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9 Physical and social engineering in the Dutch polders: the case of the Noordoostpolder

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Introduction

On 14 June 2018, exactly 100 years had passed since the *Zuiderzeewet* (Southern Sea Act) was enacted. In this act, it was agreed that the Zuiderzee (Southern Sea), a large shallow inlet of the North Sea in the centre of the Netherlands, would be enclosed by a barrier dam and would be partially reclaimed at the expense of the Dutch state (Constandse 1976). Between then and now, 1,650 km² of new land has been planned and developed in the context of this so-called *Zuiderzee project*. The project consisted of the drainage of the *Wieringermeerpolder* (1930), the completion of the *Afsluitdijk* (Barrier Dam) in 1932 and the related creation of the sweet water lake *IJsselmeer* (Lake IJssel), the drainage of the *Noordoostpolder* (1942) and the polders of *Oostelijk Flevoland* (1957) and *Zuidelijk Flevoland* (1968). The planned polder *Markerwaard* was never drained.

The Zuiderzee project is an outstanding example of the centuries-old tradition of land reclamation from coastal tidal waters, inland lakes and marshes for which the Netherlands is famous. The Netherlands also has a long history of comprehensive planning and landscape design. In the twentieth century, both traditions culminated in the largest national planning project in the Netherlands. It is not only the size but especially the extremely strong influence of the national government in both the reclamation and the design of this new land that makes the Zuiderzee project extraordinary.

The plans for and implementation of the partial reclamation of the Zuiderzee coincided with the development of the social sciences in the Netherlands. In the interbellum, “emerging scholarly disciplines, such as rural sociology, agricultural economics and spatial planning took a central role in defining problems and solutions and setting the political agenda, thus contributing to a ‘scientisation of the social’” (Van de Grift 2017, p. 108). Spatial planning was increasingly preceded by extensive surveys. The Zuiderzee project opened new opportunities for designing a society based on “planning blueprints” that were developed in advance (Van der Cammen et al. 2012). According to Constandse (1960), a government has

three instruments for developing a new region: physical planning, colonisation politics (measures to organise the admission of settlers to the area) and cultural policy (measures to influence community life in the area). In the Zuiderzee project, especially in the Noordoostpolder, all three instruments were used to their maximum extent.

Because of the staged development of the Zuiderzee project, the planning process for each polder was evaluated by social scientists and improved, refined and adapted to observed societal changes and implemented in the next polder. In the first two polders, the Wieringermeer and Noordoostpolder, the aim was to create a modern agricultural production area and a rural society based on scientific principles and according to the best traditions of Dutch engineering and planning. In Oostelijk Flevoland and especially Zuidelijk Flevoland, the focus shifted gradually from a predominance of agriculture towards urban development and the creation of natural and recreational areas as well (Van Hulst 1969).

This chapter provides an overview of the Zuiderzee project and specifically describes the design and development of the Noordoostpolder. The Noordoostpolder is chosen as a case study, because modernist, top-down, blueprint planning reached its climax here. As a result, the Noordoostpolder is considered to be the most artificial agricultural landscape in the Netherlands (Figure 9.1). Also, the social environment was designed according to science-based selection procedures of the first



Figure 9.1 Aerial photograph of the landscape of the Noordoostpolder.

Source: Marco van Middelkoop/Aerophoto-Schiphol

inhabitants. The chapter also evaluates and reflects on the design and development of the Noordoostpolder. In doing so, we discuss whether the Dutch planners succeeded in designing an optimal agricultural production area and a well-ordered and aesthetically pleasant social environment, which is what they aimed for. Finally, we conclude the chapter by making a plea that the time is ripe to do more than to reflect. We contend that this very large and extraordinary Zuiderzee project deserves much more (inter) national recognition.

History and context of the Zuiderzee project

The Zuiderzee project fits very well into the history and the image of the Netherlands as a “self-made land”, a country shaping and protecting land from the forces of nature, especially the “water wolf” (Van de Ven 2004). The northern and western parts of the Netherlands are flat, low-lying deltas, making the land vulnerable to flooding by rivers and the sea. The Dutch struggle against the sea started with the building of earthen dwelling mounds in the northern Netherlands from 500 BC. Since 1000 AD, dykes have been constructed to protect the land from flooding and to drain and reclaim some of the lost land (Hoeksema 2007). In the sixteenth century, relatively large areas were flooded and lost because of postglacial sea level rise, followed by an increase in land reclamation.

Hoeksema (2007) distinguishes three stages in the history of Dutch land reclamation. The first stage is the drainage and reclamation of several lakes north of Amsterdam, in the sixteenth and seventeenth centuries. Urban merchants set up these projects as a capital investment. Windmills were used to pump the water out of the lakes. This resulted in polders with a rational system of orthogonal parcels of land, of which the *Beemster* polder (7,000 hectares), reclaimed in 1612, is the most famous (Constandse 1972). The second stage was the drainage of Lake Haarlem (or the *Haarlemmermeer*) near Amsterdam, of 18,000 ha in 1852. This differed from the reclamations in the first stage in the large size of the lake, the use of steam power to drain it and the fact that this reclamation was a public works project (Hoeksema 2007; Van de Grift 2013). The third stage was the twentieth century closure and partial reclamation of the Zuiderzee.

Although the first plans for the reclamation of the Zuiderzee were made in the seventeenth century, the technology to achieve it and agreement on the usefulness and necessity of this project did not occur until the end of the nineteenth century. In 1886, the Zuiderzee Association was founded in order to promote the enclosure and reclamation of the Zuiderzee. Around the year 1900, several plans circulated in the Netherlands. One of them was by the civil engineer Cornelis Lely who was commissioned by the Zuiderzee Association (Van Hulst 1969; Van de Ven 2004).

The plans for the Zuiderzee project were highly contested (Hakkenes 2017). Opponents of the project were found in the circles of fisheries and politics.

The proponents, mainly the liberal elite united in the Zuiderzee Association, did not only seek to increase safety but also sought an increase in the amount of agricultural land in order to foster the national economy (Van Hulten 1969). They also raised the argument of restoring the internal cohesion of Dutch society that was supposed to have been deeply divided by “pillarisation”, a segmentation of the society along religious and political lines (De Pater 2011). Moreover, they claimed that the project would improve the position of the Netherlands in Europe. In their opinion, the Zuiderzee was a nationalistic project and as such a part of a “national environmental ideology” (De Pater 2011). Although the foundation for such an ideology lay in the “struggle against the water”, this was in certain respects an “invented tradition” (Knippenberg 1997). “The struggle against the water did not shape Dutch national identity, but it became a symbol of the Dutch nation” (Knippenberg 1997, p. 38).

Planning projects such as the Zuiderzee project fitted very well into the international *Zeitgeist* of the interwar period (Van de Grift 2015). In Europe, “hydraulic politics” (De Pater 2011), the linking of major hydraulic projects to nationalistic ambitions, was quite common at that time. Many governments initiated environmental projects as symbols of modernisation and unification (Renes and Piastra 2011). Dutch planners were well informed about colonisation projects elsewhere in the world (Takes 1948; Renes and Piastra 2011). Although the Zuiderzee project was presented as “Holland’s war with the sea” (Figure 9.2), the Dutch liberal elite wanted to show the world how to expand their national territory in a peaceful way (Knippenberg 1997) by “internal colonisation” (Van de Grift 2013, 2015, 2017). The reclamation of the Zuiderzee therefore became an object of national pride, attractive to the whole nation and a useful symbol of the Dutch national identity.

Two incidents contributed to the final acceptance of the plan. In 1916, a storm flood showed once more how dangerous the Zuiderzee was, while the First World War made clear how important national food production was. It was a proposal by the civil engineer, Lely, that formed the basis for the actual Zuiderzee project (Figure 9.3). Lely, at that time, was Minister of Water Management in the national government. The act for the Zuiderzee project was piloted through parliament by Lely in 1918. The plan was founded on four objectives: the shortening of the coastline by 270 km to increase safety and to decrease the costs of dyke maintenance; the reclamation of fertile land to enlarge the agricultural area and increase national food production; the improvement of water control and the provision of a better connection between the urban west and the rural north of the Netherlands (Constandse et al. 1982). The execution of the plan started in 1927.

The case of the Noordoostpolder

The Noordoostpolder is the second of the four polders that were reclaimed in the Zuiderzee project and the last in which the creation of a modern agricultural production area and rural society was the main, and indeed the only, goal.

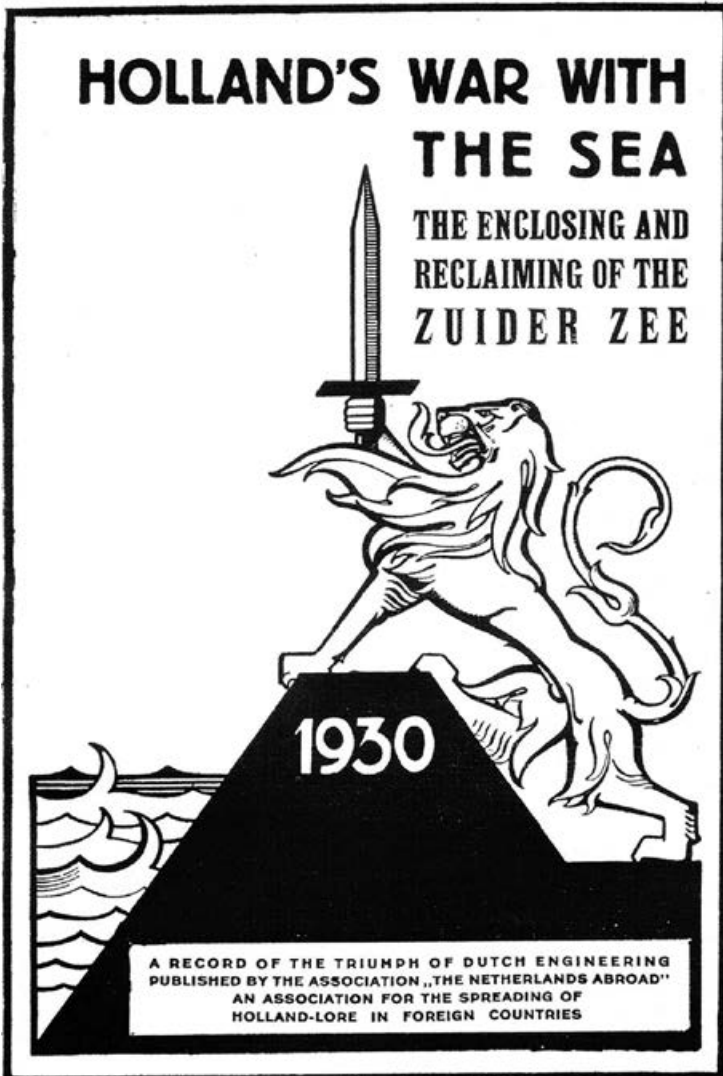


Figure 9.2 Pamphlet promoting Dutch engineering as a victory of the Dutch lion over the “arch enemy” (the sea) and as a symbol of national identity.

Source: De Pater 2011, Figure 2, originally published by The Netherlands Abroad, 1930

The principles used in the planning of the Noordoostpolder were the result of a learning process from experiences with older polder projects. Prevailing ideas for the design and colonisation of the first polder, the Wieringermeer, were based on a study on the experiences in the Haarlemmermeer polder by the human geographer Ter Veen (1925). In the Haarlemmermeer, the liberal government restricted its activities to drainage, leaving the development of

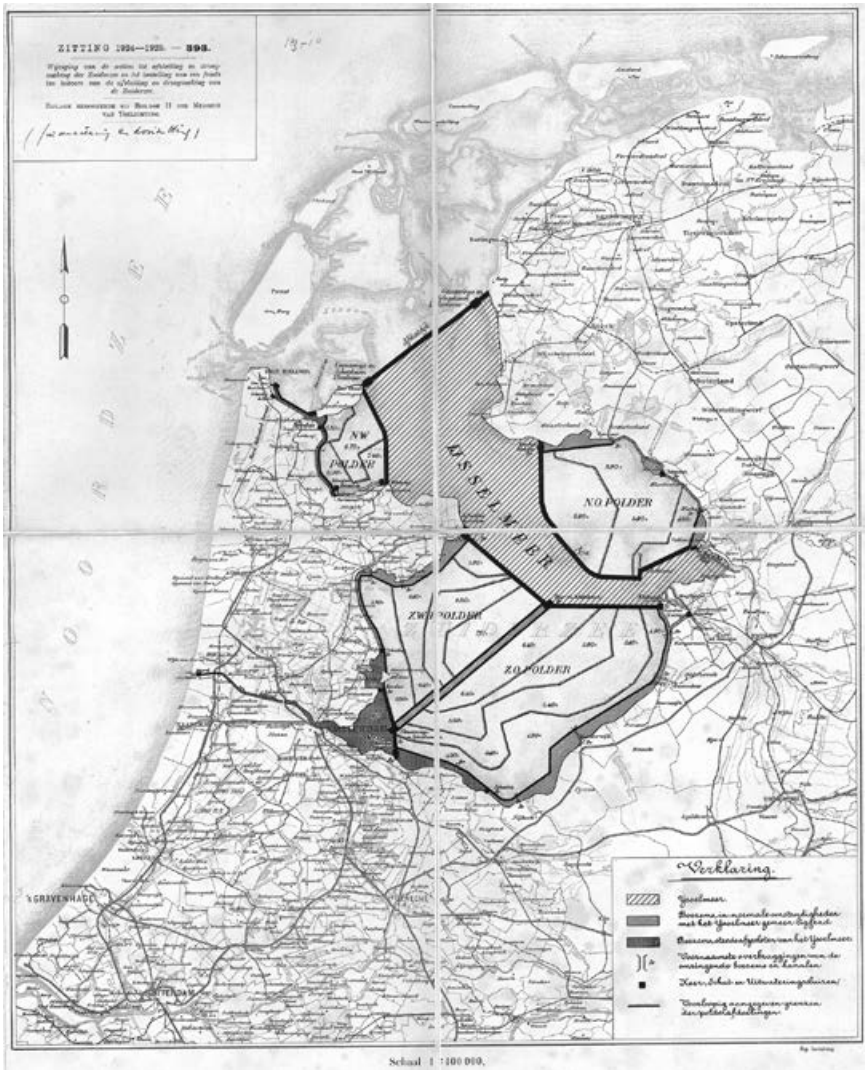


Figure 9.3 Map presenting the enclosure and partial reclamation of the Zuiderzee by a barrier dam (*Afsluitdijk*), the creation of a sweet water lake (*IJsselmeer*) and four polders: N.W. Polder (*Wieringermeer*), N.O. Polder (*Noordoostpolder*), Z.O. Polder (*Oostelijk en Zuidelijk Flevoland*) and Z.W. Polder (*Markerwaard*, cancelled). The map relates to an Act of Parliament adopted in 1925, which was a modification and financial reinforcement of the original Act of Parliament adopted in 1918.

Source: *Handelingen en bijlagen van de beide Kamers der Staten-Generaal 1924-1925*. Collection Batavialand, Lelystad

the polder to the market (Constandse 1972). Ter Veen evaluated the colonisation of the Haarlemmermeer polder as a waste of human energy and capital and was very influential in the discussions about the colonisation of the polders in the Zuiderzee project (Heinemeijer et al. 1986).

As in many European state projects in the interwar period (Van de Grift 2017), technological innovation was combined with social renewal. With the introduction of a special type of governance and new forms of top-down technocratic government interventions, “the state is building a new society” (Van de Grift 2017). Two government bodies were established to operationalise this new society: the *Dienst der Zuiderzeewerken* (Office of Zuiderzee Works), which was responsible for the technical aspects of the actual drainage of the polder areas, and the *Directie van de Wieringermeer* (Department of the Wieringermeer), which was responsible for the physical and social engineering of the area (Van Woensel 1999).

The physical and social planning of the Noordoostpolder reached new heights after 1945. Engineers, architects, spatial planners and social scientists became involved in the development of this polder. This period was characterised by a strong belief in progress that was based on an unshakable confidence in the empirical sciences (Van de Grift 2017). The plans for land allotment, settlement structures and the selection of new inhabitants were important subjects for this type of social research and social planning.

Physical engineering

In order to achieve the goal of “develop(ing) a prosperous and modern agricultural area” (Gort and Van Oostrom 1987), the first point of departure was to create an optimal land parcellation structure. In the Wieringermeer, standard parcels of 20 hectares were used to determine the pattern of farmsteads, roads and canals. A long-lease system was introduced through which the farmers obtained the right to use the land for a fixed price. It was felt that too many farm holdings of the same size (30–60 ha) had been created. This was seen as resulting in a shortage of farm labourers and a lack of a “natural hierarchy” in farm sizes.

In the Noordoostpolder, the land parcels were slightly larger than those in the Wieringermeer polder: 24 hectares. However, more variety in the size of farm holdings was achieved by two contesting developments. “On purely economic grounds, there was strong pressure for an increase in the size of the commercial unit: more machines, fewer people. On social grounds, there was a desire to keep this scale magnification within limits: there was a great demand for farming units, of the traditional type, and the smaller the holdings were made, the more families could be given an independent living. This led to a compromise under which the biggest holdings were to be 48 ha, the smallest 12 ha and the average 24 ha” (Constandse 1976, p. 8). Smaller farms were situated near the villages and larger farms were located further away, so that the majority of the population lived relatively close to the rural service centres.

Because of the previous experiences with parcellation plans and the more or less spontaneous development of settlements in the Haarlemmermeer and Wieringermeer, much more attention was given to the development of an appropriate settlement plan for the Noordoostpolder (Van Hulten 1969). The settlement plan of the Haarlemmermeer only emerged after the first spontaneous housing developments occurred. Ideas about differences in the numbers of inhabitants and functions among settlements were therefore the result of spontaneous development (Takes 1948). More attention was given to the settlement planning of the Wieringermeer. A settlement that was to be the seat of local government was planned in the middle of the polder. For the development of other potential settlements, 13 plots were reserved at distances of 4 km to 5 km from each other. However, villages only developed at three locations, while the originally planned main village proved to be less successful than one of the other villages (Van Hulten 1969).

The first version of the settlement plan of the Noordoostpolder was presented in 1938, two years before the drainage was completed. Changes were proposed in 1939 and during the Second World War, in 1942 and 1943. The final plan was presented in 1946. The debates and research reports about the plans and the subsequent changes were based on a diversity of arguments. However, three topics were central: expectations regarding the number of inhabitants, ideas about the proportion of people living within settlements and in the surrounding countryside (on farms and in small hamlets), and the expected mobility of the inhabitants (Takes 1948; Van Hulten 1969; Constandse 1972, Heinemeijer et al. 1986).

The Noordoostpolder was planned as an agricultural society similar to those of the existing, non-reclaimed rural parts of the country (often referred to as “the old land”, in contrast to the new, reclaimed land). The expectations of the numbers of inhabitants were strongly based on the expected agricultural employment levels, which in turn depended on the characteristics of the agricultural structure. Over the period from 1938 to 1946, pressure to accept smaller farms and more labour-intensive crops developed. The final plan also reflected an intensive debate over the best place to house farm labourers: relatively near the farms, and therefore in dispersed dwellings or in hamlets, or living with the nonagricultural population in the villages (Heinemeijer et al. 1986; Van Woensel 1999). The final choice – to concentrate most farm labourers in the villages – was, above all, based on financial considerations. However, houses for the so-called “first labourers” were planned near the farms, in small clusters of two to four dwellings. Assumptions about the mobility of the inhabitants were based on the situation at the time in comparable regions on the mainland.

One of the first decisions was to plan for a single regional centre with approximately 10,000 inhabitants. The remaining settlements were perceived as rural service centres, evenly distributed around the regional centre. Originally five, but later six, such settlements were planned at a distance of 7 km to 8 km from each other, based on the use of bicycles and cars (see [Figure 9.4](#)). After conducting surveys in several rural areas on “the old

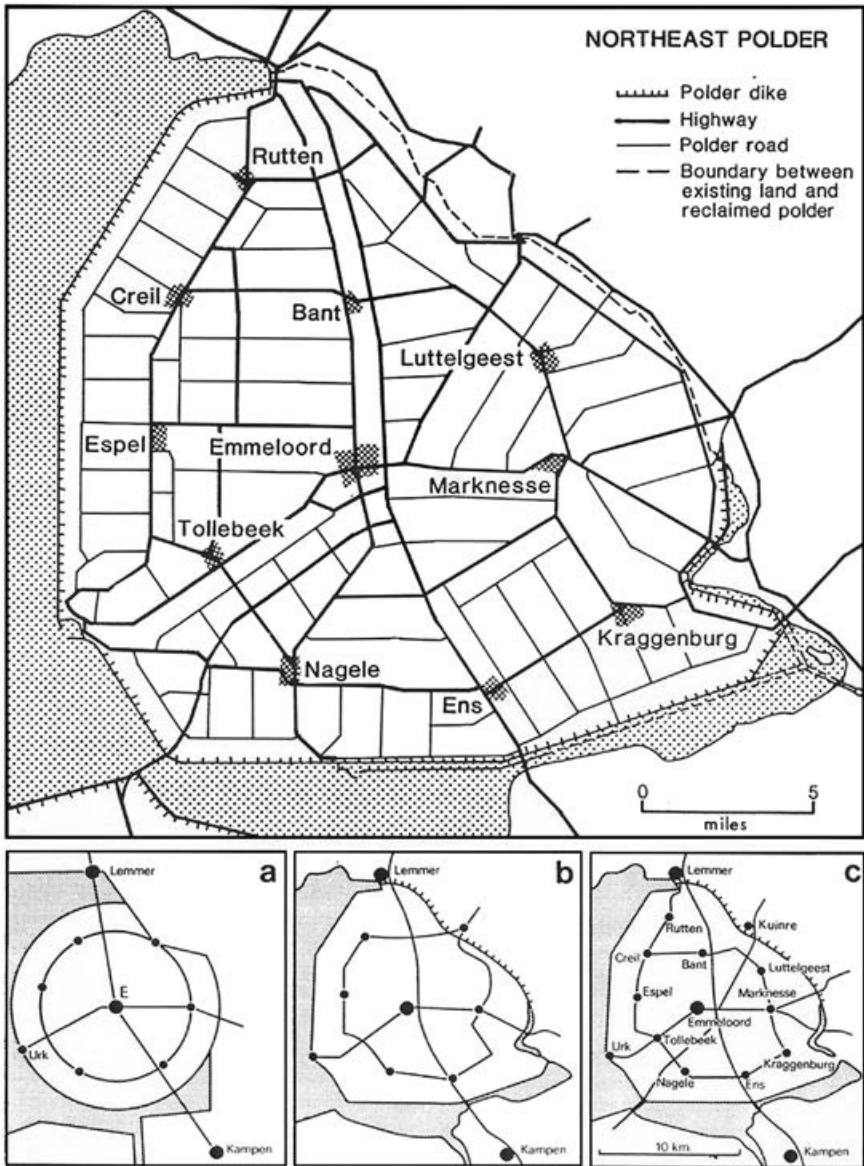


Figure 9.4 The settlements in the Northeast Polder (*Noordoostpolder*): the final settlement plan of 1946 (top) and the development of the settlement plan for the *Noordoostpolder* between 1938 and 1946 (a, b, and c).

Sources: De Bruin et al. 1991, Figure 1; Meijer 1981

land”, it was concluded that this distance was too large (Takes 1948; Van Woensel 1999). In the final plan of 1946, it was decided to build ten villages at a distance of 6 km centred around the regional centre and with the farms and houses for the “first labourers” dispersed throughout the rural area. Each of the villages was expected to house 2,000 inhabitants, while 20,000 inhabitants were expected to reside outside of the settlements, making a total of 50,000 polder inhabitants overall (Table 9.1).

The regular pattern of the Noordoostpolder settlement plan is sometimes presented (Van Hulten 1969; Van de Grift 2013) as an example of the application of the settlement theory of Walter Christaller (1933). However, there is no direct connection (Constandse 1986; Van der Wal 1997). Dutch geographers and planners probably were familiar with Christaller’s theories on central places, but the planners responsible for the Noordoostpolder settlement plans did not refer to Christaller’s publications (Constandse 1986; Van Woensel 1999). The debate about the required amount and type of facilities and services, such as churches and primary schools, was complicated by the political wish to have the major religious groups of the Netherlands proportionately represented in each of the new settlements (see “Reflection” section). As a result, each settlement had to build churches and schools in triplicate (Constandse 1986).

Social engineering

The planners of the Zuiderzee project did not only design the physical structure of the new polders, they also set requirements for the new residents. Again, Ter Veen’s evaluation of the experiences in the Haarlemmermeer functioned as the basis for this strategy. In the Haarlemmermeer, no attention was paid to the selection of inhabitants, the building of farmhouses or water drainage. According to Ter Veen, only the psychologically strongest, most innovative, rational, sober, materialistic and practical people managed to make a living in the new land of the Haarlemmermeer (Ter Veen 1925). He advised the responsible state organisations to avoid a “natural” selection of the inhabitants and instead to artificially organise this selection by the state to ensure that only the most skilful people would be given the opportunity to make a new living in the ideal societies that were to be created in the Zuiderzee polders. This was seen as a more humane and rational selection process that would increase the success rate of the project.

Ter Veen’s advice can be contextualised in the prevailing ideas on Social Darwinism and Eugenics that prevailed internationally in those days (Vriend 2012). This proposed artificial selection can also be referred to as “social engineering”: “scientifically founded attempts to govern and influence social behaviour” (Van de Grift 2017 p. 109). Although often associated with totalitarian regimes, social engineering can actually be understood as a characteristic feature of the modern, interventionist, liberal-democratic state as practised in different European countries from the period after the

Table 9.1 Population development of the Noordoostpolder: number of inhabitants of the regional centre, the ten villages and the surrounding countryside of the villages, according to the original plan and the development, 1970–2017

	<i>Number of Inhabitants in Original Settlement Plan</i>	<i>Number of Inhabitants</i>						<i>Indices</i>				
		1970	1981	1987	1995	2004	2017	1970-1981	1981-1987	1987-1995	1995-2004	2004-2017
Emmeloord <i>(as percentage of total population)</i>	10,000 20%	13,129 41%	19,342 52%	20,400 54%	21,830 55%	25,021 55%	25,711 55%	147	105	107	115	103
Luttelgeest	2,000	532	687	613	610	690	855	129	89	100	113	124
Marknesse	2,000	1,473	2,161	2,234	2,370	2,880	2,780	147	103	106	122	97
Kraggenburg	2,000	578	699	637	670	800	765	121	91	105	119	96
Ens (incl. Schokland)	2,000	1,410	1,586	1,646	1,770	2,230	2,145	112	104	108	126	96
Nagele	2,000	1,031	1,056	934	960	1,110	1,115	102	88	103	116	100
Tollebeek	2,000	513	571	588	720	1,160	1,850	111	103	122	161	159
Espel	2,000	561	763	684	680	720	820	136	90	99	106	114
Creil	2,000	590	746	637	640	860	1,060	126	85	100	134	123
Rutten	2,000	510	637	574	890	870	925	125	90	155	98	106
Bant	2,000	548	676	631	610	810	750	123	93	97	133	93
Total villages <i>(as percentage of total population)</i>	20,000 40%	7,746 24%	9,582 26%	9,178 24%	9,920 25%	12,130 27%	13,065 28%	124	96	108	122	108
<i>(variation coefficient or relative standard deviation of the number of inhabitants in ten villages)</i>	0,00	0,50	0,54	0,62	0,60	0,61	0,54					
Total surrounding countryside villages <i>(as percentage of total population)</i>	20,000 40%	11,129 35%	8,621 23%	8,151 22%	8,190 21%	8,412 18%	7,783 17%	77	95	100	103	93
Total Noordoostpolder	50,000	32,004	37,545	37,729	39,940	45,563	46,559	117	100	106	114	102

Source: De Bruin et al. 1991, table 1; Municipality Noordoostpolder; Statistics Netherlands

First World War until the beginning of the 1960s (Couperus et al. 2015). A key eugenic element of the suggested selection was the “biologist paradigm”: “the idea that the physical and mental qualities of individual farmers shape the quality of the community” (Van de Grift 2017, p. 125).

In the 1930s, a selection procedure was designed to optimise the colonisation of the Wieringermeer polder (Gort and Van Oostrom 1987; Van de Grift 2017). All those involved in the planning of the polder areas were convinced that the colonisation needed strong leadership (Vriend 2012). A separate section of the *Directie* (the state organisation responsible for the polder’s physical and social engineering) was in charge of selection, with director Lindenbergh taking an authoritarian lead. In the Wieringermeer, both future tenant farmers and agricultural workers were selected. The future tenants had to meet both economic and sociobiological selection criteria. The sociobiological criteria encompassed practical professional competence, agricultural education and experience and family composition. Candidates had to be younger than 45 years old, of good health and physically strong. Initially, small business operators in retailing were able to settle freely. The number of applicants for the Wieringermeer polder was not very large because of the economic crisis of the 1930s and the uncertain reputation of the new polder area (unknown and feared) (Gort and Van Oostrom 1987). Despite the relatively low number of applicants to choose from, in 1938, the colonisation procedures for the Wieringermeer were deemed to have been successful. Therefore, they could be used for the Noordoostpolder as well. In agricultural terms, the Wieringermeer polder distinguished itself in a positive way from the “old” agricultural areas. The settlers differed because of their self-confidence, entrepreneurial spirit, workability, endurance, strong vitality and down-to-earth rationalism (Van Heek 1938).

The selection procedure was refined in the post-war years to select new settlers for the Noordoostpolder (Van de Grift 2017). Because of the shortage of houses and the increased demand for agricultural products after the Second World War, the number of applicants for the Noordoostpolder outnumbered the amount of available farms. In the period 1947 to 1957, 1,480 agricultural and 200 horticultural farms were allotted in annual registration rounds. In total, approximately 22,000 applications to become a farmer on the new land were made by around 10,000 applicants. Although most unsuccessful applicants gave up after the first attempt, there was a small group who applied over and over again (Vriend 2012); 5,000 applications were made for agricultural worker positions and at least 2,000 for local retailing opportunities (Gort and Van Oostrom 1987).

Most selection criteria were similar to those for the Wieringermeer, but they were applied more strictly because of the greater popular interest in the Noordoostpolder. Minor tightening of already defined criteria included a narrower age limit (26 to 50 years) and more severe agricultural criteria: candidates needed agricultural knowledge and skills, main work experience in agriculture and the skills to run an agricultural enterprise in a modern

and rational way (Gort and Van Oostrom 1987). Furthermore, the criteria for financial capacity changed over the course of the selection period. It began at 1,000 guilders per hectare in 1947 and rose to 1,600 guilders per hectare by 1955.

A new requirement for the Noordoostpolder was that candidates needed to have a “pioneer spirit”, which was operationalised as being active in community organisations (e.g., church, school, village councils, sports clubs, agricultural organisations, etc.) and being able to adapt to new situations. This aspect of community development was given a key role in the Noordoostpolder (Van de Grift 2017). In relation to this, the capacities and enthusiasm of wives were also more closely checked in the selection procedure. A man was only thought to be capable of focussing on developing a modern farm and contributing to community development if his wife was very supportive. Therefore, candidate-farmers had to be married or to have plans to get married to a neat and flexible woman who could deal with living in a new land (Gort and Van Oostrom 1987).

For the implementation of the selection of settlers, Lindenbergh appointed and trained seven assessors who were capable of judging people and quickly estimating, from a conversation, whether or not a candidate was suitable for a life on the Noordoostpolder. Each application round was announced through advertisements in newspapers and agricultural magazines. People could get more information by asking for a prospectus and visiting one of the information days held on the polder itself. If they were interested, applicants had to fill out an extensive application form to show how they met all the selection criteria. They also had to include the names of four referees. The selectors requested information from the mayor of their place of residence and from the candidate’s agricultural organisation. When all personal files for one allotment round were complete, the first selection took place. After that, the qualified candidates were visited without notice at their homes by one of the selectors. The aim was to see how the candidates functioned in their daily lives. Both the farm and the household were inspected, and the candidate and his wife were interviewed. The information from the home visits was added to their personal files. After that, the final selection took place (Gort and Van Oostrom 1987). According to Vriend (2012), a short list of 5% to 10% of the total number of applicants were actually visited.

During the selection, the first assessment was of whether someone was suited to receive a farm. After that, the size of the farm and its location were determined on the basis of the observed qualities of the applicant and his wife (Gort and Van Oostrom 1987; Van de Grift 2017). Candidate-tenants of a 48-hectare farm had to meet higher requirements (more leadership, real pioneers) than 12-hectare candidates (hard working, docile, committed people).

The most difficult question to answer was whether or not the candidate had a pioneer spirit and was therefore suited to living in a new area where the local community had to be developed from scratch. Lindenbergh

explained (Vriend 2012, p. 42): “The technical information, such as age, finances, education, were easy to check. But the suitability of the candidate was the most difficult criterion. I had a clear idea of the type of persons I needed. However, it was difficult to judge if people were able to contribute to community development”. Nevertheless, and in retrospect, Lindenbergh admitted that the suitability of individual farmers to contribute to community building was, in the end, decisive in their selection (Wolffram 1994).

Reflection

Physical engineering

During the construction period of the settlements in the Noordoostpolder, from 1945 until 1962, it became clear that society, economy and agriculture were all undergoing impressive changes. The most significant was the transformation of the national economy from an agri-industrial to a service-led economy. Although the percentage of agricultural employment was already declining at a national level before the Second World War, the absolute number of people employed in agriculture in the Netherlands increased until 1947 but declined very fast in the 1950s because of mechanisation and rationalisation (Van Leeuwen et al. 2010). Employment growth in the tertiary and quaternary sector and the regionalisation of daily life because of the growing mobility of the Dutch population that characterised post-industrial society in the Netherlands began at the end of the 1960s (Van Engelsdorp Gastelaars and Ostendorf 1986).

For evaluation purposes, and in order to develop and adapt the plans for the next two polders, several studies became available in which the agricultural structure and the settlement plan of the Noordoostpolder were evaluated (Takes 1948; Van Hulten 1969; Constandse 1972; Hoekstra 1980; De Bruin et al. 1991). With regard to the agricultural structure, the average farm size very soon appeared to be too small for mechanised farming, and far fewer agricultural labourers were needed. Because of a shortage of land, most farmers started to intensify their cultivation by growing open field vegetables such as onions and carrots, instead of the traditional crops for which the polder had been planned (potatoes, sugar beets and grain) (Gort and Van Oostrom 1987). Despite this, Hoekstra (1980) concluded that the Noordoostpolder developed, up to the mid-1970s, as a prosperous, relatively independent agricultural region. However, regionalisation, with respect to migration, use of more distant service centres and more extensive commuting and marriage patterns soon became more important in this part of the Netherlands. The regional centre of Emmeloord developed as a service centre for the adjoining municipalities, while the inhabitants of the ten villages developed a stronger orientation towards Emmeloord and also Zwolle, the nearest urban centre on the mainland. At the same time, sociocultural differences between the Noordoostpolder and the mainland diminished. The relatively weak position

of the ten villages as rural service centres was also reflected in the lower attraction of these villages as places to live (Hoekstra 1980).

The ten villages showed a less than positive population progression (Table 9.1). Only two villages reached the intended number of 2,000 inhabitants; five never even reached 1,000 inhabitants. Instead, the regional centre of Emmeloord developed fast in absolute and relative terms. As in other rural regions in the Netherlands (Thissen 1995), the development of the settlements was the result of a concentration process caused by age selective migration patterns and a sharp decline in agricultural employment up to the 1980s (De Bruin et al. 1991). As a result, most villages in the Noordoostpolder experienced a decline in population in the 1980s. From the 1980s onwards, population changes in villages in Dutch rural areas became less dependent on local service functions and local employment, while the role of the residential function became more important (De Bruin et al. 1991; Thissen 1995). The relatively positive population development of these villages in the 1990s and the first decade of this century is the result of later ripples in the demographic development of the original, relatively homogeneous, young polder population (Van der Bie et al. 2012) and the popularity of these villages as residential environments during this period. More recently, demographic changes and a new wave of urbanisation (Bijker and Haartsen 2012) have resulted in age-selective outmigration, especially of young adults from the Noordoostpolder (Haartsen and Thissen 2014). It is clear that the planned villages have experienced a more diverse population influx than the planners had foreseen (as indicated by increasing indices of variation up to 1987; see Table 9.1). This can be explained by the sequence of their development (e.g., the earliest village of Marknesse became relatively large) but also by their relative location with reference to commuter and service centres on the mainland and differences in their attractiveness as residential environments.

A study by Takes in 1948 followed the “evaluation tradition” of analysis and sought to guide the design and colonisation of the next polder, Oostelijk Flevoland. At first, this polder was also intended to develop as an agricultural society. However, the focus changed as early as the 1950s (Constandse 1986). This is reflected in the land use designations of the last two polders. Instead of the expansion of agricultural land, other objectives gained in importance. The shortage of urban land for the enlargement of the Randstad-area in an outward direction became apparent (Van Hulten 1969). The number of settlements was strongly reduced in Oostelijk Flevoland, and it was suggested that the final polder, Zuidelijk Flevoland – if it continued to be planned as an agricultural polder – would not need a service centre at all.

Social engineering

In the period after the Second World War, the social engineering that took place in the Noordoostpolder was accepted as natural and not unique. Other examples in the 1930s were the recruitment procedures, including

home visits, for potential employees of the Dutch Lamp Factory Philips, and the selection procedures for farmers in villages such as Giethoorn. Of course, in the Noordoostpolder, the *Directie* itself continuously asked social scientists to evaluate whether the selection procedures were working as intended (Vriend 2012; Van de Grift 2017). These evaluations were also aimed at justifying the colonisation process. In 1952, De Blocq van Kuffeler concluded that the selection of both farmers and agricultural workers ensured an optimal yield from the agricultural land. According to him, the criteria that were used in order to achieve the overall goal of the Zuiderzee project were fully justified from a national economic perspective. The new land required people who were competent and suited to making these valuable state investments productive in the interests of the whole nation (Vriend 2012). In 1955, research into the societal roles of farmers in the Wieringermeer and the Noordoostpolder showed that the number and the importance of an individual's societal roles increased with farm size (Vriend 2012). Those selected for the larger farms did indeed take up pioneer roles in community development. So, the selection process had worked.

During the colonisation of the Noordoostpolder, some frictions arose between the *Directie*, which wanted to perform an optimal selection for the benefit of the new rural society, and the national government, which had a broader perspective. At the start of colonisation, the national government had demanded that the population of the Noordoostpolder had to have a similar mix of religion and geographical origin as did the Netherlands as a whole (Gort and Van Oostrom 1987). Also, the approximately 600 to 700 so-called pioneers and *polderworkers* who performed strenuous reclamation work during and after the Second World War had to be favoured. They had been promised farms in prospect but, once the allotment started, the *Directie* unexpectedly also demanded that they fulfil the selection criteria. Although the first two rounds of allotment (about 225 farms) were exclusively reserved for these pioneers, in the end only 54% of the pioneers and 30% of the *polderworkers* were granted a farm (Gort and Van Oostrom 1987; Vriend 2012). Another dispute related to the inhabitants of some communities in the surrounding regions. Their way of existence (fishing) was threatened by the creation of the new land. The national government felt that the *Directie* had to compensate these people by offering them new opportunities in the polder. But the *Directie* claimed that these people did not fit in with the requirements for the envisioned ideal polder society. They were considered to be backward, negative and suffering from psychological decline. The *Directie* refused to give them priority and suggested that they would be better off if they were sent to other parts of the Netherlands (Gort and Van Oostrom 1987).

Over the colonisation period, the national government urged the *Directie* to compensate groups of people who had been disadvantaged by developments in the countryside on “the old land” with a farm on the new land

(Constandse 1976). Examples included farmers who lost their land because of land consolidation or urbanisation and victims of the flooding in the province of Zeeland in 1953. The *Directie* was not in favour of this because these individuals were not always the most rational and innovative farmers, and the majority practised the Protestant religion. They would therefore disturb the desired religious balance.

Despite the general acceptance of the selection procedures, some criticism of them arose during the 1950s. These criticisms were especially expressed in the House of Representatives of the national parliament. One example was a motion submitted by Representative Engelbertink in 1951 that demanded more clarity on how the interests of different groups of candidate-tenants were taken into consideration. This move resulted in the installation of a committee of trusted representatives who had to double-check the selection procedures. Interestingly, the Director of the *Directie* became the chair of this committee, so the *Directie* kept control over these deliberations. Because the *Directie* was directly responsible to the relevant ministers, it could function relatively independently and sometimes without reference to wider society (Gort and Van Oostrom 1987).

In the 1960s and 1970s, following sociocultural changes in Dutch society, the selection procedures were criticised more strongly and, in the polders of Oostelijk Flevoland and Zuidelijk Flevoland, they were applied much less strictly. A complete description of the colonisation and selection procedure was provided by Gort and Van Oostrom in 1987. These authors, for the first time, also reflected on the perspectives and experiences of the people who had been selected. Much later, in 2012, Vriend published a historical novel on the selection of people for the new land that also included the painful stories of those that were not selected. Vriend (2012) discussed the selection procedure critically but managed to situate it very well within the timeframe of the interbellum and post-war period, characterised by the development of a strong welfare state and the need to provide housing, land and jobs in the context of a fast-growing population. Her conclusion was that the selection procedure was a suitable instrument that functioned well in this period of rational, modernist planning.

Conclusion

The Zuiderzee project is the largest and most extraordinary of all the national planning projects in the Netherlands. It is not only the size but especially the extremely strong influence of the national government in both the reclamation and the design of this new land that makes the Zuiderzee project special. It is an excellent example of the type of modernist blueprint planning that was popular from the 1930s to the end of the 1960s in that it followed the principle of “survey before planning” in order to create ideal societies (Van der Cammen et al. 2012). In the Noordoostpolder, this blueprint form of planning was at its peak. However, in retrospect, some scholars

now claim that the total Zuiderzee project can be considered a major example of adaptive process planning *avant la lettre* because, in each new polder, the plans were adapted to new circumstances (Constandse 1976; Van der Cammen et al. 2012). Following this line of reasoning, the Zuiderzee project was even more innovative given that adaptive process planning only developed during the 1970s.

In 2011, the Noordoostpolder was nominated to become a UNESCO World Heritage site because of its unique planning history. Despite the enthusiasm of the mayor of the municipality, hardly any local enthusiasm was apparent for this nomination. The local population was afraid that heritage status would limit the entrepreneurial spirit in the area. Given the very special history of the Noordoostpolder, we think that the time is ripe to restart such discussions. The year 2018 marked the 100th anniversary of the Zuiderzee project. Given this milestone, it seems appropriate to ask for more attention to be paid to the special story of the colonisation of the Noordoostpolder. Can it (still) be demonstrated that the state managed to create adaptive, strong communities through strict selection procedures? How entrepreneurial are the descendants of the selected pioneers? Are they aware that their ancestors were pioneers, and (how) do they identify with that? It would be a nice challenge to develop a UNESCO World Heritage Site that takes into consideration the pioneer and entrepreneurial spirit that forms the heart of the regional identity of the Noordoostpolder (Simon et al. 2009). In doing so, such a location may need to be more dynamically maintained than other UNESCO sites. This would acknowledge the extraordinary character of the Noordoostpolder and the Zuiderzee project and would give the project the (inter)national recognition that it deserves.

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