February 1844, RWWA 130-165-15, without foliation (note: there is a second folder with the same shelfmark that contains more papers concerning the purchase of land for Eisenheim).

30 Among other documents, the two folders sharing the shelfmark RWWA 130-165-15 contain the verdict in the lawsuit of Theodor Rübekamp versus Theodor Hülsken, known as "Timpe", dated 3 February 1838, a contract dated 29 October 1844 and promising Rübekamp's expected share from the ongoing enclosure to the JHH, and documents concerning a plot purchased from Johann Kalveram. The latter parcels were both under one hectare in area. RWWA 130-204-12 is a detailed map of the relevant parts of the Osterfeld commons, dated 6 March 1844. A rough account of the Osterfeld enclosure procedures is provided in Klaus Weinberg, Zehn Gemeinheiten in Osterfeld machen Ärger, in: Kickenberg 34 (2015), 4–7.

31 Georg Fertig, Gemeinheitsteilungen in Löhne: Eine Fallstudie zur Sozial- und Umweltgeschichte Westfalens im 19. Jahrhundert, in: Karl Ditt et al. (eds.), Agrarmodernisierung und ökologische Folgen. Westfalen vom 18. bis zum 20. Jahrhundert, Paderborn et al. 2001, 393–426, 405.

Figure 2: Map of Eisenheim in 1866



Source: Stiftung Rheinisch-Westfälisches Wirtschaftsarchiv zu Köln (RWWA) 130-2307-2.

Eisenheim was not the company's only housing project: the JHH had built its first workers' accommodations in the 1820s.[32] By 1910, the Gutehoffnungshütte was renting out 2,414 apartments in 720 houses within at least ten settlements.[33] Nevertheless, only 5 to 6 percent of its 9,000 employees lived in company housing in 1900,[34] and as employment numbers rose to 19,500 in 1905 and over 80,000 in 1923,[35] workers provided with apartments and gardens remained a minority. As a consequence of the ongoing housing shortage, Eisenheim – like other workers' colonies – had become increasingly overcrowded since the stock market crash of 1873 had brought building activities to an abrupt halt. In the late 1890s, construction was resumed energetically, but for a long time was unable to keep up with demand.[36] Many residents were sub-letting rooms of their apartments, which were small to begin with (55 to

32 Grollmann, Eisenheim, 24.

33 Die Gutehoffnungshütte, 167. The following settlements were founded after Eisenheim: Dunkelschlag, Stemmersberg, Gerschermannshof, Vonderbruch, Dellwig, Nonkeil, Gustav Wiesner, Hiesfeld, Dentsch.

34 Grollmann, Eisenheim, 42, 30.

35 Gerhard Hetzer, Gutehoffnungshütte (GHH), in: Historisches Lexikon Bayerns, https://www.historisches-lexikon-bayerns.de/Lexikon/Gutehoffnungshütte_(GHH) (last visited in May 2019).

36 Grollmann, Eisenheim, 29, 42.

Figure 3: Map of Eisenheim in 1903. The buildings are coloured black.

Source: RWWA 130-33014-8, slightly adapted.

65 m² in the 1872 *Kreuzgrundriss* houses[37]), considering that families had many children and often housed a widowed grandmother.[38]

37 Günter/Günter, Arbeitersiedlung, 11.
38 Ibid., 11.

Landownership, food sovereignty, and income formation in Eisenheim

Roland and Janne Günter have pointed out that subsistence gardening and small-scale agriculture provided essential parts of the Eisenheim residents' incomes, since well into the twentieth century their wages were not high enough to reliably support a family.[39] This claim is substantiated by broader research on the situation of workers throughout the nineteenth century, which shows large parts of the population living under precarious conditions characterised by low wages, insecure jobs, and a high risk of poverty that became a near certainty in old age or illness.[40] Keeping livestock and growing fresh vegetables and fruit must also be considered a distinct improvement in the quality of workers' diets compared to those of large parts of the nineteenth-century urban populations, who rarely consumed meat or fresh produce, milk or eggs, with many subsisting primarily on potatoes, bread and surrogate coffee.[41] Looking back at their own youth and the lives of their parents in their 1970s interviews, older Eisenheimers stressed the importance of gardening and animal husbandry for their livelihoods and the fact that these sources of nutrition saved them from hunger even in times of war or crisis.[42] They also valued the supplement which gardening still provided to their old-age pensions.[43] By this time, chickens, ducks, and rabbits were the only farm animals kept in Eisenheim, but many residents had at times raised up to four pigs or sheep in their small barns well into the twentieth century.[44]

Gardens, barns, and storage cellars were the features of company housing settlements that were most praised by advertisements and the agents sent to Silesia, Prussia, and other rural regions by Ruhr companies starting in the 1870s to recruit workers.[45] A 1908 advertisement for a new colony associated with the coal mine "Viktoria" near Rauxel painted a vivid picture of a settlement resembling a Masurian village ("wie ein masurisches Dorf").[46] While the promise of being admitted into a company settlement did not come true for all newcomers, subsistence gardening and part-time farming by workers and miners was a systemic feature of the Ruhr's economic and social structure.[47] Most migrants who came from East Prussia or Congress Poland belonged to the fast-growing rural underclasses of these regions, lacking sufficient access to land to support themselves, but skilled in gardening and agriculture;[48]

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39 Günter/Günter, Sprechende Straßen, 64.

40 Jürgen Kocka, Arbeiterleben und Arbeiterkultur. Die Entstehung einer sozialen Klasse, Bonn 2015, 131–132.

41 Kocka, Arbeiterleben, 113–124; Jürgen Schmidt, Arbeiter in der Moderne. Arbeitsbedingungen, Lebenswelten, Organisationen, Frankfurt 2015, 42. Kocka sees the displacement of the "monotonous" legumes by potatoes as the lower classes' staple food during the nineteenth century as an improvement in food quality, but considering the ongoing scarcity of other proteins in the diets of a large part of the population, this does not seem entirely convincing.

42 Günter, Tal der Könige, 139–140, 146.

43 Günter, Leben, 137; Günter/Günter, Sprechende Straßen, 103.

44 Günter, Leben, 137–138.

45 Christoph Kleßmann, Polnische Bergarbeiter im Ruhrgebiet 1870–1945. Soziale Integration und nationale Subkultur einer Minderheit in der deutschen Industriegesellschaft, Göttingen 1978, 39.

46 Grollmann, Eisenheim, 30.

47 Kocka, Arbeiterleben, 126, 169.

48 Kleßmann, Polnische Bergarbeiter, 24–25.

many arrived carrying their belongings wrapped in a piece of cloth and leading a goose on a leash.[49] As their children would later recall, these migrants experienced their new life in Eisenheim and comparable settlements as a rise in social status and a considerable improvement of their living conditions.[50]

All buildings and land remained the company's property, contrary to Lueg's earlier plan to allow workers to buy their houses (he had originally thought that the status of being a homeowner would keep them from joining revolutionary activities[51] – a consideration that remained prominent in the minds of many nineteenth-century housing reformers). Barns and garden plots were let together with the apartments, and rental contracts were linked to a job in one of the company's steelworks or coal mines; if a tenant's employment was terminated, the family was to leave the apartment within two weeks' time.[52] This meant that their subsistence activities did nothing to reduce the dependency of Eisenheim residents on their employer, as in the case of a conflict they stood to lose their housing and garden together with their jobs.

Rent was considerably lower than the regional average.[53] In this respect as well as with the relatively low building density of the settlement, the company chose the contentment of workers and resulting reduced fluctuation rates over higher profits from rents. This corresponded to the highly paternalistic attitude recognizable in Lueg's letters[54] as well as in the company's early adoption of some elementary welfare measures.[55] Lueg had been to England and was well-read, and it has therefore been assumed that his plans for Eisenheim were influenced by English building styles as well as by the ideas of Robert Owen and Charles Fourier.[56] Robert Owen's workers' settlement of New Lannark had famously begun to provide up to 1,000 inhabitants with apartments, welfare provisions, and gardening spaces as early as 1800.[57] German literature on the reform of workers' housing as a means to alleviate poverty dates back to the 1840s.[58]

While centralised landownership by the company maintained the Eisenheimers' dependence on the their employer, it did also ensure that the grounds and buildings remained outside the real-estate market. This meant that Eisenheim's green spaces could be preserved even while the fast-growing city of Oberhausen was enclosing the settlement. Hence Eisenheim met the first of the two conditions Stephan Barthel and his co-authors specify for increasing

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49 Günter, Tal der Könige, 89–91.

50 Ibid., 139.

51 Grollmann, Eisenheim, 28.

52 Ibid., 40.

53 Günter/Günter, Arbeitersiedlung, 17; Grollmann, Eisenheim, 41–42.

54 Lueg's letters between the 1830s and 1860s show him involved in poor relief (such as the distribution of grain during the food price crisis of 1847) and social projects (e.g. contributions towards school buildings or the establishment of a pharmacy in Sterkrade) as well as strongly opposed to pubs selling liquor to workers and to (in his view) exaggerated expectations of workers concerning wages and living standards, yet advocating a trusting relationship between employers and employed; RWWA 130-20002-50-1 (copies). Although several of the letters concern the region around Sterkrade, Eisenheim is never explicitly mentioned.

55 Grollmann, Eisenheim, 40. For the company's own account of its welfare activities, see Die Gutehoffnungshütte, 166–174. Lueg's cash book notes expenses for sick workers as early as 1808–1815; Herzog, Wilhelm Lueg, 462.

56 Günter/Günter, Arbeitersiedlung, 3; Günter/Günter, Sprechende Straßen, 31.

57 Markus Elsässer, Soziale Intentionen und Reformen des Robert Owen in der Frühzeit der Industrialisierung. Analyse seines Wirkens als Unternehmer, Sozialreformer, Genossenschafter, Frühsozialist, Erzieher und Wissenschaftler, Berlin 1984, 125.

58 Honhart, Company Housing, 5.

a city's degree of food resilience through gardening: protection of green spaces against profit-driven land use.[59] The other condition for food resilience through urban gardening named by Barthel et al. is the existence of sufficient gardening knowledge. This condition was also met in Eisenheim due to the rural origins of most of its early residents. In this respect, it is noteworthy that these agricultural skills seem to have been taken for granted by the Gutehoffnungshütte and other companies organising housing for their workers. While there were many efforts to improve the workers' morals and hygiene, they seem to have been trusted to make the best use of their gardens and livestock without any instruction from the company.

Rural and urban features and community life in Eisenheim

Eisenheim has been described as a compromise between traditional village and modern urban quarter, a "model of transition" ("Modell des Übergangs").[60] This view seems to imply a more or less linear historical development towards modernisation and urbanisation, with Eisenheim and similar workers' settlements assuming a median position chronologically as well as structurally, and reinforces older assumptions about a mutual exclusivity of subsistence and market-oriented production. But, as has been shown above, Eisenheim's layout and infrastructure actually were a highly functional response to the requirements of industrialisation, with subsistence agriculture complementing wages, stabilising the workforce, and overall supporting instead of counteracting the wage-labour relationship.[61] Eisenheim's planners made no attempts to hide the settlement's functionality and modernity behind traditional design elements, while many of the later nineteenth-century company housing projects deliberately employed vernacular architectural features in an effort to create a village-like appearance and instill "Heimatgefühl" in residents.[62]

The dichotomy of traditional and rural versus modern and urban ways of life has dominated many political and social discourses since the nineteenth century and profoundly influenced the evaluation of subsistence gardening. Examples range from Friedrich Engels's rejection of house and land ownership as a step backwards towards a "semi-feudal" ("halbfeudal") state[63] to conservative, *völkisch*, or fascist efforts to preserve what they saw as German traditional lifestyles against industrialisation and the juggernaut of the modern city. In the twentieth century, the equation of modernity with densely developed cities and a population living exclusively on monetary incomes remained dominant. Le Corbusier deemed individual vegetable gardens troublesome and inefficient; subsequent generations of city planners remained firmly convinced of the merits of lawns and evergreen hedges, and of turning the residual green spaces between blocks of flats into exclusively decorative areas. In a similar spirit, officials in the Soviet Union or the GDR never acknowledged the huge contribution

59 Barthel et al., Food and Green Space.

60 Günter/Günter, Arbeitersiedlung, 8.

61 For more on this "entanglement of wage labor and subsistence labor" see Van der Linden, Workers, 327–330.

62 Cedric Bolz, Constructing 'Heimat' in the Ruhr Valley: Krupp Housing and the Search for the Ideal German Home 1914–1931, in: German Studies Review 34/1 (2011), 17–43, 18.

63 Friedrich Engels, Zur Wohnungsfrage, Hottingen/Zurich 1887, Vorwort zur 2. Auflage, cited from Karl Marx/Friedrich Engels, Werke, vol. 21, Berlin 1975, 325–334, 334.

private kitchen gardens and small-scale farming made to the countries' overall vegetable production.[64]

When architectural planners expedited the demolition of settlements like Eisenheim in the name of modern urbanity during the 1960s and 70s, they argued not only that high-rise buildings would offer working-class residents larger flats, modern bathrooms, and garages, but also that the anonymity of these flats was a prerequisite for a clear, "modern" distinction between public and private spaces.[65] Janne and Roland Günter's sociological research on the communication patterns of Eisenheim residents was explicitly conceived as a challenge to these theories. It was focused on the interrelatedness of architectural design and social interactions and the importance of local social networks for Eisenheim's working-class residents, especially for women, children, and elderly persons.[66] Eisenheim's open spaces with their manifold possibilities for outdoor activities like gardening, tending to animals, and do-it-yourself practices were shown to be conducive to its tight-knit community.

According to this analysis, the layout of Eisenheim seems highly functional from a social perspective. It provides a well-balanced mix of private spaces, such as apartments with sound-proof brick walls and private entrances, and semi-public and public spaces like residential streets, paths and gardens, with many interlinking features such as low windowsills or fences facilitating informal communication opportunities. Thus, Eisenheim seems to have fulfilled all the criteria for social sustainability Robert Gilman lists for an eco-village: "To fulfil the ideal that the eco-village support healthy human development requires that the buildings in the community: have a good balance of public space and private space; encourage community interaction; support a full diversity of activities."[67]

Gardening in nineteenth- and early twentieth-century social reform discourse: from allotment gardens to Ebenezer Howard's garden city concept

From the very beginning of the nineteenth century, providing the poor or working-class population with gardening space has been an oft-proposed solution to pauperism and the social problems accompanying industrialisation and urbanisation. Where the idea was put into practice, it often took the shape of allotment gardens: small plots separate from the house and reserved for subsistence gardening, intended as a supplement to monetary incomes and not as a livelihood in itself, as a smallholding or a peasant farm would have been. In England, legislation to make the establishment of poor-relief gardens compulsory when enclosing common land was discussed as early as 1793 to 1800.[68] The first German allotment garden

64 Micheline Nilsen, The Working Man's Green Space. Allotment Gardens in England, France, and Germany, 1870–1919, Charlottesville 2014, 14; Meyer-Renschhausen, Allmende, 80–81.

65 Günter, Leben, 28–31, challenges these theses as formulated by Hans Paul Bahrdt and others in the 1960s and 1970s in the context of Eisenheim.

66 Günter, Leben; Günter/Günter, Arbeitersiedlung, 18.

67 Robert Gilman, The Eco-village Challenge, in: Living Together. Sustainable Community Development = Context 29 (1991), 10–15, https://www.context.org/iclib/ic29/gilman1/ (last visited in May 2019).

68 Nilsen, Allotment Gardens, 24.

was started in Kappeln in 1806 by the landgrave of Hesse-Kassel;[69] the first German cities to dedicate patches of public ground to the poor as gardening land were Kiel (around 1820), Königsberg (1829), Leipzig (1832), and Berlin (1833).[70]

Over the course of the century, charitable allotment garden projects – and later the association-based *Schrebergärten* – became more and more widespread. Micheline Nilsen has pointed out that many nineteenth-century plans included, but did not stress, subsistence gardening: "The vegetable garden has had a modest but continuous presence in urban utopian writings", playing an "understated" role in the concepts of Robert Owen, Charles Fourier, Pierre-Joseph Proudhon, Jean-Baptiste Godin, and others.[71] Although allotment gardens, if installed, often worked out well, supply could never keep up with demand, and most gardens did not last long in the face of city growth and rising real-estate prices.[72] This problem was addressed in a more radical fashion first by Chartists and the English "Land and Labour League" in the 1840s, then by the German land-reform movement towards the end of the nineteenth century. But it was only after World War I that allotment garden associations gained lasting municipal and legislative protection.

The garden city movement that proliferated internationally around 1900 can be considered a forerunner of many current movements in that it strove to bridge the divide between country and city, and in that at least several of its proponents wished to do so with a progressive agenda in terms of direct democratic and cooperative structures as well as technological innovations. In Germany, the movement was informed not only by Ebenezer Howard's internationally famous book *Garden Cities of To-morrow* (1902)[73] and other housing-reform literature, but also by the practical examples of workers' settlements in the Ruhr. A continuous line of influence can thus be drawn from Eisenheim to the garden cities and reform architecture projects of around 1900, and on to the municipal social housing programs of the 1920s and 30s.[74]

Ebenezer Howard's hopes of finding a compromise between rural and urban lifestyles were high. The garden city was to be a remedy for poverty, rural-urban migration, agrarian market crises, unhealthy living conditions, and air pollution. In his book, he developed a detailed template for planning a garden city. Acknowledging the many older lines of thought by which he was inspired, from land reform through romantic and life-reform ideas to philanthropic plans to fight poverty by giving the poor access to land, he called his scheme a "unique

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69 Ibid., 58.

70 Gertraud Koszteczky, Die Geschichte der Wiener Grünflächen im Zusammenhang mit dem sozialen Wandel ihrer BenützerInnen, unprinted doctorate thesis, University of Vienna 2007, 84.

71 Nilsen, Allotment Gardens, 12. After World War I, the German garden architect Leberecht Migge strongly opposed this preoccupation with the recreational and aesthetic values of public parks and advocated for subsistence gardening plots as a tool for social change; Leberecht Migge 1881–1935. Gartenkultur des 20. Jahrhunderts, Kassel 1981, 90–94; David H. Haney, When Modern was Green: Life and Work of Landscape Architect Leberecht Migge, London et al. 2010, 104–105.

72 Koszteczky, Geschichte, 84. For a detailed account of the development and efficiency of allotment gardens as poor relief in the nineteenth century, see Nilsen, Allotment Gardens.

73 Ebenezer Howard, Garden Cities of To-morrow, London 1902; a shorter version had previously been published in 1898.

74 Honhart, Company Housing, 4. On the development of the garden city movement and the role of German and English company housing projects and model villages, see also Nilsen, Allotment Gardens, 13–14, and Mettele, Garten.

combination of proposals".[75] Among the authors he cited were John Ruskin, William Blake, Thomas Spence, Herbert Spencer, and Leo Tolstoi. Equating cities with "human society" and the countryside with "nature", he stipulated that both needed to be "married" in order to overcome the present "unholy, unnatural separation of society and nature".[76]

A schematic illustration of the ideal garden city showed a park providing "ample recreation grounds" at the centre of the settlement, surrounded first by public buildings, then a glass arcade housing various shops. Next, forming concentric rings, came first the residential buildings (some of which would have "common gardens" and co-operative kitchens); then more parks and playgrounds, schools and churches. The outer circle of the city would house factories, which according to Howard would cause no air pollution as they were to be entirely powered by electricity. The surrounding land would be devoted mostly to market-oriented farms, but also to "labourers' allotments". The currently "despairing producer of wheat"[77] would be saved by the good market opportunities the garden city was to provide both locally and through its excellent rail connections, which would allow a broad range of export-oriented production both for farmers and factories. The fertility of the soil would be preserved by recycling all the settlement's waste using a modern and hygienic sewage system.[78]

The garden city would be built on agricultural land purchased through a mortgage-backed loan by four reliable trustees. These would collect a moderate ground rent from all residents through which both the loan and public expenses (including a broad range of welfare institutions) would be met. The land's rise in value resulting from its development would help to finance its purchase; as soon as it was free of debt, the land would be communally owned by all residents. This collective ownership, together with a democratic self-governance system, would enable the long-term preservation of the green spaces: when the garden city reached around 32,000 inhabitants, its further growth would not be allowed to consume the fields and parks, as it inevitably would within a profit-driven private real-estate market. Instead, the settlement's further growth would be directed towards new garden cities forming satellites beyond the mother city's green borders.[79] These considerations demonstrate Howard's acquaintance with contemporary land-reform theories.[80]

The criteria most valued by Howard, namely light, air, hygiene, and opportunities for healthy and morally unproblematic leisure pastimes, mirrored a middle-class preoccupation with avoiding the filth, the lack of space, sunlight, and air, the bad smells, and the perceived moral pitfalls that struck the bourgeois visitor to contemporary slums. They also bespoke the momentum the life-reform movement had gained. Compared to parks, alleys, and professional farming enterprises, kitchen gardens as a means of subsistence production played a less prominent role in Howard's concept.

75 Howard, Garden Cities, 71.
76 Ibid., Introduction (without pagination).
77 Ibid., 12.
78 Ibid., 6.
79 Ibid., 93–95.
80 On land-reform theories and campaigns in England, see Nilsen, Allotment Gardens, 21–22.

The organisation of gardening and agriculture in Herrnhut, Königsfeld, Eden, and Loheland

This section will present four examples of other "model villages" which represent a wide range of ideological motivations and socio-economic backgrounds, yet faced some similar challenges in their agricultural organisation. These challenges included gaining and securing access to land, generating a meaningful complement to monetary incomes from subsistence production, and organising housing and green spaces to fit their communal needs and aspirations.

A much earlier predecessor to the way Eisenheim was strategically founded on agricultural land of mostly lesser quality, and on a property far too small to enable inhabitants to live as farmers, can be seen in early modern protoindustrial settlements. Like Eisenheim, these were often built within the boundaries of existing villages. In some respects, the Moravian Church's famous first community at Herrnhut can be seen as a particularly well-documented example of an early modern pre-industrial settlement, as well as an example for a religiously motivated utopian community project. Herrnhut was founded in 1722 at the manor of count Nikolaus Ludwig Zinzendorf in Upper Lusatia to house Moravian religious refugees. Most of them had formerly been farmers or farm workers; now they became weavers or spinners, supporting themselves through a combination of home industry, crafts, subsistence gardening, and small-scale animal husbandry.[81] Maps from 1717 and 1760 show how the new settlement was inserted into the fields of the village of Berthelsdorf, with Herrnhut much smaller and more densely built.[82] Initially, all land remained part of Zinzendorf's allodial property: a traditional custumal (*Dorfrüge*) codified the inhabitants' duties and privileges, including a permanent exemption from serfdom.[83] In 1760, ownership of the land was transferred to the Moravian Church, which also owned all community buildings; most family houses and businesses were privately owned.

Town maps from 1722, 1769 and 1858 show a settlement pattern that is comparable to Eisenheim in certain respects: rows of townhouses, each with garden space in its backyard and some with an additional plot within one of the geometrically divided gardening areas surrounding the settlement.[84] By the second half of the eighteenth century, Herrnhut was also home to factories and a number of shops and craft businesses. While Herrnhut's social struc-

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81 For more information and references on the beginnings of Herrnhut, see Dietrich Meyer, Zinzendorf und die Herrnhuter Brüdergemeine 1700–2000, Göttingen 2009; Ines Peper, "Wir aber in der ganzen Gemeine durften einander trauen": Vom mährischen Geheimprotestantismus zur Herrnhuter Brüdergemeine, in: Thomas Wallnig et al. (eds.), Maria Theresia? Neue Perspektiven der Forschung, Bochum 2017, 67–86.

82 Institut für vergleichende Städtegeschichte Münster (ed.), Deutscher Historischer Städteatlas 3: Herrnhut und Herrnhuter Siedlungen, Münster 2009, Tafel 2: Das Rittergut Berthelsdorf 1717 und 1760, 1:20.000; Birgit Schulte, Die schlesischen Niederlassungen der Herrnhuter Brüdergemeine Gnadenberg, Gnadenfeld und Gnadenfrei. Beispiele einer religiös geprägten Siedlungsform im Wandel der Zeit, Insingen 2008, 31–32.

83 Printed transcription in: Joseph Theodor Müller, Zinzendorf als Erneuerer der alten Brüderkirche (orig. 1900), in: Erich Beyreuther (ed.), Erster Sammelband über Zinzendorf (Nikolaus Ludwig von Zinzendorf, Materialien und Dokumente / Reihe 2:, Nikolaus Ludwig Graf von Zinzendorf, Leben und Werk in Quellen und Darstellungen, vol. 12), Hildesheim/New York 1975, 1–124, 62–64; online transcription: http://herrnhut.blogspot.co.at/2009/04/die-statuten-von-1727.html (last visited in May 2019).

84 Deutscher Historischer Städteatlas 3, Tafel 1: Grundriss 1769 und 1858; ibid., Tafel 4a: Topographische Entwicklung, Bebauung 1722 bis 1858.

ture was far more varied than Eisenheim's and included many middle-class families, almost all households still retained their own gardens and their additional garden plots in 1858, suggesting that subsistence gardening still played a role in their economies. While the sources consulted for this essay allow no conclusions regarding community building through gardening activities, it can be noted that the spiritual concept of community within the Moravian Church is steeped in agricultural symbolism. Easter liturgy as the most important celebration of the year assembles the whole community at sunrise at the cemetery or *Gottesacker* ("God's acre"), which features prominently in the topography of all settlements.[85]

A later example for a Moravian Church community would be Königsfeld in Württemberg, which was founded in 1806. The Moravian Church purchased an entire farm comprising 69 hectares of meadows, arable land, woods, a pond, buildings, and cattle. In comparison to Eisenheim, this was a large property.[86] All land remained in the hands of the church, while the family homes were mostly privately owned. Although the population was far more middle-class than that of Eisenheim, consisting predominantly of artisans and shopkeepers, subsistence farming and gardening were important. Not only were there kitchen gardens for every family, but during Königsfeld's early decades, the central square in front of the church was devoted to vegetable gardens, fruit trees, a cistern that served as the settlement's only source of drinking water as well as being used to breed edible fish, and a lawn for laundry-bleaching. Directly behind the church lay the barns and fields of the "choir" of unmarried women, who generated a considerable part of their collective income through agriculture until the end of the nineteenth century.

Around the same time that Königsfeld's unmarried women gave up farming, a group of Berlin vegetarians founded the settlement *Vegetarische Obstbau-Kolonie Eden* on the outskirts of Oranienburg.[87] Drawing on Tolstoian, *Lebensreform*, and land-reform ideas, Edeners saw vegetarianism, which at the time often resembled what would be called veganism today,[88]

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85 Schulte, Die schlesischen Niederlassungen, 39–41.

86 Brüdergemeinearchiv Königsfeld, Gründungsverträge, Purchase contract between the Moravian Church and the farmer Jacob Lehman, 10 Nov. 1804; Wolfgang Rockenschuh, Königsfeld: Beiträge zur Geschichte, Königsfeld 1999, 12–36.

87 The word "vegetarian" in the settlement's name was dropped in 1901 when the association decided to admit non-vegetarian members as well. In 1920, the name was changed to "Obstbausiedlung". On Eden today, see http://www.eden-eg.de/ (last visited in May 2019); Astrid Segert/Irene Zierke (eds.), Organisationsstrukturen und ökologisches Alltagsverhalten. Die Gemeinnützige Obstbau-Siedlung Eden eG als Fallbeispiel für nachhaltig orientierte Genossenschaften, Potsdam et al. 2000. For historical accounts, see also Christian Böttger, Zum Leben in den genossenschaftlichen Siedlungen "Eden" und "Falkenberg" von Beginn ihres Bestehens bis 1933. Eine vergleichende volkskundliche Untersuchung der Lebensweise und Kultur von Bewohnern zweier Siedlungen im Berliner Raum, Berlin 1993; Grit Marx, Der ökologische Gartenbau in der Obstbausiedlung Eden von den Anfängen bis zur Gegenwart, unprinted master's thesis, HU Berlin 1998; Heide Hoffmann/Grit Marx, Die Entwicklung des Ökologischen Gartenbaus in der Obstbausiedlung Eden, in: Heide Hoffmann/Susann Müller (eds.), Vom Rand zur Mitte. Beiträge zur 5. Wissenschaftstagung zum Ökologischen Landbau, Berlin 1999, 345–349; Hermann Kaienburg, Der Traum vom Garten Eden. Die Gartenbausiedlung Eden in Oranienburg als alternative Wirtschafts- und Lebensgemeinschaft, in: Zeitschrift für Geschichtswissenschaft 52/12 (2004), 1077–1090; Joachim Scholz, Haben wir die Jugend, so haben wir die Zukunft. Die Obstbausiedlung Eden/Oranienburg als alternatives Gesellschafts- und Erziehungsmodell (1893–1926), Berlin 2002.

88 For instance, many of the dietary plans in the German *Vegetarierbund*'s journal were completely vegan; others contained milk and butter as their only animal products: Vegetarische Warte. Zeitschrift für naturgemäße Lebensweise und Gesundheitspflege 32 (1899), 8–9, 44. At least during its first years, the Eden grocery shop seems to have stocked plant-based products only: Eden Archiv (Oranienburg), Mappe Regeno-Raiffeisen,

as a healthy and "natural", but also ascetic lifestyle that required them to give up "shallow" entertainment, luxurious clothing, coffee, alcohol, and smoking. This would lead to a nobler human condition ("wahrem und edlem Menschentume")[89] while also saving money. By combining gardening and the cultivation of fruit trees with a frugal lifestyle and co-operative self-organisation, early Eden inhabitants sought economic self-help, while at the same time aiming at creating a model for social reform.[90] Eden assembled workers, artisans, urban professionals, and intellectuals, and among them a broad range of political convictions, from socialists like Franz Oppenheimer to adherents of land or monetary reform like Silvio Gesell and proponents of racist, eugenic, and *völkisch* notions like Gustav Simons.[91]

On 12 July 1893, the Eden association had bought 160 *Morgen* (40 hectares) of land at the comparatively cheap price of 225 Marks per *Morgen*.[92] Following the merchant Bruno Wilhelmi's plan,[93] the greater part of the land was divided into 85 parcels of about 2,800 m^2 each for homesteads (*Heimstätten*), the rest retained for collective use.[94] Tenancy leases forbade all commercial activities connected to meat production or sale, but allowed the keeping of dairy animals (probably mostly goats) and poultry.[95] More land was bought in 1905 and 1907, bringing the total to around 55 hectares; by then, far smaller homesteads (starting at 800 m^2) were also being offered.[96] All homesteads were leased from the association via *Erbpacht* or *Erbbaurecht* contracts;[97] to make them affordable even for the "poorest" tenants, the deposit of 500 Marks (in 1893) could be paid in rates as low as 1 Mark per week. Gardening and fruit

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nos. 35 and 36: price sheet of the *Konsum-Verein und Versandabteilung* for November 1894. One of the reform food products produced in Eden from 1908 onwards was a margarine consisting purely of vegetable oils (*Eden Reform Butter*). On the German vegetarian movement of the time, see Judith Baumgartner, Vegetarismus, in: Diethart Kerbs/Jürgen Reulecke (eds.), Handbuch der deutschen Reformbewegungen 1880–1933, Wuppertal 1998, 127–139.

89 Eden Archiv (Oranienburg), Mappe Regeno-Raiffeisen, no. 1: "Die Ziele der Vegetarischen Obstbau-Kolonie Eden (e.G.m.b.H.) zu Oranienburg" (handwritten, without author and date).

90 The wide range of occupations can be seen in the early membership lists, which also included several women as members of the association, although never in leading positions: Eden Archiv (Oranienburg), Mappe Regeno-Raiffeisen, nos. 3, 4, 25. In his draft for an application for a state loan to build houses, a representative of Eden (probably Bruno Wilhelmi) argued that the diversity of educational backgrounds of the members would help to bridge the gap between social classes and contribute to efforts at popular education: ibid., no. 31, written on the back side of a 1894 advertisement.

91 On *völkisch* ideas as well as on ideological diversity within Eden, which also housed socialists, pacifists, and anarchists until 1933, see Ulrich Linse, Völkisch-rassische Siedlungen der Lebensreform, in: Uwe Puschner et al. (eds.), Handbuch zur "Völkischen Bewegung" 1871–1918, Munich et al. 1996, 397–411, 398–401.

92 Karl Bartes et al., Die Obstbausiedelung Eden, eingetragene Genossenschaft mbH in Oranienburg in den ersten 25 Jahren ihres Bestehens, Oranienburg 1920, 4.

93 Wilhelmi advertised for his idea of founding a fruit-growing co-operative: Bruno Wilhelmi, Aufforderung und Plan zur Gründung einer Obstbau-Kolonie zu Berlin, in: Vegetarische Rundschau 13/5 (1893), 141–142 (quoted in Böttger, Leben, 140–141).

94 Böttger, Leben, 43.

95 Ibid., 71; goats grazing on Eden's sodded paths are mentioned in Otto Willkommen, Bodenwirtschaft in Eden, in: Bartes et al., Obstbausiedelung, 47–54, 49; for details of leasing contracts, see Böttger, Leben, Anlage 3 and Edener Mitteilungen 28/5–6 (1933), 110–111.

96 Böttger, Leben, 70. Today, Eden covers around 120 hectares: Marx, Gartenbau, 22.

97 *Erbpacht* 1893–1906 and 1919–1923; *Erbbaurecht* 1906–1919 and after 1923. The main difference was that under the latter, privately owned houses could not be claimed by creditors in case of the association's bankruptcy: Böttger, Leben, 70; Otto Jackisch, Zur Einführung des Erbbaurechtes an Stelle des Erbpachtverhältnisses in "Eden", in: Edener Mitteilungen 1/1 (1906), 2–9.

growing on the homesteads was obligatory, and failure to do so could lead to expulsion.[98] These property and land-use regulations were intended to secure Eden's green spaces in spite of ongoing nearby city growth, and in fact successfully did so.

The site had been selected for its affordability and proximity to Berlin, but against the advice of professional gardener August Hanke:[99] it was extremely sandy, poor in nutrients, and prone to night frosts late into the year. These adverse conditions nearly led to financial failure in the settlement's early years as the newly planted fruit trees did not produce the expected yield.[100] After extensive fertilisation and much learning by trial and error, however, revenues began to increase, especially when the Edeners began processing their surplus fruit in the early 1900s and marketing fruit preserves and other vegetarian products all across Germany.[101] In the 1890s, large quantities of mineral fertiliser (chalk, potash, ammonia, phosphate) were used in addition to Berlin street cleaning waste, Oranienburg sewage sludge, and "Hensel's Mineraldünger"; after a few years of this treatment, compost and green manure sufficed to maintain soil fertility.[102] In an interesting parallel to today's permaculture concept of the so-called food forest,[103] many of the Eden orchards employed a tiered system of higher and lower fruit trees interspersed with berry bushes and strawberries.[104]

Concerning Eden's once vibrant community life, its basic structure of single-family houses surrounded by private gardens and high hedges has been cited as one reason for the loosening of community ties since the 1950s,[105] when the co-operative businesses as well as many of the former collective leisure activities ceased to provide constant opportunities of everyday interaction.

The final example to be cited here is the women's school settlement of Loheland in the Rhön mountains near Fulda in Hesse. The location was rural, but Loheland's connections to avantgarde urbanity were strong: teachers and students came predominantly from urban middle-class families. The students were young women who received training as professional gymnastics teachers as well as an artistic education and an introduction to farming and gardening during their two-year curriculum at Loheland. The project's realisation with hardly any starting capital succeeded only thanks to the founders' ability to negotiate their urban networks in order to mobilise investors and tap markets for their artisanal products, which equalled those of the contemporary *Bauhaus* schools in terms of their modernity and

98 Wilhelm Schröder/Paul Schirrmeister/Friedrich Zerndt, Obstbaukolonie Eden, in: Vegetarische Warte 30/10 (1897), 272–273; Bartes et al., Obstbausiedelung, 52–53.

99 Marx, Gartenbau, 22.

100 Böttger, Leben, 83–87; Marx, Gartenbau; Willkommen, Bodenwirtschaft. Detailed accounts of the association's returns were regularly published in the *Vegetarische Warte*.

101 Segert/Zierke, Organisationsstrukturen, 12.

102 Marx, Gartenbau, 29. The founding members had initially placed great hope in "Hensel's Mineraldünger", a brand of stone meal developed by Julius Hensel, since they wanted to avoid animal manure (Archiv Eden, Mappe Regeno-Raiffeisen, no. 6, invitation to the founding meeting on 28 May 1893). The product was soon abandoned due to its lack of certifiable benefit, however: Marx, Gartenbau, 29. On comparable fertilising practices in Germany around 1900, see ibid., 13–17.

103 Mollison, Handbuch, 77–79; https://permacultureapprentice.com/creating-a-food-forest-step-by-step-guide/ (last visited in May 2019).

104 Willkommen, Bodenwirtschaft, 49. On a historical plantation plan displayed in the Eden archive's permanent exhibition, this system is called "Baumquartiere mit Beerenzwischenpflanzungen Werder'scher Art", referring to the traditional fruit-growing town of Werder in Brandenburg.

105 Segert/Zierke, Organisationsstrukturen, 67, 165.

quality. Gardening and agriculture were integral parts of the Loheland pedagogical concept and curriculum and were declared as such in the association's statutes.[106]

On 30 May 1919, Luise Langgaard and Hedwig von Rohden bought around 45 hectares of land (heather, woods, and arable) in the name of their association *Bund für klassische Gymnastik* (later *Lohelandbund*) from the farmer Ludwig Homburg[107] by way of a mortgage loan (a scheme that remotely resembled the one promoted by Howard).[108] A report by the agronomist Albert Sviering reached them only after the contract was signed.[109] In it, Sviering had denounced their yield expectations for the property (in terms of rye, potatoes, vegetables, and firewood) as unrealistic and soil quality in the region as inferior. In the following years they bought more land, bringing the property to a size of 54 hectares.[110] Subsistence production of food was integral for feeding the school in the postwar years, although similarly to experiences in Eden, the founders of Loheland also required several years of learning and experimentation before their agricultural aspirations could be fully realised.

By the 1920s, Loheland housed cows, chickens, turkeys, workhorses, and pigs.[111] In 1927, all gardens and fields were converted to biodynamic farming methods except for two plots which were cultivated conventionally for comparative purposes. Led by Loheland gardener Marie Lohrmann, systematic experiments to develop biodynamic farming further were conducted; some of their results were published, thereby making Lohelanders join the ranks of organic farming pioneers.[112] Many methods that are still prominent in discussions of ecologically sustainable agriculture today were utilised and experimented on in Loheland: from green manuring with lupines, composting, and cold frames to beekeeping and extensive efforts at bird protection – in 1928 alone, 150 nesting holes for starlings and chickadees were installed.[113]

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106 On the economic development of Loheland see Ines Peper, "Wir, jeder Einzelne von uns, sind der Bund". Zur Gemeinwohlorientierung der Loheländer Wirtschaftsweise in den beiden Anfangsjahrzehnten, in: Ines Peper/Iris Kunze/Elisabeth Mollenhauer-Klüber (eds.), Jenseits von Wachstum und Nutzenmaximierung: Modelle für eine gemeinwohlorientierte Wirtschaft, Bielefeld 2019, 109–134. On the role of gardening and agriculture for Loheland's pedagogical concept see Anja Christinck/Thomas van Elsen (eds.), Bildungswerkstatt Pädagogik und Landwirtschaft, Conference Documentation, 25–26 Oct. 2008, Künzel 2009.

107 Archiv der Loheland-Stiftung (Loheland), Ordner "Unterlagen aus dem wirtschaftlichen Werdegang": purchase contract, dated 30 May 1919 (copy); ibid., "Kreis Fulda Handzeichnung nach der Katasterkarte von einem Teile der Gemarkungen Dassen, Dirlos und Pilgerzell", dated Fulda, 3 May 1921: cadastral plan (the site is marked "Bund für Klassische Gymnastik e.V. in Berlin").

108 "Der Gesamtkaufpreis ist auf dem Grundstück als Hypothek eingetragen"; Archiv der Loheland-Stiftung, D-1-1 15: Prospectus of the "Loheland Schule für Körperbildung, Landbau und Handwerk", Fulda 1920, 14.

109 Archiv der Loheland-Stiftung, Bauakte, Gutachten Albert Sviering, 14 July 1919 (copy).

110 http://www.loheland.de/index.php?id=loheland-archiv-geschichte&L=1Maren (last visited in May 2019).

111 Drei Frauen – drei Geschichten. Perspektiven auf die frühe Siedlungsgemeinschaft Loheland. Herta Dettmar-Kohl, Imme Heiner und Elisabeth Hertling erzählen, Fulda 2012, 177–178.

112 Marie Lohrmann, Mondphasenversuche mit Kopfsalat, in: Demeter 6/1 (1931), 3–6. On Loheland's role as a pioneer for organic farming, see Heide Inhetveen et al., Loheland – lebensreformerische Fraueninitiative und ökologische Forschungsstätte, in: Jürgen Heß/Gerold Rahmann (eds.), Ende der Nische. Beiträge zur 8. Wissenschaftstagung Ökologischer Landbau, Kassel 2005, 427–428; Heide Inhetveen et al., Pionierinnen des Ökologischen Landbaus. Herausforderungen für Geschichte und Wissenschaft, in: Bernhard Freyer (ed.), Ökologischer Landbau der Zukunft. Beiträge zur 7. Wissenschaftstagung Ökologischer Landbau, Vienna 2003, 427–430.

113 Archiv der Loheland-Stiftung, Gartenarchiv: Anonymous [probably Maria Lohrmann], Jahresbericht 1928 über Versuche nach biologisch-dynamischen Wirtschaftsmethoden in der Gärtnerei Loheland (photocopy

Loheland's open spatial structure without any private gardens has been cited as beneficial for the settlement's atmosphere and its concept of integrating community and landscape.[114]

Conclusion

Urban gardening in nineteenth-century Eisenheim fulfilled several of the aspirations connected to urban gardening today: Eisenheim's working-class residents were able to improve their level of food security as well as the quality of their diets through subsistence gardening and the keeping of livestock like pigs, chickens, ducks, goats, sheep, or geese. While the provision of gardening land and barns was initially reserved for higher-ranking workers and their families, the Gutehoffnungshütte soon offered these facilities to all residents in order to stabilise its workforce. All evidence shows that access to these "resources of subsistence labour" was highly valued by the workers. The high relevance of subsistence agriculture for improving the inhabitants' food security was also evident in all other settlements presented in this paper, regardless of whether the respective founders considered subsistence gardening an obvious part of everyday life (as in Herrnhut and Königsfeld) or a means of social reform (as in Eden and Loheland).

In Eisenheim, centralised landownership by the company kept the land and buildings off the real-estate market for over a century and preserved the original layout and architecture as well as the intended land-use regime until the 1970s; then the settlement was protected by the residents themselves and broader civil society engagement until it was finally declared a protected monument by state authorities. In Herrnhut, access to land and a stable land-use regime were first achieved through the traditional legal regulations between manorial landlord and village, then through collective ownership of all land by the Moravian Church, as was the case in Königsfeld. Eden and Loheland organised collective landownership through co-operative associations which ensured the communities' intended land-use regimes by way of detailed regulations in their statutes. It is noteworthy that in all four cases the longevity of their land-use regimes was neither based on private nor public landownership, but on institutions for collective action.

Systematic sociological research conducted in Eisenheim in the 1970s has highlighted the settlement's interweaving of public, semi-public, and private spaces, and the important role of outdoor subsistence activities like gardening and DIY crafts as fundamental for maintaining and strengthening community ties. This line of research still seems highly relevant today since community building has become one of the foremost aims of urban gardening initiatives and theory. For the other settlements discussed in this paper, only anecdotal evidence for a similar interrelatedness of spatial organisation and social relations exists; this, however, seems to fit well with the Eisenheim findings.

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of a typewritten text), 1, 4 on bird protection, 1–13 on fertilizing methods and yields. I thank Elisabeth Mollenhauer-Klüber for the information that this text was also published as: Mitteilungen des Landwirtschaftlichen Versuchsringes der Anthroposophischen Gesellschaft 4/2 (1929). Early photographs in the Archiv der Loheland-Stiftung, Gartenarchiv, show the utilization of cold frames.

114 Elisabeth Mollenhauer-Klüber, Freiraum Loheland, in: maybrief 47 (2017), 33–35, 33.

Due to their rural origins, agricultural knowledge and skills were no issue for Eisenheim's residents, who also seem to have been entirely trusted by the Gutehoffnungshütte to make good use of the land. The same was true for Herrnhut and Königsfeld, while the founders and early inhabitants of Eden and Loheland reported rather steep learning curves in their first agricultural efforts, as many of them had not acquired these skills in their urban and often middle-class prior lives. Yet (and perhaps not surprisingly) they approached gardening with far higher expectations of its potential for social reform, often already intensely discussing topics that continue to play an important role in today's gardening discourses: nutrient cycles, composting, green manure and other aspects of soil health, beekeeping and bird protection as ecological measures, (a traditional form of) forest gardens, cold frames, organic agriculture, and more.