Individualised Public Health

A conceptual history of heredity in the Dutch interwar years

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Abstract

This thesis investigates how during the interwar years, Dutch eugenicists, anti-alcohol reformers and sanitary reformers employed the concept of heredity to define degeneration, alcoholism, and tuberculosis as social diseases in need of a collective response. Inspired by Reinhart Koselleck's conceptual history program, I examine how the explicit attempts to explain heredity in relation to these social problems interact with the Dutch interwar political culture. By means of a detailed analysis of textbooks and periodicals, as well as inaugural lectures, propaganda material, and specific dissertations, I identify four general trends in Dutch public health discourse centred around social diseases. (i) Throughout the interwar period, public health reformers came to agree that acquired characteristics were not inheritable and that environmental influences acting on the developing body could not alter the genetic blueprint. (ii) Dutch public health reformers increasingly employed heredity to discuss social diseases in relation to development instead of reproductive transmission. (iii) The strongly biologised Dutch interwar public health discourse went along with a big emphasis on environmental—and hence malleable—influences in the constitution of social diseases. (iv) Dutch public health reformers conceptualised the collective as a series of equal individuals. Revealing a focus on individual developmental health and a practical orientation towards improving the environment, I claim that this individualised public health discourse reflected and contributed to the Dutch egalitarian political culture during the interwar years, in which health was regarded as a private matter and collective solutions to social diseases were decentralised and organised bottom-up rather than top-down.

Front matter: Edited cover of *Tegen de Tuberculose* (1921). Illustration made by Albert Hahn Jr.

Contents

Preface

> Ik heb vanavond geen gemakkelijke boodschap voor u. De realiteit is, dat het coronavirus onder ons is en voorlopig ook onder ons zal blijven. Er is geen eenvoudige of snelle uitweg uit deze zeer moeilijke situatie. *(Dutch Prime Minister Mark Rutte, March 16th, 2020).*

I remember listening to these words from a Facebook live stream while I was taking a walk at Christ Church meadow. I had just finished the first draft of my thesis-chapter on eugenics and public health and was wrapping up my studies at the University of Oxford during Hilary term. Even though it was a beautiful evening, the Dutch prime minister's speech made the day feel rather gloomy. Rutte did not announce new measures in response to 'Corona' during his speech; the address was apparently meant as a symbolic gesture to mark the historical situation in which Europe found itself—and that the Netherlands was as much subject to the pandemic as every other country. In the following days, public officials clarified that the Netherlands had entered a state of 'intelligent lockdown'.

In a 'technical briefing' on March 18th, Jaap van Dissel, director of the Dutch centre for infectious disease control, further explained this national condition. Even though public gatherings were not allowed, pubs and restaurants had to close, and working from home was highly encouraged, the Dutch collective response to the epidemic came down to responsible behaviour of individual citizens. The 'intelligent' in 'intelligent lockdown', as van Dissel explicitly stated, referred to the expectation of widespread social responsibility, including not shaking hands, 'social distancing', and taking care of personal hygiene. I followed these early developments on the 2020 pandemic from abroad, which made me aware of the extent to which the Dutch bottom-up response contrasted with the top-down measures in Italy, France, and Belgium, in which citizens were only allowed to leave their houses with special permission.

At the start of this project in Agust 2019, my thesis on the role biological concepts played in interwar public health appeared to be a somewhat obscure subject. Hence, in the context I just sketched, it suddenly became a hot topic. Ironically, the history I wrote about paralleled the difficult circumstances in which I was writing. As a result, the context of corona influenced this thesis in two ways. One the one hand, I saw my most critical methodological principles at work in my own times: local political cultures interact with and are constituted through ambiguous concepts—even scientific ones. Defining 'lockdown' as 'intelligent', as we have seen in the Dutch context, reflects the importance of individual autonomy, social responsibility—being central values in neo-liberal political cultures—in responding collectively to social diseases.

It is up to the reader to determine the extent to which my own experiences with the Dutch collective response to the 2020 pandemic shaped my conclusions on the Dutch debates on the collective response to social diseases about a hundred years earlier. Sceptical readers might conclude that it did and state that the thesis is a product of and a contribution to the

atomistic neo-liberal reasoning that currently characterises the Dutch response to the COVID19 pandemic. To facilitate these readers in 'deconstructing' my thesis as a political argument with high precision, I have published all the unstructured notes as a data set on the CORE depository of Humanities Commons (http://dx.doi.org/10.17613/fx4k-4t28) and uploaded every draft and revised version of my chapters on an open-access folder in Google Drive (https://bit.ly/3eZxDwu). I hope that this transparency enables every reader to figure out how my second most import theoretical principle—that knowledge and context constantly interact—applies to my own writings.

However, although the influence of the context of corona on my interpretations and conclusions is debatable, it certainly had a profound impact on the *process* of making this thesis. Practically speaking, it has been a challenge to write alone at home, without being able to work in libraries at which it is possible to have coffee- and lunch breaks with fellow students to discuss the latest theoretical (and sometimes emotional) struggles. On a methodological level, the thesis suffered from not being able to visit archives and the special collections of the university library. Even though I was lucky to have finished most of my source investigations in December, I was not able to revisit some of my material and highly depended on my notes. The attentive reader might discover some asymmetry with respect to the types of sources I used. The thesis builds on textbooks, inaugural lecture, monographs and periodicals, but these types are unevenly spread over the three chapters of this thesis. If I had been able to visit the International Institute for Social History in Amsterdam and Utrecht University's special collections in March and April, I would have examined inaugural lectures of professors on alcoholism and sanitary reform, and investigated the Dutch periodical *Ons Nageslacht*, disseminated by eugenicists in the Netherlands. These sources undoubtedly would have given my first two chapters more relief.

Nevertheless, I hope that the story I am about to tell fosters reflection on contemporary debates on collective responses to social diseases. It uncovers the extent to which scientific concepts and explanations used to legitimise public health intervention, reflect and contribute to preferences of how the relationship between the individual and the group are perceived. From that point of view, this thesis does not just knock on an open door by stating overly bold that 'science is political'; it provides a case study of *how precisely* science interacts with political orientations—especially in the domain of public health. Hence, my thesis does not provide answers on how to *solve* the current pandemic; it forces us to reflect on how societies define 'Corona' as a *problem* in relation to the pre-existing political culture.

Martijn van der Meer, July 30th, 2020.

Acknowledgements

Research is a collective enterprise—even in the humanities. Although the processes of reading historiography, analysing sources, and actually writing all the resulting thoughts down, are solitary activities, the end-result should be regarded as a synthesis of the many fruitful, intense, and at times frustrating discussions I had with other people. I would like to thank Frank Huisman for the pleasant and friendly conversations we've had along the way, as well as his editorial remarks, and foremost his repeated call for context. The attention for political culture, playing such an essential role in the thesis's central argument, is inspired by Frank's questions and remarks, and his interest for Thorbecke and the relationship between health and citizenship. I would also like to thank Stephen Snelders, whose earlier research on heredity fostered my interest in—what appeared to be—one of the most confusing concepts of modern science. His critical remarks helped me to figure out which story I actually wanted to tell, by forcing me to separate head and side issues. Stephen also made me fear as much as value the notion of 'practice' and encouraged me to define the boundaries of my scope with high precision. I am also thankful to Timo Bolt, who reminded me of the promises of applying conceptual history to medical history. I also want to thank John Lidwell-Durnin, who made me attend his fantastic option paper 'Malthus, Environment, Society' at the University of Oxford. He critically read earlier drafts of my introduction and the first chapter on eugenics. John kindly forced me to write 'less apologetically', and made me realise why Dutch history is so interesting from an international perspective. I also highly enjoyed discussing the parallels between the interwar period and contemporary public health with Bert Theunissen, who read the final version of this thesis.

Also a big thank you to those who proofread (parts of) this thesis at various stages: Ronald Hes, Elske de Waal, Maura Burke, and Jan Huurman. Their comments have been of crucial importance in clarifying some of the obscure parts in my thesis. I also want to emphasise how this thesis is the result of two years intense academic training and discussing the necessity of history and philosophy of science with the intriguing and friendly students of the HPS-cohort at Utrecht University and the HSMT-cohort at the University of Oxford. Nevertheless, if I had to name one person with whom I almost co-wrote this thesis, it would be Max Bautista Perpinya: he read every single page of basically all the drafts that ever existed. I am sure that I speak for both of us by saying that we inspired one another while going along with each other's (methodological) struggles. This rollercoaster-thesis-writing-year would have been remarkably less enjoyable if I had to do it without him.

I also want to thank my parents for their love and support while making my seven (!) years as a student such a fantastic experience. Lastly—but most importantly—I want to thank my girlfriend and *partner in crime* Elsemiek for her love, support, and patience during the past two years. Because of her I know that academics is not the most important thing in the world.

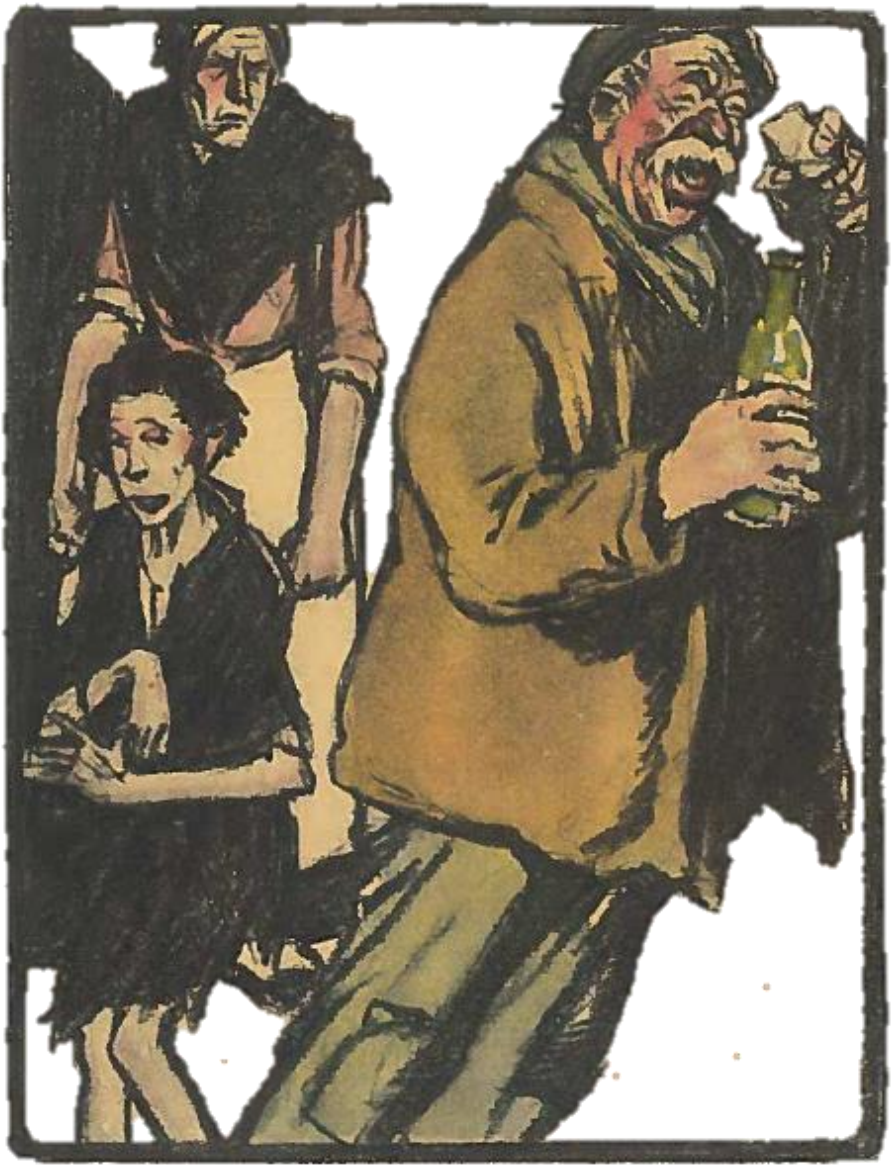

Fig. 0.1 – Picture from *Gezondheid is uw Grootsten Schat* by Louis Rademakers (NCV: 1928).

Introduction

Heredity in Dutch Public Health

In late 1928, the Dutch Central Association for the Eradication of Tuberculosis (*Nederlandsche Centrale Vereeniging tot Bestrijding der Tuberculose*) commissioned Louis Raemaekers (1869-1956), a famous political cartoonist, to illustrate a new propaganda brochure called *Gezondheid is uw Grootsten Schat*. The booklet, containing seventeen coloured drawings on thick and luxurious paper, had to convince the Dutch public of the urgency of social diseases, tuberculosis in particular. More importantly, the brochure meant to propagate the improvement of individual hygiene. The most prominent and dramatic picture can be found on page fifteen (fig. 0.1). The man on the right—clearly an alcoholic—stumbles out of the frame, wasting his money on substance abuse. He leaves behind his weakened and angry family, suffering from either venereal disease or tuberculosis. Disease, here, is a social phenomenon, potentially leading to the demise of society. The description under the picture is therefore quite unambiguous: 'Alcohol abuse implies social decay; it fosters tuberculosis, venereal disease, and general degeneration.'[1]

The emphasis on the social consequences of these diseases enabled reformers to frame the initial individual pathologies as problems in need of collective solutions. And as diseases turned into group problems, they became political issues. In the first half of the twentieth century, a growing group of reformers began to propose, discuss, and propagate specific political solutions to protect society from threatening demise. Reformers employed scientific concepts to explain the causes of social diseases and define them as collective problems. One of the essential concepts to articulate social transmission of disease was 'heredity'. During the 19th and first half of the 20th century, health reformers believed that tuberculosis, a degenerate constitution, and alcoholism was spread across generations through reproduction in one way or another. In this thesis, I analyse how debates among various groups of Dutch health reformers resulting from these conceptual struggles interacted with the Dutch political culture during the interwar years.

[1] Louis Raemaekers, *Gezondheid is de grootste schat* ('s-Gravenhage: Nederlandsche Centrale Vereeniging tot bestrijding der tuberculose, 1930), 15.

i. What is public health?

The collective response towards diseases explained in terms of their social origin are usually understood, analysed, and discussed under the umbrella notion of 'public health.'[2] However, historians have quite effectively pointed at the 'fuzziness' of public health as an analytic concept, especially since the meaning of both 'public' and 'health' is inherently ambiguous.[3] As a result, historians of public health have been relatively explicit in defining public health as an analytic category. Let's briefly sketch the resulted historiographic discussion by unpacking the 'public' and 'health' element in 'public health' distinctively.

Public primarily refers to the collective nature of responses to disease. The definition of individual conditions as a problem in need of solutions that are executed and supported collectively makes those diseases political phenomena analysable in terms of the exercise of power.[4] Therefore, one single question holds the centre stage in responding to social diseases: should the individual be trusted to take care of his transmittable condition, or should society overrule individual autonomy to secure the health of the community? The answer to this question leads to an absent, marginally supportive state in which health is regarded as a private matter, to collective action through top-down state regulations or to something in between these extremes. In highlighting how public health implies a collective response, it is not surprising that many medical historians investigated public health by looking at state medicine and state intervention in several chronological periods and different national and international contexts.[5] Such approaches take political history and the history of public health to form two sides of the same coin.[6]

Health is the second ambiguous element in public health. Concerning the social explanation of diseases, two factors are at play. One the one hand, to make individual deviations like alcoholism and tuberculosis an object of public health, they have to be medicalised—explained in terms of a disease. This means that these conditions have to become an object of *medical* investigation, requiring medical, presumably objective expertise to respond to the

[2] Dorothy Porter, 'The history of public health: current themes and approaches', *Hygiea Internationalis* 1:1 (1999): 19. Important: this is my definition of public health, a slight alteration of Dorothy Porter's: 'Collective towards the health of the population'. Dorothy Porter, 'The history of public health: current themes and approaches', *Hygiea Internationalis* 1:1 (1999): 19. My definition of public health is a slight alteration of Dorothy Porter's proposal: 'Collective towards the health of the population'.

[3] Hanna Lindberg, *Conceptualizing Public Health: historical and contemporary struggles over key concepts: Johannes Kananen, Sophy Bergenheim, Merle Wessel (Eds) London/New York, Routledge, 2018227 p.* (Taylor & Francis, 2019), 1–2; Christopher Hamlin, 'The history and development of public health in developed countries', *Oxford textbook of public health* 1 (2002): 1. Johannes Kananen, Sophy Bergenheim, en Merle Wessel, *Conceptualising public health: Historical and contemporary struggles over key concepts* (Routledge, 2018), 1–2; Hamlin, 'The history and development of public health in developed countries', 1.

[4] Porter, 'The history of public health', 21.

[5] Dorothy Porter, *The History of Public Health and the Modern State*, 1e dr., The Wellcome Institute Series in the History of Medicine (Amsterdam: Rodopi, 1994), 2–3; George. Rosen, *A History of Public Health*, MD Monographs on Medical History ; 1 (New York: MD, 1958).

[6] An extensive historiographical account of the interaction between political culture and conceptualisations of health can be found in: Frank Huisman and Harry Oosterhuis, *Health and citizenship : political cultures of health in modern Europe* (London ; Pickering & Chatto, 2014), 5–6.

condition effectively.[7] Think about how alcoholism was first regarded as solely a sin until, from the middle of the nineteenth century onwards, it came to be explained as a condition requiring treatment by physicians. However, once a particular condition is medicalised, it is not immediately regarded as a problem in need of a collective response. First, the medicalised condition needs to be explained as a disease that is not restricted to a single individual but instead acquired via someone else.

Medical historians Jean-Paul Gaudillière and Ilana Löwy showed recently how, in the second half of the 19th and the first half of the 20th century, especially the concept of 'transmission' played a fundamental role in explaining the social nature of certain diseases. In their 2012 book on the history of disease transmission, they elaborated on how the causes of tuberculosis, degeneration and AIDS have been conceptualised through 'vertical' (reproductive) transmission on the one hand; thereby framing the pathology as a 'hereditary' disease. On the other hand, they argue how these social diseases could also be conceptualised as transmitted 'horizontally' through interpersonal (physical) contact; enabling to explain these pathologies as infectious diseases.[8] Although Gaudillière and Löwy's book aims to highlight conceptual complexity by pointing at the blurred boundary between horizontal and vertical transmission, they stress how specific explanations of illness and health is historically contingent upon the interaction between the scientific consensus, political considerations, and practical orientation.[9]

Henceforth, the history of 'public health' clearly brings together medical and political history. Therefore, as Dorothy Porter has famously argued, it deals with 'the practice of expertise and the politics of knowledge'—an insight she borrows from Erwin Ackerknecht's pioneering work on the interwovenness of disease aetiology and political ideology.[10] I would in a similar vein argue that an analysis of public health debates requires examining how the relationship between the citizen and state is negotiated politically, and how certain conditions are explained as transmittable diseases. These two faces of public health discourse, however, cannot be studied in isolation from one another. The explanation of medical conditions in social terms reflects the political culture of its context. And, vice versa, the political culture of a particular context is articulated and constituted through the explanation and conceptualisation of medical conditions.

My contribution to the existing literature is twofold. On the one hand, I will focus on the Netherlands, a country that—unfortunately—has not yet been sufficiently noticed by

[7] A bit of an old, but nevertheless great Dutch example of medicalisation in public health contexts regards Abram de Swaan's sociological work. See: Abram De Swaan, *De mens is de mens een zorg: opstellen 1971-1981* (Amsterdam University Press, 2009), 203–6.

[8] Jean-Paul Gaudillière en Ilana Löwy, *Heredity and infection: The history of disease transmission* (Routledge, 2012).

[9] Gaudillière en Löwy, 1–16.

[10] Porter, 'The history of public health', 21. However, it is safe to say that the interwovenness of political culture and disease etiology is as old as Erwin Ackerknecht classis essay of Anticontagionism in 1948. See a modern reprint: Erwin H. Ackerknecht, 'Anticontagionism between 1821 and 1867: The Fielding H. Garrison Lecture', *International journal of epidemiology* 38:1 (2009): 7–21. Porter, 'The history of public health', 21. However, it is safe to say that the interwovenness of political culture and disease etiology is as old as Erwin Ackerknecht classis essay of Anticontagionism in 1948. See a modern reprint: Erwin H. Ackerknecht, 'Anticontagionism between 1821 and 1867: The Fielding H. Garrison Lecture', *International journal of epidemiology* 38:1 (2009): 7–21.

international medical historians.[11] This is primarily a missed opportunity since pre-World-War-II-Netherlands, as I will argue in this thesis, seems to be an exception to the general trends in Western public health discourse. My focus on the Netherlands during the interwar period provides a compelling case of a country in which an egalitarian political culture dominated, health was regarded as a private matter, and public health was organised locally. On the other hand, I combine the recent historiography of biology and history of public health by focussing on the most crucial notion facilitating the explanation of disease transmission and the conceptualisation of the relation between individual and collective health: the concept of heredity.[12] I have chosen heredity because its conceptualisation reflects how—in a given context—the collective is perceived as either a series of individuals or as an abstract population that legitimises compromising individual autonomy to guarantee collective health. Hence, my thesis answers the following question: *how did Dutch health reformers employ the concept of heredity to articulate public health discourse in relation to the interwar political culture?*

ii. Old and New Public Health: population and the individual

My concentration on debates and explanations leaves me with the problem that the meaning of concepts and technical language employed in public health debates is often vague and continually changing—making it challenging to write about its historical development.[13] Turning this challenge into an opportunity, a group of Finnish historians recently started to problematise the use of 'public health' as an analytic category in the existing historiography. Most historians, they argue, presume the meaning of 'public health' to be stable in constructing their histories, thereby underestimating the historical contingency of its meaning.[14] In their 2018 edited volume *Conceptualising Public Health*, co-editors Johannes Kanenen, Sophie Bergenheim, and Merle Wessel take the historical contingency of public health as the object of investigation to identify trends and transitions in the way in which public health has been conceptualised in modern Northern Europe

Broadly two ideal typic conceptualisations alternate in their historical analysis of public health. On the one hand, public health that takes the health of the population as an economic resource to secure the health of the powerful. In this 'mercantilist approach', the 'population' is an abstract entity intelligible through statistics; its health is determined by a natural economy leading to equilibrium. This orientation towards the population contrasts with public health that understands health as a universal right and crucial part of individual autonomy. The improvement of individual health would, from such a perspective, lead to the betterment of

[11] This is the case for Dorothy Porter's classic history of public health and the modern state, as well as recent examples focussing on the history of public health in Northern Europe. Porter, *The History of Public Health and the Modern State*; Kananen, Bergenheim, en Wessel, *Conceptualising public health*.

[12] Investigations on the cultural history of heredity have primarily been conducted in the 1990's and early 2000's, and has been presented at a series of seminars at the Max Plank Institute for the history of Science in Berlin. Staffan Müller-Wille and Hans-Jörg Rheinberger synthesises these investigations in: Staffan Müller-Wille en Hans-Jörg Rheinberger, *A Cultural History of Heredity* (University of Chicago Press, 2012).

[13] This problem of 'contested concepts' has earlier been addressed by Frank Huisman and Harry Oosterhuis. They responded by defining public health as the interaction between concepts of citizenship and health in an idealtypic manner. See: Huisman and Oosterhuis, *Health and citizenship*, 6–10.

[14] Kananen, Bergenheim, en Wessel, *Conceptualising public health*, 11.

collective health.[15] This distinction reminds of Michel Foucault's 1978 lectures on 'Security, Territory, and Population' at the College of France in 1978. Reasoning in terms of 'levels of phenomena,' the French philosopher points at how understanding the collective as a 'series' or 'multiplicity' of individuals, implies that the individual is the final objective. This contrast with an approach in which the population is pertinent as the objective for collective and political action, in which 'individuals are no longer pertinent as the objective, but simply as the instrument, relay, or condition for obtaining something at the level of population.'[16]

Historically speaking, the editors of *Conceptualising Health* argue, a public health orientation towards the individual or the population 'creates an interesting tension that seems to appear time and again in the conceptual history of public health.'[17] Their analytic distinction enables the authors to sketch three successive stages and two transitions of modern public health in the Western world. In the first stage, centred around the 19th-century sanitary movement, the environment was seen as the source of illness. The proposed collective action included socioeconomic improvements fostering developmental health and prophylactic sanitary improvements. In the spirit of the liberal and progressive reformers that propagated this perspective, public health was reached bottom-up: 'It placed the focus on the individual,' Kanenen, Bergenheim, and Wessel argue, 'to prevent disease in the collective as well as in the individual.'[18]

A transition occurred in the first half of the twentieth century, in the context of growing opposition to progressive reform movements at the end of the nineteenth century, as well as the embracement of centralised political systems—such as fascism, communism, and authoritarianism—by former imperialist states. 'As nations struggled for hegemony in a spirit of rising nationalism,' the authors of *Conceptualising Public Health* argue, 'they intensified their focus on the national and social body: the population.'[19] The intensified focus on population health reached its peak in the interwar period, as both Darwinian laissez-faire public health as well as eugenic ambitions to intervene in the reproductive capacities of 'degenerates' held a central place in Western public health discourse.[20] With an emphasis on preventing degeneration, a focus on the long term by the cultivation of hereditary qualities, and the aim to improve the health of the social body, individual autonomy was compromised.[21]

This population-oriented public health discourse coexisted with more intense state interference during and top-down measures the interwar years, as the contributors to Dorothy Porter's *Public Health and the Modern State* show. The histories of France, Germany, the United States, Canada, Sweden, and the United Kingdom all point to the aftermath of the First World War, the depression of the 1930s, and the preparation for the Second World War as

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[15] Porter, *The History of Public Health and the Modern State*, 1–3; Kananen, Bergenheim, en Wessel, *Conceptualising public health*, 11–12.
[16] Michel Foucault, *Security, territory, population : lectures at the Collège de France, 1977-1978* (New York, N.Y. : Picador/Palgrave Macmillan, 2009), 42.
[17] Kananen, Bergenheim, en Wessel, *Conceptualising public health*, 2.
[18] Kananen, Bergenheim, en Wessel, 3.
[19] Kananen, Bergenheim, en Wessel, 4.
[20] Diane B. Paul, 'Darwin, social Darwinism and eugenics', *The Cambridge Companion to Darwin* 214 (2003); Lene Koch, 'Past Futures: On the Conceptual History of Eugenics—a Social Technology of the Past', *Technology Analysis & Strategic Management* 18:3–4 (2006): 329–344. Paul, 'Darwin, social Darwinism and eugenics'; Koch, 'Past Futures'.
[21] Daniel J. Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity* (Berkeley: University of California Press, 1986). Kevles.

fostering momentum for initiating health policy on a national level in respect of social diseases. French 'public hygienists', for example, successfully convinced the Third republic's government to found a well-funded Ministry of Hygiene in 1920, under the pressure of worries resulting from the war, as Matthew Ramsey argues.[22] In the United States, the clearest example of top-down state regulation materialised in the prohibition from 1920 until 1933. However, as state governments started to implement more extensive sterilisation laws in the 1920s and 1930s, comprehensive public health policies and funding was implemented in the context of the Social Security Act after the Great Depression in 1935, as Elizabeth Fee states.[23] In Sweden, as Karin Johannisson show, population oriented public health accompanied an increasingly centralised state in the mid-1930s, resulting in a governmental 'population committee' which successfully proposed a blend of top-down public health policies on alcoholism, compulsory sterilisation and mandatory segregation of tuberculosis patients.[24] These examples show that Germany, with its top-down public health system under Nazi-rule, [25] was not alone in its orientation towards the population at the cost of the individual during the interwar period.[26]

The pendulum swung back to a focus on the individual after the Second World War. In response to the trauma of the holocaust, the foundation of the World Health Organization and the United Nations in 1948 added a new global perspective to the existing national public health conceptualisations. The authors of *Conceptualising Public Health* present the Declaration of Universal Human Rights as a more explicit articulation of health as a universal right, in contrast to the idea that some individuals are more 'fit' than others from a population-oriented point of view.[27] To that extent, the post-war Western conceptualisation of public health shows the gradual change of focus on health instead of disease, and on the current-generation individual instead of the long-term health of the population. Public health (again) became conceptualised as a universal right instead of a resource. Alongside the increasing attention for chronic disease and lifestyle medicine,[28] this new attention to developmental health—the individual life course—from the 1980s, became recognised as the transition from 'old public health to 'New Public Health' (N.P.H.).[29] In their historiographic account on health and citizenship, Frank Huisman and Harry Oosterhuis effectively stress the increasingly central place for neo-

[22] M. Ramsey, 'Public health in France.' in: Dorothy Porter (ed.), *Public Health and the Mordern State* Clio medica 26 (Amsterdam, 1994): 90.
[23] Elizabeth Fee, 'Public Health and the State: The United States'.' in: Dorothy Porter (ed.), *Public Health and the Mordern State* Clio medica 26 (Amsterdam, 1994): 246.
[24] Karin Johannisson, 'The People's Health: Public Health Policies in Sweden', in: Dorothy Porter (ed.), *Public Health and the Mordern State* Clio medica 26 (Amsterdam, 1994): 179.
[25] In political history, Germany is for its authoritarian path often characterised for its so-called *Sonderweg.* Huisman, *Health and citizenship*, 13. A comparison with other countries in the interwar years, however, problematise such an understanding.
[26] Paul Weindling, 'Public Health in Germany.' in: Dorothy Porter (ed.), *Public Health and the Mordern State* Clio medica 26 (Amsterdam, 1994): 126–27; for a more detailed analysis: Paul Weindling, *Health, race and German politics between national unification and Nazism, 1870-1945* (Cambridge University Press, 1993).
[27] Kananen, Bergenheim, en Wessel, *Conceptualising public health*, 6.
[28] Alex Mercer, *Infections, chronic disease, and the epidemiological transition: a new perspective*, vol. 31 (Boydell & Brewer, 2014).
[29] Alan Petersen en Deborah Lupton, *The new public health: Health and self in the age of risk.* (Sage Publications, Inc, 1996); Theodore H. Tulchinsky en Elena A. Varavikova, *The new public health* (Academic Press, 2014); Niyi Awofeso, 'What's new about the "new public health"?', *American journal of public health* 94:5 (2004): 705–709.

republican pillars of citizenship such as liberty, autonomy and responsibility in conceptualisations of health towards the end of the 20th century.[30]

The authors of *Conceptualising Public Health* repeatedly problematise the ideal-typical character of their transitional framework by emphasising both the of public health approaches in the three stages they characterise, as well as the gradual character of the shifts they identify. And yet—their illustration helps grasping the historical tension between a public health discourse in which collective measures emphasise the primacy of either the individual or the population. It especially points at the interesting timeframe of the Western interwar period in which public health became equated with centralised collective measures aiming for fitness of the social body at the cost of individual autonomy, while the period was preceded and succeeded by the primacy of individual health to improve health of the collective.

My thesis is written in the spirit of the Finnish *Conceptualising Public Health* project. I will take the same methodological perspective of conceptual history—on which I will elaborate below—and respond to the presupposed tension between orientation towards the population or the individual in attempts to improve collective health in the first half of the twentieth century, especially the interwar period. In doing so, I will focus on 'heredity' as one of the key concepts in public health. This notion, as I will show, is especially interesting since its interwar plasticity enables various conceptualisations of the relationship between the individual and the collective. Additionally, I will investigate how the story of the Netherlands fits the international trends in public health history.

iii. Public health, private concern

Before I elaborate on the concept of heredity, it is necessary to sketch the Dutch institutional and political context of the interwar period—especially concerning health care. As the Netherlands became a parliamentary democracy in 1848, King Willem II grudgingly commissioned the liberal Johannes Rudolph Thorbecke (1798-1872) to write a new Dutch constitution as an alternative to the centralised government under the pressure of revolutionary calls for decentralisation in Europe.[31] The administrative core of Thorbecke's constitution focused on an ingenious system including "checks and balances" between three governmental bodies: the local *gemeente*, the regional *provincie*, and the national *centrale overheid*. With the further development of this so-called legislative 'House of Thorbecke' with provincial and municipal laws in 1850 and 1851, governmental primacy lay at the local level of primarily the municipality—as close to the individual citizen as possible.

For the best part of the 19th century, conservatives and liberals led the Dutch national government. Still, the formation of the first anti-revolutionary political party in 1879 increased tension between liberal sentiments and confessional political sentiments. This parliamentary "antithesis" led by a liberal government, had set the tone for Dutch political discourse until the introduction of general male suffrage in 1917 when confessional parties took over political leadership for the rest of the interwar period. Despite these political changes, the focus on local

[30] Huisman, *Health and citizenship*, 35–40.
[31] See for example: Laurens Marie Raijmakers, *Leidende motieven bij decentralisatie. Discours, doelstelling en daad in het Huis van Thorbecke* (Uitgevrij Kluwer BV, 2014).

government as being institutionalised in Thorbecke's constitution remained remarkably stable until the Second World War. This can largely be explained because liberals and confessionals shared the view that political issues had to be regarded as a private matter, eventually organised on a local level.[32] Whereas liberals emphasised individual autonomy as an argument to oppose top-down governance, Catholics held a 'subsidiarity principle', and Dutch Protestants preferred local government following the principle of 'sovereignty in one's circle' (*souvereiniteit in eigen kring*). Accordingly, the Dutch government operated in the first half of the twentieth century more or less as a funding body, while local governments and civilian initiatives took up operational tasks.[33] The Dutch political culture can thus be characterised ideologically by liberal-confessional egalitarianism, and institutionally by state abstinence.[34]

Against this backdrop, it is no surprise that health was regarded as a private, individual matter. Public health, as Hans and René Rigter argued, was decentralised and had been 'the Cinderella of Dutch politics' in the first half of the twentieth century, constituting not more than 'the tailpiece of the Dutch governmental agenda'.[35] This did not mean that there was no public health in the Netherlands: the absent state resulted in a strong presence of civil society in Dutch health care. The so-called 'private initiatives' (*particulier initiatief*) were responsible for a patchwork of (ambulatory) institutions and initiatives that envisioned the improvement of health by eradicating social diseases on a very local level.[36] Consequently, as Tom van der Grinten argues, public and private health organisations were profoundly interwoven; the Dutch state primarily functioned to fund and acknowledge the interests and authority of local, civilian initiatives.[37]

The question arising in light of this thesis considers the extent to which the Dutch interwar political culture of decentralisation and liberal-confessional egalitarianism relates to either an individual-oriented or a population-oriented public health discourse. As Dutch public health was very much decentralised, state intervention might not be the best place to look. Instead, I focus on how decentralised organisations dealt with problems defined as an issue of public health. To effectively compare these problems, I take the conceptual history approach that enables me to investigate public health in the context of its political culture through the analytic frame of one single notion: heredity. Before turning to the cases I am going to investigate in my thesis, I would like to explain why heredity provides such a promising perspective if we want to understand what the concept of public health entailed in the Dutch interwar years.

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[32] Frank H. Aarebrot, 'The Netherlands: Early Compromise and Democratic Stability', in *Conditions of Democracy in Europe, 1919–39* (Springer, 2000), 322; Staf Hellemans, 'Pillarization ("Verzuiling"). On Organized "Self-Contained Worlds" in the Modern World', *The American Sociologist* 51 (2020): 6–7. Aarebrot, 'The Netherlands', 322; Hellemans, 'Pillarization ("Verzuiling"). On Organized "Self-Contained Worlds" in the Modern World', 6–7.

[33] Hellemans, 'Pillarization ("Verzuiling"). On Organized "Self-Contained Worlds" in the Modern World'.

[34] This fits Piet de Rooy's analysis of 'political culture' through constitution, civil society and 'zeitgeist'. See: Pieter Rooy, *Ons stipje op de waereldkaart: de politieke cultuur van Nederland in de negentiende en twintigste eeuw* (Wereldbibliotheek, 2014), 15–16.

[35] H. Rigter en R. B. M. Rigter, 'Volksgezondheid: een assepoester in de Nederlandse politiek. Een analyse toegespitst op de sociaal-democratie', *GEWINA/TGGNWT* 16:1 (2012): 1.

[36] Marco Strik en Nel Knols, 'Public health, private concern: The organizational development of public health in the Netherlands at the beginning of the twentieth century', *The European Journal of Public Health* 6:2 (1996): 81–86.

[37] More specifically, van der Grinten argues that the Dutch civil society lacked contrapower (*tegenmacht*), explaining its dominance in the first half of the twentieth century. See: Tom van der Grinten, 'Macht, tegenmacht, onmacht: de hardnekkige aanwezigheid van het maatschappelijk middenveld in de gezondheidszorg', in E. Dekker en E. Elsinga, (red.). *Mensen en machten: gezondheidszorg in de jaren negentig* (houten, 1990), 115-128.

iv. The contested concept of heredity

First of all, it is crucial to get rid of the idea that 'heredity' is primarily a scientific concept and that only scientific definitions constitute its meaning. I think of science as the changing consensus on how phenomena ought to be conceptualised, that gets more accurate and precise over time. The notion of heredity, in my view, refers to reproductive transmission, but how this phenomenon is conceptualised depends on (historical) context. Scientists—being human creatures with feelings, ideological commitments, and interests—are as much part of this context as all non-scientists. It is therefore unhelpful to assume a clear distinction between science and its 'public' to which knowledge needs to be 'disseminated' in a 'popularised manner'. Science is always in the making;[38] the meaning of scientific concepts at a certain point in time in a particular local context, therefore, reflects the negotiation over how a certain phenomenon ought to be understood.[39] The process of consensus-building over the meaning of scientific concepts is quite technical and codified. On the other hand: whoever takes the trouble of delving into them will find that these debates are rather precise and explicit.

My focus on the concept of heredity to investigate the history of public health is an analytic decision. The notion presents me with a stable element that can be followed and traced in various (sometimes technical) debates on the collective responses towards social diseases in the Dutch interwar period. For two reasons: on the one hand, the meaning of the notion of heredity was (and is) inherently ambiguous—or 'plastic'—and therefore subject to a wide range of conceptualisations.[40] On the other hand, the notion is crucial in articulating a tendency towards population- or individual-oriented public health. Nevertheless, as Pim Huijnen has shown by means of a text mining approach, the notion of 'heredity' frequently occurred in various medical debates during the Dutch interwar period, suggesting its importance in medical discourse[41]

Why is heredity such as an ambiguous or plastic concept, even in scientific debates? One way to answer this question is to point at the history of ideas, suggesting that the concept referred to three related biological issues in the first half of the twentieth century: transmission, development, and evolution. The first issue revolves around the question of which characteristics are transmitted 'vertically' through reproduction. On the one hand, Jean Baptiste de Lamarck (1744-1829) had famously argued at the beginning of the 19th century how traits are acquired during an individual's lifetime in adapting to the environment, and through reproduction transmitted to next generations. This explanation was opposed by August

[38] Yes—this is a reference to Bruno Latour's infamous writings on the sociology of science. This thesis is definitely inspired by especially the first and second part of *Science in action* (1987). Having great descriptive value, the assumption that science is a process subject to sociological investigation is important and inspiring. I aim this thesis to go beyond sweeping philosophical claims about 'how science is socially constructed' and 'how science is political'—this thesis actually shows processes of consensus building in its openness and continency. See, for a more elaborate description of 'science in the making': Bruno Latour, 'Introduction: Opening 'Phandora's Box', in: *Science in action: How to follow scientists and engineers through society* (Harvard university press, 1987), 1–17.
[39] Stephen Hilgartner, 'The dominant view of popularization: Conceptual problems, political uses', *Social studies of science* 20:3 (1990): 533.a
[40] Stephen Snelders and Toine Peters, 'Van degeneratie tot individuele gezondheidsopties. Het maatschappelijk gebruik van erfelijkheidsconcepten in de twintigste eeuw', *GEWINA/TGGNWT* 26:4 (2012): 204–5.
[41] Pim Huijnen e.a., 'A Digital Humanities Approach to the History of Science', in *Social Informatics*, onder redactie van Akiyo Nadamoto e.a. (Springer Berlin Heidelberg, 2014), 9.

Weissman (1834-1915), who analytically separated the biological process of heredity from that of development on a cellular level.[42] According to Weismann, the hereditary 'germ-line' was localised in the 'germ-plasm' of the cell, and separated from the bodily 'soma' subject to external factors. He stressed the continuous character of the germ-line across generations in contrast to the soma. This analytic separation implied that acquired characteristics could not be transmitted. Instead, only the recombined parental germ-plasm serving as a blueprint for development was passed on to the next generations.[43] Despite the rediscovery of Mendel's laws around 1900,[44] disagreement on whether external factors could influence the hereditary material rather than parental recombination, remained important until individual difference was investigated in biomolecular investigations from the discovery of the double helix structure of the gene in the 1950s.[45] The question of vertical transmission played an important role in determining the extent to which the individual was the product of an intergenerational group, formed by its ancestry and future generations.

The second issue concerned development. Is the individual predetermined to recombination of ancestry characteristics, or do external factors have the most decisive influence in development? Francis Galton (1822-1911) responded to this tension between hereditary determinism and environmentalism by stating that 'there is no escape from the conclusion that nature enormously prevails over nurture'.[46] The Danish botanist Wilhelm Johansson (1857-1927) later specified this language by introducing the notions of 'genotype'––the potential characteristics that are inherited from the individual's ancestors—and 'phenotype'—the traits constituted due to environmental influences on the developing individual with its inherited genotype. Consequently, the issue centred around the question to what extent the development of the phenotype was determined by its genotype (nature), or environmental factors (nurture).

The third conceptual issue concerning heredity dealt with the relationship between individuals and how populations change. Lamarck, on the one hand, had argued how species evolved because individuals transmitted their acquired traits to the next generations. Charles Darwin, on the other hand, conceptualised changing species on a population level in his theory of evolution by natural selection.[47] Inspired by Thomas Robert Malthus,[48] evolution took place in the context of limited resources, he argued, in which only the best-adapted organisms

[42] Hans-Jörg Rheinberger and Staffan Müller-Wille, *The Gene: From Genetics to Postgenomics* (University of Chicago Press, 2018), 20.
[43] Among historians of ideas, there is debate on the extent to which Weismann himself believed external factors could not influence the germ-line. Rasmus Winther, for example, argued that the distinction between heredity and development came from a questionable interpretation of Weissman, they 'they reinpretered Weissman in a mannar suitbale for their purposes.' Rasmus G. Winther, 'August Weismann on Germ-Plasm Variation', *Journal of the History of Biology* 34:3 (2001): 550; Daniel J. Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity* (Berkeley: University of California Press, 1986), 70.
[44] Jean Gayon, *From measurement to organization: a philosophical scheme for the history of the concept of heredity* (Cambridge University Press, 2001).
[45] For a synopsis of this narrative, see: Evelyn Fox Keller, *The Century of the Gene* (Cambridge, Mass. ; Harvard University Press, 2002), 23–24.
[46] Francis Galton, 'The history of twins, as a criterion of the relative powers of nature and nurture', *The Journal of the Anthropological Institute of Great Britain and Ireland* 5 (1876): 391–406.
[47] Elliott Sober, 'Evolution, population thinking, and essentialism', *Philosophy of Science* 47:3 (1980): 350–383.
[48] Robert M. Young, 'Malthus on Man–In Animals No Moral Restraint', in *Malthus, Medicine, & Morality* (Brill Rodopi, 2000), 84.

survived and reproduced, causing the species as a whole to change.[49] Both argued that inherited variation was a necessary precondition for evolution. Yet, while Lamarck hypothesised the individual's attempt to survive through adaptation as an explanation of an evolving population, Darwin reversely argued that the death of less-adapted individuals was necessary for the species as a whole to survive. In an environment with limited resources, only the survival of the best adapted would foster change on the level of the population. From Darwin's perspective, death is 'the creative force in nature'. The crucial difference lied in the fact of whether an individual had to die or not to cause the required adaptation on the level of population to ensure the species' survival.[50]

In the first half of the twentieth century, before Oswald Avery, James Watson and Francis Crick synthesised these three issues on a biomolecular level in the 1940s and 1950s, conceptualisations of heredity included various blends of opinions on development, variation, and evolution. Because of this plastic meaning, the same concept legitimised sometimes opposing solutions to the same problem. This becomes specifically explicit in the central role the concept of heredity played in articulating the tension between public health orientations. To clarify, let me sketch the connection between individual and population oriented public health approaches and specific conceptualisations of heredity in extreme, ideal typic terms (*Fig 0.*2). In a population oriented public health approach with its focus on reproductive intervention, acquired characteristics were not hereditary, nature prevailed over nurture in development, and collective survival was achieved by withholding individuals from reproducing. On the other hand, in the individual-oriented public health approach with its focus on environmental intervention, acquired characteristics are perceived transmittable, nurture prevails over nature in explaining physical development and, as a result, every individual is essential in reaching collective health.

Interwar conceptualisation of heredity	**Individual oriented public health approach**	**Population oriented public health approach**
What is the direction of intervention?	Bottom-up	Top-Down
Which traits are vertically transmittable?	Acquired characteristics	Hereditary blueprint
How is the development of the phenotype explained?	Nurture	Nature
How is collective survival achieved?	Enhancing Individual health	Survival of the fittest

Fig. 0.2 – This table schematises the extreme positions on the relationship between conceptualisations of heredity and public health.

[49] Gerald L. Geison, 'Darwin and Heredity: The Evolution of His Hypothesis of Pangenesis', *Journal of the History of Medicine and Allied Sciences* 24:4 (1969): 379; Eva Jablonka, Marion J. Lamb, and Eytan Avital, ''Lamarckian'Mechanisms in Darwinian Evolution', *Trends in Ecology & Evolution* 13:5 (1998): 206–210.
[50] Peter J. Bowler, 'What Darwin Disturbed: The Biology That Might Have Been', *Isis* 99:3 (2008): 564.

The emerging picture portrays a continuum, ranging between the extremes of individual and population oriented public health. My point is that the conceptualisation of heredity suggested by my historical protagonists clarifies where they find themselves on this spectrum. Nevertheless, I want to emphasise that although this scale is analytically helpful, it is an oversimplified view of pre-World-War-II debates. Ideas don't float through the air; they are held by people made of flesh and blood with often quite clear ideas on how social problems should be solved. Conceptualisations legitimise these solutions. As a result, many public health reformers held various—often quite contradictory—opinions on issues relating to heredity. The specific ways in which heredity is conceptualised in public health is very much intertwined with the practical orientation of the public health reformers.

v. Analytic concerns: from discourse to concept

This thesis is an example of 'discourse analysis'. A discourse means nothing more than the way of speaking in a particular context; it is the linguistic process of ordering and structuring experience. The discourse as an object of historical and sociological investigation started in the 1960s during the so-called 'linguistic turn' in historiography, with the French philosopher Michel Foucault undoubtedly as its frontrunner. Foucault especially highlighted how discourses reflect (and facilitate) the distribution of power at a certain point in time. So the analysis of discourse enables the historian to figure out how individuals, as well as groups, articulated a specific 'political culture' in a given geographical and historical context through language.[51] I already argued how public health partly refers to collective action, so the discourse on public health should, in theory at least, reflect a consensus on the relationship between individuals and the collective, and how this relationship should be shaped in a particular political system. To put it as concretely as possible: an analysis of the way of speaking about public health issues in a specific point in time helps me to analyse the consensus within debates on how collective action towards social disease ought to take place.

But what does it mean to 'analyse' a discourse? If we presume that language-usage somehow reflects or even interacts with the distribution of power, it is quite a challenge to decide which language has to be investigated. Assuming that every 'way of speaking' somehow hides 'social structures' or 'power-relations' can easily lead to cherry-picking of examples that fit the ideological preferences of the analyser, especially when 'critical discourse analysis' is practised.[52] I, however, want to *understand* history; instead of criticising it. Therefore, I prefer to take discourse analysis in a descriptive sense: it helps me to describe adequately how Dutch interwar public health debates were shaped the way they did. That is why I take a comparative approach in this thesis. I will look at how three different public health problems are defined and

[51] Michel Foucault e.a., *The Government of Self and Others: Lectures at the Collège de France 1982-1983* (Houndmills, Basingstoke, Hampshire: Palgrave Macmillan, 2010); Michel Foucault e.a., *The Foucault Effect: Studies in Governmentality : With Two Lectures by and an Interview with Michel Foucault* (Chicago: University of Chicago Press, 1991).

[52] Henry G. Widdowson, 'Discourse analysis: a critical view', *Language and literature* 4:3 (1995): 157–172; Ruth Breeze, 'Critical discourse analysis and its critics', *Pragmatics* 21:4 (2011): 493–525. This problem has been called 'the scope of description'.

explained by distinctive groups of health reformers. Besides the many interesting differences, I will primarily point at the similarities that represent the Dutch discourse of public health. But still, how do I decide which language-usage I am going to examine in respect to these three problems? My solution is to take the notion of heredity as a stable linguistic element playing a central role in talking about all three issues, albeit in a different way; and which meaning is negotiated explicitly.

This approach builds on the tradition of 'conceptual history', initiated by the German historian Reinhart Koselleck in the early 1980s. This methodological approach, being a concrete example of discourse analysis, investigates how terminology has been used to make social tension explicit. 'The semantic struggle for the definition of social position, defending or occupying social positions by deploying a given definition,' Kosellek states, 'is a struggle that belongs to all those times of crisis of which we have learned through written sources.'[53] In a similar vein as Foucault's post-structuralist approach, Koselleck emphasises how past social struggle can be interpreted and decoded in terms of their contemporary conceptual boundaries and the historical actor's language-usage. Conceptual analysis can thus be considered discourse analysis centred around the *explicit* struggle to define the meanings of concepts.[54]

A 'concept', in that regard, considers the meaning given to the word when (historical) actors use the concept to define, defend and determine a certain social position. 'In whatever way the linguistic triad of word (signification)—meaning (concept)—object is employed in its different variants,' Koselleck reasons, 'a straightforward distinction—initially pragmatic—can be made in the sphere of historical science: sociopolitical terminology in the source language possesses a series of expressions that, based on critical exegesis, stand out definitively as concepts.'[55] Although it might seem frustrating that the only historically-stable element of a concept is the word itself, this ambiguity is precisely the reason why my focus on heredity suits my research so nicely. According to Koselleck, 'a concept must remain ambiguous to be a concept. The concept is connected to a word, but is at the same time more than a word: a word becomes a concept only when the entirety of meaning and experience within a sociopolitical context within which and for which a word is used can be condensed into one word.'[56]

To be sure, a conceptual history undertaking is not identical to the chronological succession of its meanings. It connects a diachronic with a synchronic approach; it helps understanding historical change without losing track of historical depth. As the language under investigation—and its connection to the political culture of its context—remains stable in a literal sense, the changing meanings of concepts reflect stabilisation or destabilisation of the social context in which the concepts are used. In that regard, this thesis takes with Koselleck as a theoretical principle 'that persistence and change must be weighed against each other, and measured in terms of each other.'[57] This is especially helpful when analysing how certain

[53] Reinhart Koselleck, 'Social History and Conceptual History', *International Journal of Politics, Culture, and Society* 2:3 (1989): 319; Reinhart Koselleck, *Futures Past: On the Semantics of Historical Time*, Keith Tribe (trans.) (Cambridge: 1985): 80.
[54] Jan Ifversen, 'Text, discourse, concept: Approaches to textual analysis', *Kontur* 7 (2003): 68; Niels Akerstrøm Andersen, *Discursive Analytical Strategies: Understanding Foucault, Koselleck, Laclau, Luhmann* (Policy Press, 2003), 93.
[55] Reinhart Koselleck, 'Futures Past: On the Semantics of Historical Time, Trans', *Keith Tribe (Cambridge, Mass., 1985)* 230:28 (1985): 84.
[56] Ibidem, 84-85
[57] Koselleck, 'Social history and conceptual history', 13.

conditions were defined as issues of collective health: concepts play a central role in articulating how alcoholism, tuberculosis and degeneration are defined as social problems in context of the solutions being proposed. Although specific explanations changed over time, but the analytic notions that were used did not. Therefore, looking at how the meaning of concepts adapted to their historical context helps to grasp what changed in the explanation of social diseases, and what remained similar. These continuities, in turn, reflect the Dutch public health discourse in which a political culture and 'way of speaking' are co-constructed.

Until now, I have used 'explanation' and 'construction' interchangeably to explain my theoretical concerns as clearly as possible. But in the remainder of this thesis, I will use 'conceptualisation'—referring to how a notion gets a specific meaning to serve a particular goal—as my most important analytic tool to examine Dutch public health discourse during the interwar period. The investigation of changing language usage requires a clear distinction between my analytic language and the words used by the actors I investigate. Therefore, I use English for my analytic notions such as 'public health', 'population', 'individual', and the English translation of the actors-categories in between single quotation marks, accompanied with the Dutch word in italics and between brackets, such as 'inheritable' (*over-erfelijk)*, and 'society' (*samenleving*).[58]

vi. Cases and sources

To examine how during the interwar years, Dutch public health discourse tended towards either the individual or a population, I will examine how heredity was employed and, as a result, conceptualised in debates on degeneration, alcoholism, and tuberculosis. The thesis is structured around three chapters, focusing on how health reformers discussed how these pathologies could be eradicated to maintain and improve public health. Besides eugenicists, also anti-alcohol reformers and sanitary reformers will serve as protagonists. Together, these groups represent the Dutch public health arena in the interwar period. An analysis of how these groups employed the concept of heredity to define the problem they wanted to solve as an issue of collective health enables me to investigate the interaction between public health discourse and the Dutch political culture during the interwar years. Firstly, I investigate how eugenicists conceptualised degeneration as a collective thread and under which conditions they proposed reproductive measures. After that, I examine how Dutch anti-alcohol reformers employed heredity to conceptualise individual alcohol abuse as a collective problem and individual restraint as its solution. My last chapter studies how Dutch sanitary reformers downplayed the importance of heredity in the aetiology of tuberculosis to propose environmental reform. Let me walk us through my three cases while outlining the types of sources I use.

(1) Benedict Augustin Morel (1809-1873), Swiss physician and father of 'degeneration' as a medical concept, defined the pathology in 1857 as an 'intergenerational process' in which

[58] Comparable to the Finnish approach, see: Kananen, Bergenheim, en Wessel, *Conceptualising public health*, 12.

depraved individuals pass on undesired hereditary traits to their offspring.[59] It was a rather vague and ambiguous diagnosis: degeneration could become apparent by specific behaviour or mental and physical characteristics. Morel defined it as an issue of public health in that individuals could transmit (and therefore spread) their degenerate constitution through reproduction and, consequently, harm the health of the (future) collective. In the late 19th and early 20th century, eugenicists claimed degeneration as a public health problem they could solve. In the spirit of Francis Galton's eugenic research program, these reformers investigated the distribution of hereditary traits within a given population.[60] This scientific gaze for genetic determinants could potentially substantiate reproductive policies to enhance the population's quality and prevent degeneration by reproductive measures.

Retrospectively speaking, eugenics is often interpreted as Nazi-science, aiming to create an 'ideal race'. However, as historians such as Peter Weingart and Deborah Kamrat-Lang pointed out, this interpretation underestimates the central place eugenics held in early-twentieth-century public health as an essential approach to prevent degeneration.[61] I will investigate the Dutch response to degeneration by looking at how eugenicists in the Netherlands employed heredity to define degeneration as a problem of public health. Central to my analysis is the role the concept of heredity played in articulating the Dutch eugenicist's attitude towards public health in the context of the Dutch political culture. As the Dutch eugenicists lacked a central communication medium for the whole interwar period, I will analyse mainly two types of sources. One the one hand, I will look at textbooks on 'heredity theory' *(erfelijkheidsleer*) to investigate continuities and discontinuities in conceptualising heredity in relation to degeneration. On the other hand, I will look at inaugural speeches of the most important Dutch eugenicists to examine how they saw their new research program fit into the contemporary intellectual landscape, and how its urgency was articulated.

(2) Alcoholism is the second public health issue under my investigation. Historians such as Gemma Blok and Jaap van der Stel argued that while many 19th century reformers conceptualised alcoholism as individual sin, it became increasingly medicalised in the early twentieth century.[62] Additionally, Stephen Snelders, Toine Pieters, and Frans Meijman argued how debates on alcoholism biologised over the course of the interwar period. With the explanation of alcoholism as a hereditary disease, the condition was perceived as transmittable. Consequently, anti-alcohol reformers approached alcoholism as an issue of collective health.[63] To examine how Dutch alcohol reformers framed alcoholism as an issue of public health, I will analyse the most prestigious journal on 'the study of the alcohol issue': *De Wegwijzer*. In the context of Dutch political culture, it will become clear that Dutch anti-alcohol reformers envisioned a local response to alcoholism by promoting individual restraint in the form of either

[59] Jean-Christophe Coffin, 'Heredity, Milieu and Sin: The Works of Bénédict Augustin Morel (1809-1873)', *A Cultural History of Heredity II* (Berlin: Max Planck Institute for the History of Science, 2003), 153.
[60] Francis Galton, 'Eugenics: Its definition, scope, and aims', *American Journal of Sociology* 10:1 (1904): 1–25.
[61] Peter Weingart, 'Eugenics—Medical or Social Science?', *Science in context* 8:1 (1995): 197–207; Debora Kamrat-Lang, 'Healing society: medical language in American eugenics', *Science in context* 8:1 (1995): 175–196.
[62] Jaap van der Stel, *Drinken, drank en dronkenschap : vijf eeuwen drankbestrijding en alcoholhulpverlening in Nederland : een historisch-sociologische studie*, (Hilversum, Verloren: 1995); Gemma Blok, *Ziek of zwak : geschiedenis van de verslavingszorg in Nederland* (Amsterdam: Nieuwezijds, 2011).
[63] Stephen Snelders, Frans J. Meijman, en Toine Pieters, 'Alcoholism and Hereditary Health in Dutch Medical Discourse, 1900–45: Biology versus Psychology in Coping with Addiction', *The Social History of Alcohol and Drugs* 22:2 (2008): 140.

temperance or abstinence. Altogether, my analytic focus on the changing conceptualisation of heredity reveals that Dutch alcohol reformers emphasised how collective health was achieved by enhancing developmental health in a proper environment.

(3) The third chapter investigates how the Dutch sanitary reformers debated the aetiology of and response to tuberculosis. Koch's discovery of the Tubercle Bacillus as the proximate cause challenged popular views that the disease was transmitted through reproduction. As a result, Dutch tuberculosis reformers defined the condition as a public health problem by explicitly dismissing the relationship between heredity and tuberculosis and conceptualising a distinction between a hereditary cause—as was predominant in the second half of the 19th century—and an infectious cause. By improving the environment, most Dutch sanitary reformers argued, the chance that these external factors succeeded in causing the disease would be lowered. In the 1930s, however, sanity reformers began to argue that heredity did play a role in constituting tuberculosis. But in their epidemiological view, sanitary reformers conceptualised inherited disposition as of minor importance next to the many other external factors contributing to constituting the disease. In their attempts to achieve collective health, as my analytic focus on heredity shows, Dutch tuberculosis reformers regarded improving individual development by enhancing the environment as the best solution to the problem of tuberculosis.

My investigation of the Dutch response to tuberculosis as an issue of public health builds on a close analysis of three types of sources in their context of the Dutch political culture. I will look at the periodical of the Dutch Central Association for the Eradication of Tuberculosis (NCV) to investigate how downplaying heredity substantiate the plausibility of reformative optimism. To further analyse the debate on heredity and tuberculosis, I will look at dissertations and its reviews on the conceptual relation between heredity and disease. By relating the reformer's envisioned solution of environmental reform to downplaying heredity, I will be able to examine how their focus on improving developmental conditions reveals a public health orientation towards the individual.

vii. Roadmap

To investigate how the changing conceptualisation of heredity articulated Dutch public health in the interwar years, I will look at the way in which proposals for collective action interacted with how diseases were explained in social terms. In the spirit of Koselleck's conceptual history approach, I will concentrate on the concept of heredity to investigate whether Dutch public health discourse tended towards either the individual or the population. Lacking centralised public health measures during the interwar years, the Netherlands appears to be an interesting case to shed light on general developments in Western countries during the interwar period.[64] After all, I will claim in this thesis that Dutch interwar public health discourse was oriented towards the individual, which should be explained as a response to an egalitarian political

[64] Hans Pols, 'eugenics in the Netherlands and the Dutch east Indies', *The Oxford Handbook of the History of Eugenics* (Oxford: 2010), 347–62; Jan Noordman, *Om de kwaliteit van het nageslacht : eugenetica in Nederland, 1900-1950* (Nijmegen: Sun, 1989), 243–48; Leo Lucassen, 'A Brave New World: The Left, Social Engineering, and Eugenics in Twentieth-Century Europe', *International Review of Social History* 55:2 (2010): 265–96; Frank Dikötter, 'Race Culture: Recent Perspectives on the History of Eugenics', *The American Historical Review* 103:2 (1998): 467–77.

culture and decentralised government. In every chapter, I start with the political and institutional context before elaborating on how defining degeneration, alcoholism and tuberculosis interacts with establishing the professional authority of the eugenicists, anti-alcohol reformers and sanitary reformers. This background enables me to analyse how Dutch public health reformers employed the concept of heredity to articulate how the individual relates to the collective in achieving public health.

My analysis of Dutch public health during the interwar years is focussed on, and therefore limited to explanations, proposals and debates. My concentration on heredity enables me to compare discourse centred around three different public health issues. And although the three groups under examination used the concept in different ways, the notion as analytic anchor allows me to reveal political presumptions on the relationship between the individual and the group which, in turn, further substantiate the existing political culture (see Fig. 3). Hence, my thesis is limited to intentions resulting from a political self-image to which Dutch health reformers generally adhered during the interwar years. The story I am about to tell, consequently, serves as a starting point for further research on public health practice, and additionally compare what Dutch health reformers *said* to what they actually *did*.

With this story, I have four types of readers in mind. The first one is the historian of medicine interested in the interaction between politics and medical knowledge, who will appreciate my focus on how conceptualisations of heredity in public health interact with the Dutch political culture. The second one is the historian of biology, who might like to learn how the shifting conceptualisation of heredity took takes place in the Netherlands during the interwar years, and how heredity is explained so differently depending on the debate. The third one is the sociologist of science interested in the way concepts change in response to scientific developments while, at the same time, articulating social tension. The fourth reader regards the present-day public health official dealing with epidemics and wants to reflect on how the explanation of seemingly neutral concepts interacts with their political ideals and professional identity.

Chapter I

Degeneration and Eugenics

Degeneration is synonymous with the English word 'decay', or 'deterioration', the German 'Entartung', the French 'dégénération,' or the Dutch 'ontaarding' or 'degeneratie'. Analytically speaking, the notion is used to talk about the decline of the individual in relation to the group; it moreover addresses the process of the progressive worsening of psychological and physical quality. Retrospectively speaking, 'degeneration' theories never were crystallised in a single theory or coherent framework. According to Jo Tollebeek, editor of the compelling volume *Degeneratie in België* (2003), it is more useful to speak in terms of 'a discourse which was connected by a whole of ideas and practices brought under one single denominator through Wittgensteinian family resemblances.'[65] Over the eighteenth century, conceptions of degeneration were used to indicate deviations from a certain normal condition or status.[66] Benedict Augustin Morel (1809-1873), Swiss physician and father of 'degeneration' as a medical concept, defined the process in 1857 as an 'intergenerational process' in which depraved individuals vertically transmitted bad traits to their offspring, thereby threatening collective health.[67]

Fears for degeneration still existed in the Dutch interwar period. In the 19th century, degeneration was primarily a product of cultural pessimism, believing that individual moral sins were assumed to be leading to inevitable social decay. In the first half of the twentieth century, however, degeneration began to be understood as a threat of collective health only if individuals with a bad hereditary disposition would reproduce. Many reformers believed that with a proper understanding of the distribution of degenerate heritable traits within a given population, collective health could be preserved trough reproductive intervention. Debates on both the identification of degenerate characteristics, as well as the potential reproductive measures were known as 'eugenics', a term coined by Francis Galton (1822-1911) in 1883.[68] As individual reproductive autonomy was compromised to maintain and improve the health and quality of the population, the eugenic response to degeneration is according to historian of medicine Paul Weindling the ultimate example of a population oriented public health approach.[69] Weindling's perspective leads to the central question of this chapter: how did

[65] Jo Tollebeek, Geert Vanpaemel, and Kaat Wils, *Degeneratie in België, 1860-1940: een geschiedenis van ideeën en praktijken* (Leuven: Universitaire Pers Leuven, 2003), 2.
[66] Tollebeek, Vanpaemel, and Wils, *Degeneratie in België*, 3-4.
[67] Jean-Christophe Coffin, 'Heredity, Milieu and Sin: The Works of Bénédict Augustin Morel (1809-1873)', *A Cultural History of Heredity II* (Berlin: Max Planck Institute for the History of Science, 2003), 153.
[68] Galton, 'Eugenics,' 1-6.
[69] Paul Weindling, 'Conceptualising Eugenics and Racial Hygiene as Public Health Theory and Practice', in Johannes Kanenen, Sophie Bergenheim (eds.), *Conceptualising Public Health* (Routledge: 2018), 4.

eugenicists in the Netherlands conceptualise their response to degeneration, and which role did heredity play to articulate their cause as a matter of public health?

After I sketch the political and institutional context for eugenic proposals in the Netherlands, I will explain how and why Dutch eugenicists passionately dismissed foreign sterilisation politics. This background enables me to examine how Dutch eugenicists envisioned their relationship with medicine and how they tried to establish themselves as public health reformers. I will focus on how eugenicists explained heredity during the interwar years to understand better how Dutch eugenicists articulated their response to degeneration and the extent to which this reveals a population or individual-oriented public health approach. In the final section of this chapter, I show how the eugenicist's conceptualisation of heredity legitimises a public health approach focussed on the population with a central role for individual health and environmental reform. Overall, the chapter shows that in the Dutch eugenicists' aim to preserve collective health, developmental health and individual autonomy would never have to be compromised. On the whole, Dutch eugenic debates during the interwar years reflected the Dutch political culture of egalitarianism while providing a conceptual basis for decentralised solutions to degeneration as an issue of public health.

i. Academic Activism

Eugenics held a minor place in Dutch political discourse. While it was never a coherent program, policies that interfered with a citizen's reproductive capacities with the explicit aim to improve collective health were a sensitive topic. During the interwar years, the responsible Dutch ministers approached any item that appeared in some sense influenced by eugenic thinking with great hostility, often playing it down as an 'inappropriate' subject. Remarkably, not one member of parliament proposed eugenic laws explicitly. This, however, does not mean that the Dutch parliament didn't discuss it at all. Negative eugenics was debated (and dismissed) on the side in the context of three topics referring to reproduction. Next to premarital medical examination, these issues included the possibilities of therapeutic castration and sterilisation.

An inappropriate political topic

The first topic regarded premarital examination (*geneeskundig onderzoek vóór het huwelijk*). Already at the end of the 19th century, prominent medical professionals such as the well-known Leiden professor of obstetrics Hector Treub (1856-1920) proposed premarital medical checks on hereditary deviations and social diseases such as tuberculosis, venereal diseases, and alcoholism. Such tests, Treub and others argued, would discourage reproduction and prevent degeneration.[70] In the Netherlands, the debate on premarital examination resulted in the foundation of three consultation offices for medical examination before marriage in Amsterdam (1924), Rotterdam (1926), the Hague (1926) and Arnhem (1928). They were governed by *Vereeniging voor Geneeskunidg Onderzoek voor het Huwelijk* (V.G.O.H.), a bottom-up

[70] See: Hector Treub, *Huwelijk en ziekte*, (Haarlem: Bohn, 1900).

initiative founded in 1920. However, as Mayre Merkens showed in her master thesis, these offices were unsuccessful in terms of visitor numbers: the Amsterdam location started with over a hundred visitors a year, but that number decreased to less than thirty-three years later.[71] In the 1920s, the V.G.O.H. did whatever they could to promote their initiatives. One of their strategies meant reaching out to the government.

Betsy Bakker-Nort (1986-1947), an outspoken feminist and as social democrat a member of parliament tried to set medical examination before marriage on the parliamentary agenda while debating the budget of the Ministry of Work, Trade and Industry in 1924. Bakker-Nort specifically proposed to fund information booklets about the consultation offices for medical checks immediately to be hand out after the wedding ceremony.[72] The responsible minister, the catholic Piet Aalberse (1871-1948), responded—clearly annoyed—that the budget meeting was not the right moment to discuss 'such a delicate matter'. He argued that handing out brochures after a wedding would be too late. But his principal objection is exemplary for the government's attitude towards reproductive measures during the interwar years: 'these initiatives have to land in our society without the financial support of the government,' Aalberse stated.[73] In the spirit of a decentralised political culture, Aalberse regarded reproductive health a private matter.

Debates on therapeutic castration as treatment of sexual psychopathy similarly reflects the Dutch political culture. The most outspoken proponent of the legalisation of castration was the conservative-liberal Louis 'Ridder' van Rappard (1904-1994). In 1933, the responsible catholic minister of Justice Josef van Schaik (1882-1962) had emphasised how castration should remain prohibited, even when it happened voluntarily. In the 1934 budget debate of the justice department, van Rappard again proposed legislation of therapeutic castration. In his passionate address, he was bold enough to employ theological arguments to please the Catholic minster, stating that Vatican rulers had no principle objections to therapeutic castration 'in contrast to eugenic sterilisation.'[74] He was supported by Bakker-Nort, who proposed to consult experts on the matter of voluntary castration.[75] Minister van Schaik responded in the same way as Piet Aalberse had done earlier. He objected from a practical point of view that—to his knowledge—castration did not suppress libido, but his principal objection is even more interesting. Castration, Van Schaik stated, interfered too much in the domain of reproductive autonomy: 'the individual doesn't exist for the sake of the state, but the contrary is the case: the state exists for the sake of the individual.'[76] Van Schaik rejected the idea of an investigative committee as well—the issue was not a matter of government (*niet commisoriaal*). 'Let's leave the initiation of scientific research on this matter to private initiatives (*particulier initiatief*) and wait for their report,' the justice minister responded to Bakker-Nort.[77]

In this political climate, it is not so much a surprise that sterilisation to prevent reproduction was never seriously proposed and discussed in the Dutch parliament. Besides the

[71] M. Merkens, *'Heb ik het recht te trouwen?' Nederlandse consultatiebureaus voor geneeskundig onderzoek voor het huwelijk in het Interbellum (Master's thesis)* (Universiteit van Amsterdam, 2015), 79.
[72] Handelingen van de Tweede Kamer der Staten Generaal (1924), 1860.
[73] Handelingen van de Tweede Kamer der Staten Generaal (1924), 1860-1.
[74] Handelingen van de Tweede Kamer der Staten Generaal (1934-1935 II), 748.
[75] Noordman, *Om de kwaliteit van het nageslacht : eugenitica in Nederland, 1900-1950*, 190.
[76] Handelingen van de Tweede Kamer der Staten Generaal (1934-1935 II), 748.
[77] Handelingen van de Tweede Kamer der Staten Generaal (1934-1935 II), 841.

debates on medical examination in 1924 and castration in 1933 and 1934, sterilisation only appeared in 1937 as a side issue while debating financial support for a legal counsel for Jewish political refugees that entered the Netherlands at the end of the interwar years. Social democrat Leendert Donker (1899-1956) stated with aversion how Jewish refugees are confronted with 'disgusting' measures such as 'concentration camps, sterilisation, and other anti-Jewish policies.'[78] Overall, the Dutch political landscape generally regarded sterilisation as interference on individual autonomy by the government, as Jan Noordman correctly suggested in his 1995 dissertation on Dutch eugenics. The Dutch stronghold of resistance to the deluge of international sterilisation laws was primarily an articulation of fear for too much power of the central government.[79] Reproduction, as well as health in general, was a strictly private matter.

Stumbled organisational enthusiasm

The lack of political support for reproductive measures reflects the low number of eugenic institutions in the Netherlands. If eugenics could not be discussed in the parliamentary arena as a potential response to degeneration and reserved only a minor place in Dutch private initiative, does this mean that eugenics was completely non-existent in the Netherlands? Quite the opposite. A small group of enthusiast academics extensively published on the subject, which unified a wide range of issues concerning the application of human genetics. Institutionally, Dutch eugenics took shape as a patchwork of scientific institutions in the late 1920s and early 1930s.

Apart from the association for premarital examination, the first attempt to explicitly organise eugenics can be found in 1914, as the Dutch physician A.E.W. Toe Laer became highly disappointed by the absence of a Dutch delegacy at the first international eugenic conference in 1912 in London.[80] At a public meeting of the Amsterdam consultation office for premarital examination, he proposed to initiate a 'Dutch Eugenic Association' (*Nederlandsche Eugenetische Vereeniging*). Exemplary for Dutch eugenics, only medical professionals could become a member—sociologists, philosophers and others were not allowed.[81] Despite its initial enthusiasm, the association failed to mobilise widespread enthusiasm for eugenics. It was a 'weak attempt', as Marianne van Herwerden later admitted in her textbook on human heredity in 1926.[82] Only after the First World War, in the early 1920s, a colourful alliance between geneticists and physicians rehabilitated eugenic initiative in the Netherlands.

The first effort originated in the context *Het Nederlandsche Volk*, initially an anthropological organisation from just before the war, which strived for insight into quantitative and qualitative aspects of the Dutch race (*volk*). In the mid-1920s, the association founded a subcommittee on heredity in which solely physicians were allowed to participate. The committee counted leading figures among its members. Next to Marianne van Herwerden, who was a private lecturer in cytology and genetics at Utrecht University, also social democrat Gerrit Pieter Frets (1979-1957) participated. The latter was a physician in the mental asylum of

[78] Handelingen van de Tweede Kamer der Staten Generaal (1937 I), 310.
[79] Noordman, *Om de kwaliteit van het nageslacht: eugenitica in Nederland, 1900-1950*, 214.
[80] A. E. W. Toe Laer, 'Eugenese', *Nederlands Tijdschrift voor de Geneeskunde* (1914), 431.
[81] Toe Laer, 'Eugenese', 432.
[82] Maria Anna van. Herwerden, 'Erfelijkheid bij den mensch', *Natuurkundige voordrachten* 5 ('s-Gravenhage, 1927), 373.

Maasoord, and would later become a professor of neurology in Rotterdam. He published extensively on alcoholism, eugenics, and heredity in the 1920s and 1930s. Also, the catholic ophthalmologist Johannes Waardenburg, who would later become the successor of Marianne van Herwerden as a professor in Utrecht, was one of the original members. All three academic physicians would become leading figures in Dutch eugenics. Although the committee on heredity existed only for a short period, it had played a key role in establishing contact with internationally renowned eugenicists and geneticists.

Another subcommittee dealing with human heredity on a professional level was founded in the context of *De Mensch*, an organisation established by a group of poultry breeders in 1923. Besides this *Nederlandsche Genetische Vereniging*, also the *Nationaal Bureau voor Antropologie* tried to popularise eugenics in the Netherlands. This bureau, with a eugenic department consisting—again—mainly out of physicians, was founded in 1922 and responsible for the interdisciplinary journal *Mensch en Maatschappij*. An attempt to unite all existing organisations on eugenics and human heredity took place in 1924. In March of that year, *Het Nederlandsche Volk, Vereening tot Bevordering van het Geneeskundig Onderzoek vóór het Huwelijk*, the *Nederlandsche Genetische Vereniging*, and *Nationaal Bureau voor Antropologie* decided to collaborate under one overarching 'Central Committee'. Later in 1930, when the committee gained royal support, the association renamed itself the 'Dutch Eugenic Federation' *(Nederlandsche Eugenetische Federatie*), following international examples in becoming a member of the 'International Eugenic Federation'.

We should not overestimate these organisational activities. After all, we are looking at a small circle of activist academics who tried to establish the social relevance of 'heredity theory' (*erfelijkheidheidsleer*)—eugenics primarily was a side job, a 'hobby' for the involved physicians.[83] This is nicely illustrated by the double roles played by the board members of all committees united in the 'Dutch eugenic federation'.[84] Marianne van Herwerden, for example, was affiliate from the 'Dutch Bureau for Anthropology' in the 'Dutch Eugenic Federation' while being secretary of the 'Dutch association for premarital medical examination'. She was also editor of *Mensch en Maatschappij* and crucial in establishing international contacts for the subcommittee on heredity of *Het Nederlandsche Volk*. Gerrit Pieter Frets is another example of the interwovenness of all four associations. He represented *Het Nederlandsche Volk* in the Dutch Eugenic Federation while being chair of the eugenic department of the *Nederlandsche Genetische Vereeniging*. The entangled roles all board members had was comparable to the regular members of all eugenic associations. If someone became a member of one of the association, he or she automatically became a member of most of the other eugenic clubs.[85] It suggests the low number of participants in Dutch eugenic activism—the 'Dutch Eugenic Federation' seems, in that regard, not much more than a paper construction to establish some fort of professional authority. But if eugenics was mainly an academic matter, was this marginal institutional position compensated by an extensive research program?

It was not. Eugenic investigations on a grand scale—as had been done in Germany, the United States and Great Britain—did not take place in the Netherlands. Attempts by Marianne

[83] Noordman, *Om de kwaliteit van het nageslacht : eugenetica in Nederland, 1900-1950*, 97.
[84] Ibidem, 98-99.
[85] Ibidem, 98.

van Herwerden and psychiatrist Johannes van der Spek were relatively amateurish. The Netherlands lacked a tradition of eugenic 'field-workers', who gathered data on the hereditary quality of the population on a grand scale as was the case in, for example, the United States.[86] In the early 1930s, however, Dutch eugenics gained some momentum. For the occasion of his retirement, the Groningen zoology professor Johan Frits van Bemmelen (1859-1956) got the disposal of a fund to foster research in population biology. Together with Marius Sirks (1889-1966), who at the time was a botanist at Wageningen agricultural university, he founded the 'Dutch Institute for Investigation on Human Heredity and Racial Biology' (*Nederlandsch Instituut voor Erfelijkheidsonderzoek bij den Mensch en voor Rassenbiologie*) in 1930. Typical for Dutch eugenics, its governing board consisted out of the now-familiar names: Marius Sirks was president, Waardenburg vice-president, and Van Herwerden—again—became secretary.[87] The new institute would, according to Jan Noordman, never became the institute its founders had envisioned—despite its relatively significant amount of published output (mainly in the journals of the collaborators themselves). In its 'heydays', the 'Dutch Institute for Investigation on Human Heredity and Racial Biology' consisted out of three (privately rented) offices, regardless of its prestigious name.[88]

Towards the end of the 1930s, the partners of the Dutch Eugenic Federation who had survived started to defunct. *Het Nederlandsch Volk* already stopped all its activities at the end of the 1920s. The Association for premarital medical examination threw in the towel in the late 1930s due to lack of governmental support. The genetic department of *Nederlandsche Genetische Federatie* survived the interwar years but did not participate in public discussions on collective health or degeneration. This lack of engagement was mainly due to its hesitant secretary Arend Hagedoorn (1885-1953) who, being an internationally renowned expert on cattle breeding and genetics, was rather critically of the idea of applying human heredity. Lastly, the Dutch Bureau of anthropology remained active during the interwar years, primarily because of the excellent reputation of its academic publication *Mensch en Maatschappij* under the editorial supervision of Gerrit Frets and Marianne van Herwerden. However, its number of members dropped between 1926 and 1933 from 702 to 352. It continued to decrease towards the end of the interwar period.[89]

Regardless of the initiator's academic activism, eugenics did not get off the ground in the Netherlands. Looking at concrete actions and political outcomes, I agree with Jan Noordman that Dutch eugenics was remarkably unsuccessful.[90] Negative eugenics was never implemented as a solution to degeneration. As becomes clear from my sketch of how reproductive measures were discussed in the Dutch political arena, eugenics was at odds with Dutch political culture in that it interfered with individual autonomy and decentralised government. Noordman's one-sided focus on political outcomes is understandable, but problematic in its suggestion that Dutch eugenics 'failed' because academic eugenicists could not convince Dutch politicians of the

[86] See for example their publication in *Nederlandsch Tijdschrift voor de Geneeskunde* in 1923: Marianne van Herwerden and Johannes van der Spek, 'Nederlands Veldwerk', *NTvG* II (1923), 513-520. This US 'tradition' primarily materialised at the Cold Spring Harbor eugenic labaratoria under supervision of Charles Davenport. See: Kevles, *In the Name of Eugenics*, 41-57.
[87] Marianne van Herwerden, *Erfelijkheid en Maatschappij*, 58.
[88] Noordman, *Om de kwaliteit van het nageslacht : eugenetica in Nederland, 1900-1950*, 104.
[89] Ibidem, 112.
[90] Ibidem, 260.

reproductive measures they proposed. Such a perspective is incomplete for two reasons. Dutch eugenicists were not as isolated from the Dutch political culture as Noordman concludes,[91] but instead very much responding to it. In that regard, as Dutch eugenicists were indeed primarily academics, they determined their success in terms of research output, explicitly not by political outcomes. Therefore, to fully understand the relation between Dutch eugenicists and the Dutch political culture, we have to turn to the writings of the leading figures themselves.

ii. Opposing race delusion

Eugenics as a research program

It is beyond doubt that Marianne van Herwerden (1974-1934) was the leading and most influential eugenicist in the Netherlands. In 1910, she became a private lecturer in cytology at Utrecht University, one of the first women who gained an official position at a Dutch university. Despite her medical training, she decided to do research in the field of biology—especially in reproductive cytology. In the Netherlands and beyond, van Herwerden became highly respected for her contributions to the physiological understandings of heredity. The more surprising it was that the post for a professor in physiology at Utrecht University did not go to Marianne van Herwerden, but to J. Boeke, who already held a professorship at Leiden University. Van Herwerden's sister, who wrote her biography, speculated that Marianne was passed over because she was a woman.[92]

Her colleagues were aware of the injustice and awarded Van Herwerden a travel-grant to visit all important research institutes on heredity under the condition that she published monthly reports in the Dutch Medical Journal. In 1920, Van Herwerden visited not only the East-Coast laboratories of Alexis Carrel, Edmund Wilson, and Thomas Hunt Morgan but the Eugenics Record Office of Charles Davenport as well. She was impressed and inspired immediately: after her stay, van Herwerden's career entered a new phase. From 1920 onward, she was determined to introduce eugenics in the Netherlands. In that respect, Van Herwerden's life historyHer writings, to that extent, were regarded authoritative: almost all geneticists celebrated Van Herwerden's *Handboek der Erfelijkheidsleer en Eugenetiek* (1929) as the most authoritative textbook on the application of heredity theory in the Netherlands.[93] As a result, her views on the implementation of heredity theory are representative of how, in the 1920s, Dutch eugenicists related their research to reproductive policies as a solution for degeneration, especially in light of the increasing amount of proposals for eugenic policies in the rest of Europe and the United States.

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[91] Noordman, *Om de Kwaliteit van het Nageslacht*, 103–7.

[92] Mineke Bosch, 'Looking at Laboratory Life, Writing a Scientific Persona: Marianne van Herwerden's Travel Letters from the United States, 1920', *L'Homme* 29:1 (2018): 19; C.A.B. van. Herwerden, *Marianne van Herwerden : 16 Februari 1874 - 26 Januari 1934* (Rotterdam : W.L. & J. Brusse, 1948), 64.

[93] This becomes clear from the several ways in which other geneticists and eugenicists refer to van Herwerden's text book. See for example the Wageningen rctor magnificus Jan Antonie Honing, who stated that those interested in eugenics should start with van Herwerdens text book. See: J.A. Honing, *Erfelijkheid en Samenleving* (Wageningen: H. Veenman en Zonen, 1934), 15. Van Herwerden's book was not the first Dutch textbook on genetics and human heredity, but it certainly was the first text book on the application of heredity theory.

For Marianne van Herwerden, eugenics was primarily a research program aiming to gather data to figure out which traits were hereditary, and which were not. In such endeavour, she considered 'scrutiny' and 'precision' as the essential epistemic virtues in better to understand degeneration as a thread of public health. In framing eugenics as a research program, Van Herwerden was very critical of sterilisation policies gaining popularity during the interwar period, as appears in a report on her visit to the Eugenic Record Office in Cold Spring Harbor in 1920, which she wrote for the Dutch Medical Journal:

> I had expected that the Eugenic Record Office would propagate laws regarding sterilisation policies and marriage laws as they were applied in some of the North American states. On a meeting of the Eugenic Research Association, which I attended at Cold Spring Harbor, it appeared to me that the contrary was the case: the association fiercely opposed premature measures which discredit the good cause of eugenic research.[94]

This 'good cause' referred to research helping to prevent degeneration by improving the understanding of hereditary traits. 'Scientific eugenics'—based on a 'proper' understanding of 'actual' heredity—should, according to Marianne van Herwerden, be distinguished from a eugenics 'associated with all kinds of wild notions regarding the prohibition of reproduction.'[95] It is therefore not surprising that Van Herwerden fiercely opposed sterilisation practices to create an 'ideal race', as was increasingly propagated in Germany and to a lesser extent in Scandinavia. Such plans reflected an 'unscientific understanding of heredity', and she was keen on emphasising that such suggestions had nothing to do with 'eugenics proper'.[96] In the first edition of her textbook *Erfelijkheid bij den Mensch en Eugenetiek* (1929), van Herwerden states, explicitly 'on behalf of Dutch eugenicists', that:

> we want to keep our movement pure and dismiss all prejudices regarding the greater or lesser eminence of one or the other race—something that many German and Scandinavian eugenicists fail to understand correctly. We should abandon the many clubs and associations that aim to elevate the Nordic race, which was founded before and after the Great War in Germany.[97]

Marianne van Herwerden died in 1934, the year the German Sterilisation Law—the "Gesetz zur Verhütung erbkranken Nachwuchses"—was enacted. Even though she was unable to explicitly oppose the actual implementation of these forced sterilisation programs herself, many of her Dutch colleagues explicitly condemned the German practices in the remainder of the Dutch interwar period in her spirit. Eugenicists such Gerrit Frets, Arend Hagendoorn, Frank Wibaut, and Marianne van Herwerden were (internationally) known for their moderate and cautious position in debates on the potential application of heredity theory in terms of eugenic

[94] Marianne van Herwerden, 'Brief uit Amerika XIII,' *NTvG* (1920), 2580.
[95] M.A. van Herwerden, 'Georganiseerd onderzoek naar de verspreiding van erfelijke eigenschappen en afwijkingen bij den mensch', NTvG (1923), 515.
[96] Marianne van Herwerden, *Erfelijkheid bij den Mensch en Eugenetiek*, 2de dr., 1929.
[97] van Herwerden, *Erfelijkheid bij den Mensch en Eugenetiek*, 368.

measures.[98] No wonder that Dutch authors on heredity were relieved that Dutch politicians had not 'yet mastered the issue of eugenics.'[99]

Opposing race delusion

The suspicion towards eugenic policies as Van Herwerden had articulated it, was widespread among other Dutch eugenicists, geneticists, and physicians with interest in human heredity. The commencement speech of Jan Anthonie Honing (1880-1950) at the occasion of his appointment as rector magnificus of the agricultural university of Wageningen in 1934 illustrates this attitude nicely. Honing was a renowned Dutch geneticist. He wrote his dissertation supervised by Hugo de Vries and had been a professor of heredity theory at the universities of Amsterdam and Utrecht in the 1920s. His inaugural lecture called 'Heredity and Society' (*erfelijkheid en samenleving*) addressed the several ways in which eugenics could prevent counter-selective forces of civilisation to cause hereditary degeneration.

Of course, sterilisation was one measures under discussion. In the context of discussing the ethical and religious issues surrounding such policies, Honing elaborated on how in Germany, a research commission under the direction of Eugen Fischer (1874-1976) had concluded that from a legal and ethical point of view, only *voluntary* sterilisation was justified. However, Honing admitted worried, 'the governing party in Germany is willing to go beyond the conclusions of Eugen Fischer, based on the recent sterilisation laws and the Reichstag speech delivered on the 30th of January by Hitler, in which he asked the clergy not to condemn those who tried to prevent disease.'[100] Honing deemed such political ambitions as hyperbolic: 'Race delusion, morbid exaggeration, or perhaps the attempt to ridicule issues regarding heredity, seems to inspire some to speak of millions of people that would qualify for sterilisation.'[101]

This 'wrong', ideologically informed type of eugenics, was very often understood as related to nationalist and discriminatory policies. As a result, research-based eugenics 'suffered' under the pressure of political interests of the national context in which it was practised. Also, Johannes van Loghem (1887-1968), a professor in public health (*gezondheidsleer*) at the University of Amsterdam, addressed the eugenicist's compromised reputation in a chapter on eugenics in one of the few textbooks on public health. In 1935, he wrote:

> Eugenic practitioners often wander into reflections on the future of the nation to which they belong. As a consequence, the science shows a nationalistic guise to its detriment. It can also happen that eugenics has to supply weaponry in the struggle between races within a particular nation. In America, several eugenicists prefer to interfere with the 'Negro issue' and immigrants; an anti-Semitic Eugenics marches under German command.[102]

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[98] Alison Bashford, 'Nation, empire, globe: the spaces of population debate in the interwar years', *Comparative studies in society and history* 49:1 (2007): 178. Also Dutch physicians themselves were aware of the relatively nuanced position they hold. See, for example: J.J. van Loghem, *Algemene gezondheidsleer* (Amsterdam: N.V. Uitgevers-Maatschappij 'Kosmos', 1935), 329–30.

[99] Honing, *Erfelijkheid en Samenleving*, (1934), 15.

[100] Ibidem, 10.

[101] Ibidem, 12.

[102] Loghem, *Algemene gezondheidsleer*.

Ironically, despite the various ways in which these academics dismissed how eugenics was used as a 'political' tool, discussions about the German sterilisation laws of 1934 did foster a certain momentum for the new scientific discipline in the Netherlands. Most textbooks written at the beginning of the 1920s were reprinted as expanded new editions in the early 1930s. Marius Sirks, for example, published in 1933 the second edition of his *Handboek der Erfelijkheidsleer*. 'Passionate and fanatic racism, especially in recent years,' Sirks claimed, 'increasingly influenced the application of heredity theory. I consider myself as having the duty to safeguard our research subject and how its conclusions are put into practice, from subjective biases.'[103] To that extent, new textbooks on applied heredity theory (*Toegepaste Erfelijkheidsleer*) were written, intended to help its readers to form an opinion on international developments. The catholic physician Johannes Schulte, who wrote his *Erfelijkheid en Eugenetiek* in 1938, was well aware of how the popularity of Dutch eugenics in the 1930s related to the questionable practices in Germany and legitimised the relevance of his textbook by these events. Schulte unequivocally stated that 'over the last couple of years, especially in Germany, heredity theory has been put into practice (sterilisation, hygienic racial measures, etc.). In that regard, eugenics seems to have left the context of research and entered public life.'[104] As a result, every right-minded citizen, Schulte expected, had to be aware of the problematic nature of the hasty, political application of eugenic research.[105]

The few academics propagating eugenics, with Marianne van Herwerden in front, understood their discipline as primarily a research program. This research program had as its primary goal to make insightful the distribution of hereditary characteristics in a population. Only in the second instance, this knowledge of human heredity could be applied to prevent degeneration. During the interwar years, but especially when many European countries started to adopt sterilisation policies in the early 1930s, Dutch eugenicists explicitly distinguished themselves from 'hasty' political application that suggested to 'improve' the population. This criticism reveals that the lack of eugenic policies in the Netherlands should can not only be explained in terms of disdain from politicians; also eugenicists themselves were not necessarily interested in the practical implications of their ideas. The relation between eugenics and politics in the Netherlands presents us with a somewhat ambiguous image. As Dutch eugenicists claimed to help prevent degeneration, they were also critical of sterilisation policies aiming for racial improvement. To understand this paradox, we need to look more closely at the relation between eugenics and medicine. And more specifically, we need to examine how Dutch eugenicists saw themselves as public health reformers.

[103] M.J. Sirks, *Handboek der algemeene erfelijkheidsleer*, (2nd edition) ('s-Gravenhage: Martinus Nijhoff, 1933), 85.
[104] Schulte, *Erfelijkheid en eugenetiek,* pref. i-ii.
[105] Schulte, pref. ii.

iii. Eugenics and Public Health

An alliance with medicine

To understand the relationship between eugenics and Dutch public health, I first want to get rid of the understanding of eugenics as 'the science of the Holocaust.'[106] Retrospectively speaking, eugenics was of course employed to legitimise and encourage Nazi sterilisation practices and the holocaust. However, such a finalist interpretation of the application of human heredity fails to adequately explain why Dutch eugenicists opposed sterilisation policies abroad so explicitly. Some historians proposed in that regard retaining a 'prospective approach' to grasp the 'biologising' pre-war Dutch scientific debate fully.[107] In a similar vein, historians Deborah Kamrat-Lang and Peter Weingart proposed to understand eugenics as a public health approach aiming to prevent social decay, medicalised as 'degeneration'.[108] This medically-oriented social hygiene contrasted, according to Weingart, an anthropological- and inherently racist orientation. 'Their main concerns were parallel but different: what fear of racial impurity was to the anthropologists; the fear of physical degeneration was to the physicians.'[109] Medical eugenics aimed to prevent decay by maintaining collective health. Anthropological eugenics, on the other hand, focused on a more significant degree on improving racial quality.

It is indeed sensible to interpret Dutch eugenics as oriented towards-, or even as a part of medicine. As I stated earlier, most Dutch eugenic organisations did only allow members with a medical degree. And the geneticists who solely had biological training presented their knowledge as particularly relevant in medical contexts. Moreover, most Dutch geneticists found appointments as professors of heredity theory in medical faculties. Geneticist Marius Sirks, for example, apologised in his inaugural lecture for a position as professor of genetics at the University of Groningen in the faculty of medicine for 'not being a medical practitioner' when he addressed his new medical students in 1937.[110] Ophthalmologist Johannes Waardenburg also emphasised the tight relationship between medicine and eugenics in his inaugural speech as a lecturer in genetics in the medical faculty of Utrecht University in 1934. 'It would be wrong to allocate one of the subjects a one-sided significance; it is more helpful to speak of strong interaction. The rapid developments in the study of human heredity have been a precondition for medical breakthroughs.'[111]

At the end of the Dutch interwar period, most eugenicists portrayed the study of heredity as being fully integrated into medical practice. Many textbooks on heredity bore titles such as 'Heredity and Medicine', and 'Eugenics, genetics, and medicine'. Frank Wibaut's *De betekenis der erfelijkheid voor de geneeskunde* (1940) is an excellent example that ties together how Dutch geneticists increasingly conceptualised heredity as primarily a biological domain, therefore comparable to the exact sciences, and as an integral part of medicine. 'Over the last

[106] Kevles, *In the Name of Eugenics*, 292.
[107] Martijn Eickhoff, Barbara historica Henkes, and Frank van Vree, *Volkseigen: ras, cultuur en wetenschap in Nederland, 1900-1950*, Jaarboek van het Nederlands Instituut voor Oorlogsdocumentatie 11 (Zutphen: Walburg Pers, 2000).
[108] Kamrat-Lang, 'Healing society'; Weingart, 'Eugenics—Medical or Social Science?', 197.
[109] Weingart, 'Eugenics—Medical or Social Science?', 203.
[110] M.J. Sirks, *Het drievoudig verbond in de biologie* (Groningen: Wolters, 1937), 20.
[111] P.J. Waardenburg, *Geneeskunde en erfelijkheidsleer* (Haarlem, 1934).

couple of decades,' Wibaut stated, 'the study of heredity has developed itself increasingly into an exact science. As a result, the medical practitioner has to allocate a place for genetics in his reasoning and his conduct, as he does for other auxiliary sciences.'[112] For Wibaut, however, the study of heredity was not only useful for medicine: 'genetics is also important for medical professionals regarding its understanding of the human as a whole.' Knowledge of heredity, Wibaut concluded in the last chapter of his book, 'with all its interesting problems and state-of-the-art solutions should be an incentive for a more biological orientation of medicine. The physician of the future,' Wibaut predicted', will not only reason anatomically, physiologically, physical and chemical: it ought to learn reason biologically.'[113] Johannes Waardenburg went even further by introducing eugenics as an example of 'social hygiene'. Instead of focussing 'on the creation of some desired human race, reproductive reform should instead concentrate on preventing inferior, disadvantageous, and sickly traits from spreading across generations.'[114]

The paradoxes of civilisation

The eugenicist's orientation towards medicine, aiming to prevent degeneration, might explain the fierce criticism of reproductive measures aiming for racial purity. However, the alliance between eugenics and medicine incorporated another paradox. Dutch eugenicists regarded sanitary reform and the increasing success of therapeutic medicine and sanitary reform as the most important fruits of the rising 'civilisation' of society. In his Waardenburg's 1927 textbook *De Biologische achtergrond van aanleg, milieu en opvoeding* he stated how these developments were 'satisfactory from an ethical point of view.' But the improvements had negative consequences as well; they could potentially lead to degeneration. After all, Waardenburg stated, 'the counter-selective (*contra-selectie)* effects of sanitary reform have to be recognised and taken seriously.' Underestimating the moral and 'genetic' (*dysgenetische*) dangers of medicine for ethical reasons would, according to Waardenburg lead to the paradoxical result of 'an increased demoralisation, and hereditary degeneration of the population to which the social and medical reformer belonged.'[115] Without intervention, a civilised culture would eventually lead to a degenerate society. What precisely was the relation between medical progress, 'counter-selection', and degeneration? And how did the Dutch eugenicists relate to these worries?

The 'counter-selective' consequences of medicine made sense from a so-called 'Darwinian' (*Darwinistische*) point of view in which a population evolves in an environment with limited resources. Only the best-adapted organisms would survive and reproduce, a phenomenon that Darwin called 'natural selection'. Over time, this process caused change on a population level, making the species as a whole to respond more efficiently to its environment. Individual death was, therefore, necessary for the survival of the population.[116] Darwin thus explained the relation between populations and its environment, inspired by Thomas Robert Malthus's (1766-1834) *Essay on the principle of population*, as a natural economy leading to

[112] Wibaut, *De beteekenis der erfelijkheid voor de geneeskunde* (1940), 11.
[113] Ibidem, 185.
[114] Waardenburg, *Erfelijkheid en verwante vragen*, 294.
[115] Waardenburg, *De biologische achtergrond van aanleg, milieu en opvoeding*, 6.
[116] Bowler, 'What Darwin Disturbed', 564.

equilibrium over time.[117] However, the advantages of modern society—or 'civilisation'—interfered with this natural economy, enabling unfit individuals to survive and reproduce as well—a process that became known as 'counter-selection'. Dutch eugenicists were very much aware of these downsides of modernity. Tine Tammes (1871-1947), for example, stated in 1919 that 'in our current society, certain circumstances are leading to the degeneration of the population.'[118] Departing from a Darwinian framework, Tammes argued that over the last couple of decades, on the one hand, the 'struggle for existence' (*strijd om het bestaan*) had been softened by social and medical reform, so that 'natural selection' (*natuurkeus*) disappeared into the background. Additionally, weaker individuals did not die but instead got more offspring. As a result, medical and social improvements—the virtues of modern society—lead to 'counter-election' in their reversal of the natural process of evolution. It could even lead to degeneration of collective health.

Tammes claimed that biologists responded in various ways to these perceived demographic challenges. 'Some wanted to rehabilitate the struggle for existence in full force; they believed that in human society, weak individuals should perish inexorably so that the fit ones could survive.'[119] These eugenicists radically opposed all endeavours that held back natural selection; philanthropy was especially considered plain wrong. Tammes gave examples such as the renowned British eugenicists and sexologist John Berry Haycraft (1859-1922), who 'interpreted tuberculosis and alcoholism as favourable circumstances for the race, because it causes all weak individuals to die' and the German Alexander Tille (1866-1912), who saw 'East-London, a place were the worst elements of the population come together and perish, as a "Nationale Neilstatt".'[120]

Such a 'laissez-faire' take on human evolution and Darwinism was in view of Tammes highly problematic.[121] In their attempts to apply Darwinism to humanity, these eugenicists failed to take into account 'the uplifting effect of acts of mercy and human affection.'[122] But it was also contradictory. On the one hand, Tammes argued, 'the improvement of the human population is their most important ideal,' but the acts to achieve these ideals would be 'degrading, and lower human morality to the level of the animal.' In other words, Darwin's laws did not apply in the same way to humans as they did to other animals, because of humanoid moral consciousness. After discussing a laissez-faire interpretation of Darwinism, Tine Tammes rhetorically asked: 'Aren't the many opposing voices to such a standpoint quite understandable?'[123]

Most Dutch eugenicists answered that question positively: they regarded humans as distinct from animals; the application of natural laws to the human race required caution. Marianne van Herwerden, for example, admitted in her textbook *Erfelijkheid bij den Mensch en Eugenetiek* (1929) that the civilised attempts to improve the environmental conditions for individual development 'indeed lead to the preservation of hereditary factors that are undesired

[117] Paul, 'Darwin, social Darwinism and eugenics', 11-21. For a fantastic analysis of the relation between Darwinism and political economy see: Robert Maxwell Young, *Darwin's metaphor* (CUP Archive, 1971).
[118] Tammes, *De leer der erffactoren en hare toepassing op den mensch* (1919), 12-13.
[119] Tammes, *De leer der erffactoren en hare toepassing op de mesnch,* 13.
[120] Ibidem, 13.
[121] 'Laissez-faire', here, is an actor's category.
[122] Tammes, *De leer der erffactoren en hare toepassing op de mesnch,* 13.
[123] Ibidem, 14.

for the population as a whole.' From that perspective, van Herwerden reasoned, 'the human population has detached itself from natural selection (*natuurlijke teelkeur*) which, in the plant and animal kingdom, would set aside the undesired organisms to condemn them to extinction.'[124] According to Leiden dermatologist and eugenicist Herman Werner Siemens (1891-1969), a lack of training in the natural and biological sciences fed cultural pessimism opposing Van Herweden's and Tammes's interpretation of Darwinism: 'Still too many praise the ignorant pessimism that understands the extinction of human populations as well as the inevitable death of the individual—despite all scientific progress—as a necessary biological event.'[125] Hence, at the end of the interwar period, Dutch eugenic and biological authors reached the consensus that the biological mechanism of natural selection had disappeared in modern civilisation. But the reform movements that were part of this civilisation should not be abandoned.

This did not mean that Dutch eugenicists regarded degeneration as unimportant. To the contrary, in their united dismissal of laissez-faire public health approaches, they conceptualised eugenics as a humanitarian solution to the counter-selective consequences of public health reform and curative care. Jan Antonie Honing, for example, stated in 1934 that 'eugenics aims to compensate the booming innovations of medical science—which keeps the weak alive and causes counter-selection—in the most humanitarian sense. Instead of selection at the cost of the individuals themselves, modern eugenicists argued for selection at the cost of unborn offspring.'[126] In the Netherlands, authors who wrote on the application of genetics to preserve the hereditary health of the population through eugenic measures considered themselves as 'Darwinists'. They accepted the counter-selective consequences of 'civilisation' while denying the equation of humans with animals so that the social application of evolutionary theories legitimised laissez-faire politics by natural selection. Such a position is understandable in light of the Dutch eugenicist's ambition to present themselves as public health reformers. If and only if eugenic knowledge would be put in practice (in the distant future), it was the necessary humanitarian 'check' to could prevent hereditary degeneration caused by counter-selective forces such as medical practice and socioeconomic reform.

Resolving the tension

Framing eugenics as a humanitarian compensation of counter-selection and as an alternative to laissez-faire politics did not completely resolve all tension between eugenics and medicine. From a Darwinian point of view, collective degeneration progressed when individuals with degenerate characteristics reproduced. Preventive eugenics, in that regard, was oriented at the *future* health of the population. Consequently, the health of degenerate individuals had less priority. The orientation towards the population and the future contrasted curative medicine focusing on the short term by improving solely developmental health of every individual. How did Dutch eugenicists handle the tension between developmental health and the eugenic goal to maintain the health of the future population conceptually, while presenting themselves as an integral part of public health?

[124] van Herwerden, *Erfelijkheid bij den Mensch en Eugenetiek* (1929), 341.
[125] Siemens, *Hoofdlijnen der erfelijkheidsleer, rashygiëne en bevolkingspolitiek*, 137.
[126] Honing, *Erfelijkheid en Samenleving* (1934), 15.

Dutch eugenicists conceptualised their discipline, next to its compensating value, as complementary to existing initiatives that improve individual health. The first Dutch professor in genetics, Tine Tammes (1871-1947), who was also known for her outspoken liberal and feminist views, emphasised in her inaugural address in 1919 how curative medicine and environmental reform was a necessary precondition for applying knowledge on human heredity. 'The improvement of nutrition, light, and air for all would enable every individual to employ its hereditary potential the fullest—it would leave no promising hereditary factor unused.'[127] However, Tammes admitted that these environmental improvements focussed primarily on the developing individual and that it could not improve its hereditary material: 'indeed, the hereditary disposition of the population will not be improved. It will not be enriched with good hereditary material, and it will not take away bad hereditary material.'[128] Eugenics had the task to investigate how the spread of harmful hereditary factors (*erffactoren*) could be altered.

The Leiden professor of dermatology Hermann Werner Siemens emphasised in a similar vein the limitations of environmental improvements. In his 1931 textbook, he argued that 'every paratypic improvement (through hygiene, sport, nurturing, social measures) is limited to the lifetime of a single individual'. It did not enhance the health of the future population. Sanitary improvements 'are completely indifferent to the next generations; its effect will only last if the environmental improvements themselves are maintained.'[129] Thus environmental improvements and therapeutic medical practices enhance the health of the individual; to additionally maintain the health of the future population, eugenics was required. 'The results of environmental factors on the single individual is not without significance, and it determines the immediate condition of the population. A population that wants to stay at the same cultural, economic, and political level, ought not to fail in caring for currently living individuals while keeping in mind that it will never improve the biological structure of the population as a whole.'[130]

Hence, sanitary reform and curative care were regarded as relevant for currently living individuals. Still, to maintain the hereditary health of the population for the future, eugenic measures would be necessary. Also Johannes van Loghem, in his 1935 textbook on public health, conceptualised eugenics as a complementary and integral part of public health in similar terms as Tine Tammes and Hermann Werner Siemens had done earlier. Van Loghem admitted that sanitary reform affects the individual human or the human as a member of a population. Still, it won't be able to improve the hereditary health of the future population. 'Hygienic theory (*gezondheidsleer*) concerns the developing phenotype solely: it creates favourable conditions for the reaction between genotype and the environment so that the individual can employ its hereditary disposition the fullest. In addition to these endeavours, van Loghem stated, 'only eugenics interferes with the genotype, materialised in inherited factors (*erffactoren*).'[131] Individuals of the same species have, according to van Loghem, the same genotypic constitution. But within the human population, there are identifiable differences. Eugenics

[127] Tammes, *De leer der erffactoren en hare toepassing op den mensch*, 21.
[128] Tammes, *De leer der erffactoren en hare toepassing op den mensch*, 21.
[129] Siemens, *Hoofdlijnen der erfelijkheidsleer, rashygiëne en bevolkingspolitiek*, 86.
[130] Ibidem, 87.
[131] J.J. van Loghem, *Algemene gezondheidsleer* (Amsterdam: Kosmos, 1935), 319.

concentrates on the potential harm undesired deviation can do.'[132] Hereditary diseases were regarded as the most critical unwanted deviations; being unchecked, they could eventually lead to social degeneration. According to Frank Wibaut, these diseases were the manifestation of hereditary disposition under the influence of the environment. Therefore, a fruitful collaboration between eugenics and the medical domain required a 'division of labour': 'Whereas eugenics focusses on the hereditary disposition, medicine aims to positively alter the external factors that direct the development of the disease,' Wibaut stated.[133]

From a birds-eye perspective, it is essential to remind ourselves that the eugenicists were rather alone in experiencing the urgency for such division of labour within medicine. I already showed how there was almost no political support for eugenic policies in the Dutch parliament during the interwar years. The confessional cabinets regarded reproductive measures, and public health measures in general, as too much state-interference with individual autonomy. Dutch eugenicists did not experience this as problematic. They considered their discipline primarily as a research program and dismissed foreign racial sterilisation policies as both unscientific and—in line with the Dutch government—as too much interference with individual autonomy. They tried, as a result, to ally themselves with the field medicine; thereby emphasising that they targeted future degeneration of the population instead of racial purification. With its focus on preventing degeneration to preserve public health, Dutch eugenicists were able to equal themselves with public health reform.

The intrusion of eugenics within the domain of medicine fostered conceptual tension regarding the meaning of public health, which was resolved in relation to the Dutch egalitarian, decentralised political culture. On the one hand, eugenicists admitted that medical progress caused counter-selection leading to degeneration. They presented eugenics as an alternative to laissez-faire politics: reproductive prevention was a humanitarian compensation of medicine's tendency to keep degenerated individuals alive. On the other hand, Dutch eugenicists admitted that they focussed primarily on preserving collective health on the long-term. In contrast, sanitary reform and curative treatment aimed to maintain individual, developmental health. As a result, they presented eugenics as complementary to what already existed in medicine: hygienic improvement and therapeutic care were necessary for employing inherited potential while eugenics took care of the future of this inherited potential. Despite their focus on population health, Dutch eugenicists did not compromise the importance of individual health. In the following section, I will show how Dutch eugenicists further legitimised their emphasis on the individual through their conceptualisation of heredity.

[132] van Loghem, *Algemene Gezondheidsleer*, 319.
[133] Wibaut, *De beteekenis der erfelijkheid voor de geneeskunde* (1940), 181.

iv. Explaining 'actual' heredity

'Heredity' as contested concept

The meaning of heredity was contested. Authors on applied human heredity theory (*toegepaste erfelijkheidsleer*) repeatedly complained that they had to deal with the problem that their scientific definitions of the concept competed with a certain 'popular' use of the notion. Marius Jacob Sirks (1889-1966) dramatically opened the first edition of his *Handbook der Erfelijkheidsleer* in 1922 with the short but telling sentence: 'Heredity is a matter of experience'.[134] Everyone could relate to the phenomena of hereditary characteristics, he argued, and examples in which parents had the same traits as their offspring were all around. For that reason, Sirks discussed heredity through the scientific examination of the biological mechanism behind the reproductive and 'vertical' transmission of characteristics. As a result, Sirks organised his book primarily around the question of which characteristics were 'hereditary' (*erfelijk*), and how this could be determined.

The professional hereditary scientist, according to Sirks, should be able to distinguish 'actual heredity' (*ware erfelijkheid*) from what he called 'apparent heredity' (*schijnerfelijkheid*). This analytical endeavour required logical and empirical scrutiny, objective judgment, and should be left to biomedically informed scientists; not to philosophers and other 'soft' academics. 'Still,' Sirks wrote in 1922, 'problems regarding heredity are treated in every conceivable way. It grounds in the strong interest these issues raise by anyone who wants to give themselves the cachet to be intellectual.' Subjective reflections by philosophers, ethicists, and legal experts failed to sufficiently take into account that humans, as with all other organisms alive, are part of nature. After all, humans are subject to the same natural laws that control all living things—they are the object of biology.'[135] In the 1930s, most authors on applied heredity theory compared their biological study of heredity explicitly with the exact sciences. Herman Werner Siemens, for instance, stated in his Dutch textbook *Hoofdlijnen der Erfelijkheidsleer, Rashygiëne en Bevolkingspolitiek* that 'the study of human heredity can claim the name of the exact sciences for its universal conclusions.'[136] Heredity belonged to biological science. The attempt to demarcate a proper understanding of 'actual heredity' shows how the concept played a central role in establishing the eugenicist's professional authority. By claiming the concept, authors on heredity demarcated themselves from an imagined 'public' and other fields of academia. Conceptualising heredity thus was an example of disciplinary boundary work.

The boundary between actual and apparent heredity cannot be seen in isolation from its political context. The distinction was crucial in enabling the articulation of the eugenicists criticism of sterilisation. Jan Anthonie Honing (1880-1950) picked 'heredity and society' as the main topic for his inaugural address as chancellor of the Wageningen University of agriculture in 1934. He explicitly referred to the concept of heredity as 'both a means for- and object of quarrel.' Those who used the concept of heredity either 'paid too much credit to it' or 'denied

[134] M.J. Sirks, *Handboek der algemeene erfelijkheidsleer* ('s-Gravenhage: Nijhoff, 1922), 1.
[135] Sirks, *Handbook der Algemeene Erfelijkheidsleer* (1922), 2-3.
[136] Hermann Werner Siemens, *Hoofdlijnen der erfelijkheidsleer, rashygiëne en bevolkingspolitiek,* (4th edition). (Groningen: P. Noordhoff N.V., 1931), 51.

its value'.[137] In his lecture, he alluded to many political applications of the concept of heredity. He felt the urge to express his annoyance on the many ways politicians, legal officials, and philosophers proposing racial policies in a scientifically questionable way. In a similar vein, Frank Wibaut admitted in his medical textbook *De beteekenis van de erfelijkheid voor de geneeskunde* (1940), that calling a characteristic 'hereditary' causes much confusion: one should use 'genetically determined'. Such a subtle change of language was significant, according to Wibaut, 'since a little word such as "hereditary" ought to be read critically, and interpreted in a purely biological sense.' To Wibaut's disappointment, this was not the case in his own time: 'the notion currently "hereditary" awakens association with drastic measures such as sterilisation.'[138]

Hence, Dutch authors on eugenics employed the contested meaning of the concept of heredity to establish and defend their area of expertise over biological matters while expressing their criticism of wrongful political applications. With the invention of a distinction between 'apparent' and 'actual' heredity, Dutch eugenicists were able to articulate their specific conceptualisation of heredity as scientific, objective and therefore valid. If we take a closer look at how Dutch eugenicists modified and adjusted heredity in response to contemporary experimental results (mainly from abroad), it becomes clear that Dutch eugenicists conceptualised heredity in line with their attempts to present themselves as public health reformers. Additionally, I will show that their explanation of the concept helped in articulating their public health approach in relation to the Dutch egalitarian political culture.

Separating inheritance from development

After the First World War, Dutch authors on eugenics had been picking up the separation between the individual's hereditary material, and the developing mass of the individual. They projected this conceptualisation on August Weismann (1834-1915) and his introduction of the 'germplasm' (*kiemplasma*) as the physiological location of hereditary material in 1893.[139] This 'germ-line' had a continuous character, meaning that its composition did solely depend on the recombination of parental germ-lines. On a cellular level, Weismann considered the dead 'germplasm' as separated from the living 'soma', which was malleable and changeable by environmental factors. Though the germplasm formed the blueprint for the developing soma, the developing body could not influence the hereditary material. In this 'Weissmanian' theoretical framework, the genetic content could, in principle, not be altered due to environmental factors.[140]

Internationally, Weissman's conclusion began to be regarded as slightly outdated. Still, Dutch eugenicists remained remarkably faithful to Weissman's conceptual framework. Tine

[137] J.A. Honing, *Erfelijkheid En Samenleving* (Wageningen: H. Veenman en Zonen, 1934), 2.
[138] Wibaut, *De beteekenis der erfelijkheid voor de geneeskunde,* 184.
[139] Müller-Wille en Rheinberger, *A Cultural History of Heredity*, 86–89; Rheinberger en Müller-Wille, *The Gene*.
[140] For the purposes of this overview, I follow the more traditional story, also because I am interested how contemporaries interpreted Weissman, and not whether they did so in a justified manner. Among historians of ideas, there is debate on the extent to which Weismann actually believed external factors could not influence the germ-line. Rasmus Winther, for example, argued that the distinction between heredity and development came from a questionable interpretation of Weissman, they 'they reinpretered Weissman in a mannar suitbale for their purposes.' Rasmus G. Winther, 'August Weismann on Germ-Plasm Variation', *Journal of the History of Biology* 34:3 (1 December 2001): 550; Daniel J. Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity* (Berkeley: University of California Press, 1986), 70.

Tammes pointed out in her inaugural address as first Dutch professor in genetics how 'hereditary factors' (*erf-factoren*) form a continuous, imperishable element of every organism: they are passed on to next generations unaltered, she argued, independent from any circumstances. 'Whether someone generates a vast amount of wealth and brings it to a high position in society, or whether someone spends his life in unfavourable circumstances; whether he travels to the North pole or works in the mines, he will pass on the hereditary factors that he obtained from his parents unaltered to his children.'[141] This immortal character of the physiological structure of hereditary factors also formed the theoretical core of Marius Jacob Sirk's *Handbook der Erfelijkheidsleer*, published in 1922. Weissman, as Sirks interpreted him, showed through his research that very early in embryological life, certain parts were separated, which later formed the origin of future reproductive cells. 'These parts,' Sirks wrote, 'were turned off during development from embryo to adult life until the moment came that the body was mature enough to be ready for reproduction.'[142] During copulation, the hereditary material of both parents recombined. The continuous chain of the hereditary material was, according to Sirks, Weissman's 'crucial point'.

Later in the 1920s, in Hermann Siemens's quite popular Dutch textbook *Hoofdlijnen der Erfelijkheidsleer, Rashygiëne en Bevolkingspolitiek,* the dermatologists went one step further in interpreting Weissman's theoretical framework by stating that 'we should see the individual body as a temporary attachment of the hereditary plasm. It has the function of providing nutrition, but it will die and decompose once the hereditary plasm has assured its place in another individual by the release of reproductive cells.'[143] In the late 1920s and early 1930s, Hermann Siemens conducted various dermatological experiments on twins to investigate whether environmental factors could alter the hereditary material.[144] Based on these experiments, Siemens claimed that Weissman's separation of the living body and the dead and isolated germplasm, 'seems entirely justified.'[145]

In general, Dutch eugenicists agreed that the hereditary material was separated from the developing body. This meant that the germ-line formed the blueprint for physical development, but that the hereditary material could not be altered environmental factors. Crucially, the environment had no improving or degenerating effect on future generations—its influence was restricted to the individual 'soma'. One the one hand, Dutch eugenicists followed international trends in biology by explaining heredity in such a 'hard' manner.[146] On the other hand, Dutch eugenicists dismissed genetic determinism. They generally admitted that in individual development, both the heredity material (nature) and environmental influences (nurture) played an essential constituting role. Formulated in conventional analytic terms: in the Netherlands, the 'hardening of hereditarianism' did not result in genetic determinism based on the analytic separation between hereditary transmission and development.

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[141] Tine Tammes, *De leer der erffactoren en hare toepassing op den mensch; rede, uitgesproken bij het aanvaarden van het ambt van buitengewoon hoogleeraar aan de Rijks-universiteit te Groningen, op Zaterdag 20 September 1919* (Groningen: Den Haag, 1919), 10.
[142] Sirks, *Handboek der algemeene erfelijkheidsleer* (1922), 85.
[143] Siemens, *Hoofdlijnen der erfelijkheidsleer, rashygiëne en bevolkingspolitiek*, 11.
[144] H.W. Siemens, *Die Zwillingspathologie : ihre Bedeutung, ihre Methodik, ihre bisherigen Ergebnisse*, Mit 14 Abbn. (Berlin: Springer, 1924), 60.
[145] Siemens, *Die Zwillingspathologie*, 60.
[146] Ernst Mayr en William B. Provine, *The evolutionary synthesis: perspectives on the unification of biology* (Boston: Harvard University Press, 1998), 1–48.

Tine Tammes, for instance, argued in 1919 that although an organism has a fixed hereditary basis, its characteristics are very much plastic; they respond, to a large extent, to environmental circumstances. 'What we observe as an individual organism is only one of the many probable outcomes—it is the result of the culmination of hereditary disposition and the circumstances in which an organism lives. What we observe is not more than one of the many possible phenotypes.'[147] Tammes explained that the phenotype was not determined to its genotypic blueprint; nature did not necessarily prevail over nurture. Social democrat Gerrit Pieter Frets, one of the leading Dutch eugenicists on biometrics and heredity, pondered poetically in his 1935 textbook on heredity theory that 'all that is (*alles wat is*) has its phenotype. This is the share of the environment in the appearance of the individual. Just as living beings 'exist' (*bestaan*) in every moment of their lives, they also exist under environmental influences.' Nutrition, housing, light, external causes for disease and other damaging factors exert their impact on the developing individual.[148] Another great example of the Dutch caution with genetic determinism can be found in Sirk's inaugural lecture as professor of Genetics—as the successor of the earlier mentioned Tine Tammes—in 1937. His oration, called (literally translated) 'the threefold covenant in biology' elaborated on 'core genes', 'germplasm', and the 'environment' as the three fundamental building blocks of genetics. 'Usually,' Sirks preached, 'the politics of giving and taking conducted between the three participants in the covenant of biology can be compared to state diplomacy.' The basic principles of the covenant are 'negotiated and established by the hereditary disposition in the genes, and the germplasm; the precise editorial proceedings are the task of the environment.' That is how every individual organism 'originated as a result of a compromise between the three spheres of biology,' Sirks concluded, 'humans as well.'[149]

During the interwar years, Dutch authors on heredity reached a consensus in agreement with a 'Weissmanian' separation of the hereditary material from the developing body; thereby emphasising that although the former served as the blueprint for the latter, external influences on the body could not affect the hereditary material of future generations. Contextualising this conceptualisation, the institutional struggles as a result of the Dutch political culture proves to be explanatory. The analytic separation between hereditary transmission and development reflected the division of labour between curative and preventive medicine and eugenics: as the former focus on individual development, the latter targeted the hereditary material. Moreover, as we will see, the central place for individual development is not surprising in the Dutch political culture. Dutch eugenicists were no genetic determinists and agreed that nurture was equally important as nature. Quite literally, they stated that all individuals should have equal opportunities in development. Therefore, the allied forces of eugenics and the rest of medicine would improve both an individual's inherited starting point as well as its development.

The challenge of acquired characteristics

The conceptual separation between inheritance and development was not uncontested. As Dutch eugenicists regarded themselves as public health reformers, they had much attention for

[147] Tammes, *De leer der erffactoren en hare toepassing op den mensch*, 11.
[148] Frets, *Erfelijkheid*, 43.
[149] M.J. Sirks, *Het drievoudig verbond in de biologie* (Groningen: Wolters, 1937), 18.

hereditary diseases. Already in the 1910s, it had become clear that many diseases that were earlier perceived as hereditary could very well be cases of what they called 'apparent heredity' (*schijnerfelijkheid*).[150] The attention for transmitted diseases and their relation to heredity culminated in a complicated debate over the risk for 'inheriting acquired characteristics'. This possibility implied that changes in the developing body altered the hereditary material and that these acquired changes (or characteristics) could be passed on to the next generations. To put it briefly, what happened to the individual could affect the future of the population. In the interwar years, Dutch biologists and eugenicists called this the 'Lamarckian' (*Lamarckiaanse*) understanding of heredity. The possibility of inheriting acquired characteristics was at odds with the consensus that environmental factors could not influence the hereditary material. Therefore, the debate on acquired characteristics shows how eugenicists tried to defend their conceptualisation of heredity in light of the developing scientific consensus—it moreover illuminates and further articulates the specific interwar conceptualisation of heredity among Dutch eugenicists.

Already in 1917, the Dutch ophthalmologist Petrus Johannes Waardenburg pointed in his *Erfelijkheid en aanverwante vragen* at the mystery surrounding acquired traits. 'It speaks for itself that the deviations that are acquired at birth are not inherited: they could be categorised as 'acquired characteristics' (*verworven eigenschappen*), and it is yet not established convincingly that these characteristics are hereditary.'[151] The examples Waardenburg mentioned are wild: they range from Jewish circumcision to wearing too-small shoes. 'Previously, these cases have been interpreted as proof for the heritability of acquired characteristics, but—as odd as that might sound—the aftereffect (*nawerking*) from the influence that made a specific characteristic occurring, disappeared after a few generations.'[152] The inheritability of acquired characteristics, Waardenburg concluded, had to be regarded as another case of apparent heredity.[153]

Dutch eugenicists remained framing the strategy of the 'Lamarckian' position on heredity patronisingly as 'popular' and just a case of 'apparent heredity' in the 1920s. To legitimise such a projection, they did not deliver counter-evidence or presented proof for another position. Instead, they pointed primarily to a lack of evidence for the inheritability of acquired characteristics. Jan Antonie Honing in his 1920 inaugural address as the new professor of genetics at the University of Amsterdam that 'there is yet no convincing evidence for the heritability of acquired traits.' However, 'Lamarckism has still many followers, probably because the position is "so human" (*zoo menschelijk*).'[154] In a similar vein, Sirks referred in his first edition of *Handboek der Erfelijkheidsleer* (1922) to Weismann's germplasm theory as 'leaving no room for epigenetic considerations.'[155] After all, until the publication of his textbook in 1922, Sirks claimed that 'no experiment had proved Weismann to be wrong.'[156]

[150] 'Schijnerfelijkheid', being an actor's category, was an extremely flexible notion. It was generally used to articulate the difference between phenomena to which geneticists believed their knowledge did not apply to.
[151] P.J. Waardenburg, *Erfelijkheid en verwante vragen*, (Haarlem: Bohn, 1917), 255.
[152] Waardenburg, *Erfelijkheid en verwante vragen*, 255.
[153] Ibidem.
[154] J.A. Honing, *Erfelijkheidsleer zonder evolutietheorieën* (Wageningen: Veenman, 1920), 6.
[155] Sirks, *Handboek der algemeene erfelijkheidsleer* (1922), 89.
[156] Ibidem, 90.

However, Dutch hereditary theorists remained writing defensively in their opposition against the idea of inheriting acquired characteristics at the beginning of the Dutch interwar period. After all, experimental results aiming to substantiate the continuity of the hereditary material across generations in the 1910s and early 1920s were never beyond dispute. 'Whereas those who don't believe in the possibility of acquired characteristics will always be able to show errors in the experimental setup' Sirks stated full of self-confidence in his first edition of *Handbook der Erfelijkheidsleer*. 'The Lamarckianists,' on the other hand, 'remain to deny the significance of negative evidence based on the possibility that propagation cells of the test object had not been in the necessary "sensitive period".'[157] As a result, the debate on the heritability of acquired characteristics a pendulous dynamic. 'And so the quarrel continuous', Sirks sighed, 'periodically, we see in the case of higher organisms at one time the proponents, and then again the opponents being in the majority.'[158]

Notwithstanding those Dutch geneticists who generally agreed on the impossibility of inheriting acquired characteristics had a harder time investigating the probability of damaging the germplasm during a lifetime. In these cases, not a specific trait was passed on to the next generations, but a particular alteration in the hereditary material, caused by 'germ poisons' (*kiemvergift*). This reasoning was for a big part grounded in Auguste Forel's (1848-1931) writings on 'Blastophtoria' (*Blastophthoria*)—a pathology explicitly relating to alcohol, which could potentially damage the reproductive cells and the hereditary material, thereby causing a degenerate child. Next to alcohol, also syphilis, tuberculosis, and heavy metals were considered as germ poisons. In light of the consensus on the separation between hereditary material and the developing body, the case of germ poisons seemed problematic. In the early 1920s, Dutch authors on heredity did not talk about the topic, problematised its empirical justification, or framed the subject as a case of 'apparent heredity.'[159] But the issue was not settled, especially in light of the many experimental projects on the germplasm's physiological structure conducted in the United States, Germany and Switzerland in the 1920s. The debate on germ-damages, especially in the 1920s, was very much an example of the pendulous character of the discussion on inheriting acquired characteristics.

Gerrit Pieter Frets, for example, was one of the noisiest voices in debates on germ damages. In his 1927 textbook on heredity, he emphasised how big 'the damaging capacity of alcohol for the germplasm' was. 'Most facts on parental alcoholism, gathered by means pathological-anatomical, statistical-clinical and experimental methods, suggest the possibility of germ damage, or "blastophthoria".'[160] Also Waardenburg, in his 1927 textbook, admitted the damaging effect of alcohol but tried to specify the notion of germ damages. Het argued that they could only harm the hereditary material in the embryological phase of development.[161] Marianne van Herwerden (1874-1934), author of *Erfelijkheid bij den Mensch en Eugenetiek* (1929) agreed with Waardenburg and concluded from the fact that poisons such alcohol only damaged the hereditary material during development, that 'germ damages' had to be considered an example of 'apparent heredity'. After all, in contrast to Frets, Waardenburg and van

[157] Sirks, *Handboek der algemeene erfelijkheidsleer* (1922), 388.
[158] Ibidem, 388.
[159] See, for example: Sirks, *Handbook der Algemeene Erfelijkheidsleer*, 4.
[160] G.P. Frets, *Erfelijkheid en eugeniek*, (Nederlandsche Genetische Vereeniging, 1927), 19.
[161] Waardenburg, *De biologische achtergrond van aanleg, milieu en opvoeding* (1927), 29.

Herwerden considered it to be doubtful that the damages in the germplasm could be inherited.[162] This was a significant move: by emphasising the relationship between germ damages and development, the Dutch eugenicists could uphold their consensus on the separation of processes of heredity and of development, which was crucial in refuting the possibility of inheriting acquired characteristics.

At the beginning of the 1930s, however, fruit flies rehabilitated the possibility of inheriting acquired traits. The experiments done in American labs in the 1910s and 1920s on Drosophila were received as a potential argument for the chance that external influences could damage the hereditary material, and that these damages—conceptually equated with 'traits'—could be passed on to next generations. Joseph Hermann Muller's (1890-1967) experiments on Drosophila investigating the physiological effects of radiation may be the most critical example. His work did not only lead to a Nobel-prize in 1946, but he also set the trend for physiological experiments with fruit flies to further unravel the mysteries surrounding heredity. Dutch eugenicists referred to involved experimenters and their results as the 'Muller-school'.

Despite that these experiments were already published in 1914, it took until the mid-1930s to crystallise in Dutch textbooks on heredity. In contrast to the first edition of 1922, Sirks's second edition of *Handbook der Erfelijkheidsleer*—published in 1933—for example, dealt quite extensively with the observed hereditary changes of the genotype. Sirks admitted in a new chapter on 'germ damages' that 'experiments with Drosophila under the influence of irradiation have shown us the possibility "gene mutations" (*gen-mutaties*).' He concluded that 'the work of Muller's school convincingly showed how radiation plays a significant role in changing the genotypic structure of the reproductive cells of this individual.' However, Sirks was critical of the idea that the Drosophila experiments could be interpreted as evidence for the inheritability of acquired characteristics. Although alterations in the gene structure might be observable, he considered their interpretation as wrong. Relating himself to Heribert Nilson, Sirks emphasised that 'the observed phenomena should not be regarded as caused by the direct influence of irradiation on the genotype. Instead, they should be explained by the selection of certain self-derived genotypic mutations, which have a bigger change on viability in an unnatural environment.'[163]

Sirks's interpretation of germ damages reflects a broader consensus among Dutch authors on heredity at the end of the 1940s. They had to admit the possibility that specific influences could damage the hereditary material and that these were heritable. Still, Dutch geneticists increasingly emphasised the exceptional status of these 'real' hereditary alterations. In contrast, the damaging capacity of alcohol was increasingly problematised and categorised as an example of 'apparent heredity'. The Catholic physician Johannes Schulte's stated, for instance, in 1938 that 'is now clear that many of the apparent hereditary alterations in the germplasm have to be explained in terms of an already existing genetic defect. Frets, as a consequence, had to withdraw his earlier interpretations of alcohol.'[164] In other words, Dutch eugenicists explained American experimental results suggesting that external factors could alter

[162] van Herwerden, *Erfelijkheid bij den Mensch en Eugenetiek* (1929), 66.
[163] M.J. Sirks, *Handboek der algemeene erfelijkheidsleer*, (2nd edition) ('s-Gravenhage: Martinus Nijhoff, 1933), 487.
[164] Schulte, *Erfelijkheid en eugenetiek,* 123-4.

the hereditary material in terms of pre-existing genetic defects caused by parental recombination of the germ-line. This interpretation was motivated by the eugenicists' stance on the impossibility of inheriting acquired characteristics.

The medical orientation among Dutch eugenicists fostered much attention for the possibility of germ damages. Consequently, they debated the possibility of inheriting acquired diseases quite intensively. However, even in light of the new results of experimental genetics in the 1930s, Dutch geneticists remained faithful to their conceptualisation of hereditary transmission as being primarily separate from development. Defending the 'Weismannian' separation between development and heredity should be understood as attempts to legitimise the envisioned division between eugenics and sanitary reform within public health. This becomes clear when we take a look at how Dutch eugenicists conceptualised the relation between heredity and the public health problem they aimed to solve: degeneration.

Defining 'degeneration'

Dutch eugenicists conceptualised degeneration as a hereditary condition. Johannes Waardenburg, for example, emphasised in his 1927 textbook *De Biologische Achtergrond van aanleg, milieu en opvoeding* that only traits with a hereditary basis and transmitted to next generations through reproduction, and that only these hereditary characteristics could culminate in a degenerating society. To identify these traits, Waardenburg employed the familiar distinction between 'actual' and 'apparent' heredity. 'In post-war periods of decay,' Waardenburg wrote, 'when moral consciousness declines, criminality rises, and dance fury proliferates, social reformers don't always confront degeneration: what they observe are cases of 'apparent heredity' *(schijnerfelijkheid*) for the most part.' Waardenburg called the social problems reformers were confronted with during periods of decay 'decadence', which was not caused by hereditary factors, but by environmental influences.[165] The issue of degeneration belonged to the eugenicists as they were the only ones able to investigate which characteristics were inheritable, and which were not. Subsequently, the number of 'real' examples of degeneration was limited. According to Waardenburg, only eugenics could scientifically investigate which characteristics were 'actually' hereditary, and eventually lead to degeneration. Thus next to the undisputed importance of environmental reform, eugenics could preserve the health of the population investigating the possibilities of reproductive measures.

To further articulate the symbiotic relationship between eugenics and existing public health reform, Dutch eugenicists employed their dismissal of inheriting acquired characteristics. One of the most confident anti-'Lamarckian' voices was the skin doctor Hermann Werner Siemens, who introduced the conceptual distinction between 'paratype', the soma of the developing individual, and 'idiotype', the hereditary disposition. Based on the dominant Weismannian framework centred around the continuity of the germplasm, Siemens argued that environmental influences could only affect the paratype during development.[166] This analytic distinction and the restricted influence of the environment made Siemens—to his frustration—feel drawn to 'the question "of the hereditability of acquired characteristics",' in

[165] P.J. Waardenburg, *De biologische achtergrond van aanleg, milieu en opvoeding,* Verdieping en belijning. Tweede reeks ; 30 (Groningen: Noordhoff, 1927), 28.
[166] Hermann Werner Siemens, *Hoofdlijnen der erfelijkheidsleer, rashygiëne en bevolkingspolitiek,* 66.

which scientific laymen appeared to believe 'so desperately'. Notwithstanding, Siemens did understand why Lamarckism was so attractive among other public health reformers. 'It is tempting to imagine that public health reform not only improves the lives of currently living humans,' Siemens argued, 'but at the same time also future lives will be improved.' He regarded such optimism as 'healthy' but unjustified and unscientific. Beliefs in the hereditability of acquired characteristics certainly played 'a role in the world view and social politics of many biologically uneducated,' Siemens wrote, 'but it is nothing more than just a proof of an annoying lack of insight into the basic concepts of heredity.'[167]

Based on the Weismannian distinction between hereditary transmission and development, hereditary degeneration was not understood as caused by a toxic environment acting on an individual, but by the reproduction of individuals who already had a degenerate hereditary disposition. However, because nature was equally important to nurture, environmental reform could help someone with a corrupt constitution to employ its potential the fullest. At the same time, it could not improve the hereditary material that all individuals of a population shared. Symmetrical with the analytic distinction of development and heredity, Dutch eugenicists generally envisioned two complementary directions of public health intervention in response to degeneration: improving individual developmental health, as well as the long-term hereditary health of the population.

This symbiosis between individual and population oriented public health reform is already clear in Tine Tammes's inaugural lecture as the first professor of genetics in 1919. 'The society,' she argued, 'has to be understood as an unprocessed, unevenly fertilised field on which the seed has been sown without any care.' As a result, Tammes interestingly concludes, 'we cannot judge the hereditary value of individuals who grow up there.'[168] Therefore, reproductive measures to prevent degeneration made sense if and only if environmental conditions were optimal. Otherwise, it was impossible to distinguish characteristics caused by the individuals biological nature from those caused by environmental influence on development. According to Dutch eugenicists, public health reform aiming at environmental improvement to secure developmental health did not compete with eugenic reform that tried to preserve long-term population health trough reproductive measures. They had to co-exist and collaborate.

To conclude, Dutch eugenicists were able to conceptualise degeneration as a problem separate from development to secure individual development while improving collective health. Therefore, they dismissed a 'Lamarckian' view in which developmental damages due to environmental factors influenced the hereditary material lead to degeneration on a population-level. Instead, Dutch eugenicists defined degeneration in 'Weismannian' terms: it took place when degenerate individuals reproduced, and their inferior genes would reappear in the next generations. This implied that degeneration could not be reversed through environmental improvement, but it also meant that eugenics could very well exist next to the already existing public health reforms. As a result, in their ambitions to secure the future population, individual developmental health remained to have a prominent place. Degeneration could only be prevented through eugenics if all environmental conditions for development were maximised. So far, this conceptualisation of heredity seems to reflect institutional ambitions to present

[167] Siemens, *Hoofdlijnen der erfelijkheidsleer*, 66.
[168] Tammes, *De leer der erffactoren en hare toepassing op den mensch*, 19.

eugenics as public health reform. However, I would also argue that the remarkable attention for developmental health reflects the Dutch egalitarian political culture in which health was regarded as a private matter. This becomes clear when we elaborate on how eugenicists reasoned why individuals would participate in eventual reproductive practices to persevere collective health.

vi. Eugenics as a private matter

Eugenics in the Netherlands promoted itself as public health reform concentrating on preserving the health of the population by preventing hereditary degeneration through, potentially, reproductive measures. However, after the implementation of German sterilisation laws in the early 1930s, Dutch authors on genetics strongly opposed a eugenics based on the idea of racial purity, as well as the ambition of creating and maintaining a superior race at the cost of weak individuals with undesired traits. This didn't mean that they generally opposed preventing the reproduction of individuals with a hereditary, degenerate constitution. I argued earlier that Dutch eugenicists considered it morally sound to embrace 'civilised' public health reform keeping 'weak' individuals alive, as part of modern society. They did, however, worry about the potential counter-selective consequences these civilised initiatives had for the population as a whole. Eugenics was, as part of medicine, regarded a 'humanitarian alternative' to laissez-faire 'Darwinism': it wouldn't let weak individuals die, but prevented them from reproduction. But why, according to Dutch eugenicists, would an individual submit him or herself to reproductive restrictions while the advantages would not benefit the individual him or herself?

The answer can already be found at the beginning of the interwar period in Tine Tammes's inaugural lecture on 'Heredity and Society' as the first Dutch professor of genetics in 1919. Based on het conceptualisation of heredity in which environmental improvements were crucial for employing an individual's full genetic potential, Tammes put all her liberal hope in the idea that positive freedom fostered a sense of social responsibility. Her argument is complicated:

> among the circumstances that influence the development of the individual constitution following his hereditary factors (*erffactoren)*, I also count the individual "Will" as such a circumstance. This "Will", nurtured by education, insight, and humanitarian sensibilities, or controlled by self-interest and ambition, makes the individual feel responsible for limiting the spread of degenerate hereditary factors he or she possesses.[169]

For Tammes, this individual 'Will' provided the reason for hope and optimism. If the individual lives his life in the optimal environment, receives the correct education and is raised well, he or she will be able to develop a sense of social responsibility for the health of the population. As a result, the individual will independently arrive at a decision not to reproduce himself or undergo sterilisation voluntarily.[170] Also Johannes Waardenburg, in his 1927 textbook on the

[169] Tammes, *De leer der erffactoren en hare toepassing op den mensch*, 20.
[170] Ibidem.

biological origins of nurture, heredity and the environment, stated that individuals could develop a certain sense of 'social responsibility' and 'solidarity with future generations' once the individual is raised and educated in a healthy environment.[171]

The attention for social responsibility for the future health of the population among Dutch eugenicists increased in the rest of the interwar years. Marianne van Herwerden, for instance, argued in the second edition of her textbook on heredity and eugenics that the most important lesson from heredity theory concerned 'that every individual human is just a link in the chain of the human population and that every single human is accountable for the future of mankind.'[172] This position explains why van Herwerden portrayed eugenics 'not solely as research subject', but as a 'worldview, in which humans are currently living, bear the responsibility for the mental and physical health of future generations.' [173]

The picture arising from these positions is, of course, deeply political. The Dutch eugenicists conceptualisation of heredity, which implied that environmental improvement guarantees positive freedom and autonomous development reflects egalitarian views on individuality. They believed that proper education in the subject of heredity encouraged an individual's sense of responsibility for the population. As a result, Dutch eugenicists insisted, individuals would be willing to subject themselves to reproductive measures for the greater good. Gerrit Frets stated even quite explicitly that 'the eugenic ideal envisions a society in which every individual develops the ability to deploy its potential fully. It envisions a society respecting everyone's opinion, and in which every individual is willing to cooperate in the interest of the whole population.'[174]

In light of their egalitarian beliefs, it is not that surprising that Dutch eugenicists quite often addressed policymakers in the concluding remarks of their textbooks despite their criticism of 'politicised' eugenics abroad. 'Wise policy based on a proper understanding of heredity will eventually lead to the solution of severe social problems,' Marianne van Herwerden argued. 'If eugenicists succeed in convincing future political leaders of the urgency and social relevance of knowledge on heredity, it will hopefully be the case that scientifically and socially trained biologists advise in matters of government. And hopefully, at some point, such advice will lead to a revision of al written laws, so that they correspond with the big laws of nature.'[175] Of course, this is precisely what happened in countries that implied the top-down sterilisation laws which the Eugenicists so fiercely opposed in the 1930s. But the crucial point here is that for Dutch eugenicists, the opposition to 'race delusion' was perfectly compatible with their plea for eugenic policies to prevent hereditary degeneration. The key to an understanding of that paradoxical position lies in how Dutch eugenicists conceptualised heredity and its implied interpretation of the relationship between individual development and the future health of the population.

I showed how Dutch eugenicists dismissed the German sterilisation laws because they did not take into account the importance of environmental improvements to enable every single

[171] Waardenburg, *De biologische achtergrond van aanleg, milieu en opvoeding*, 18.
[172] van Herwerden, *Erfelijkheid bij den Mensch en Eugenetiek*, 198.
[173] Marianne van Herwerden, 'De Bijeenkomst der "International Federation of Eugenic Organisations" te Parijs', *NTvG* (1926), 574.
[174] Frets, *Erfelijkheid*, 228.
[175] van Herwerden, *Erfelijkheid bij den Mensch en Eugenetiek*, 455.

individual to develop its ideal constitution. However, resulting from their conceptualisation of heredity, Dutch eugenicists argued that even though these improvements affected the developing individual, they did not influence the hereditary material of these individuals. This meant that of the individuals whose diseased appearance was still visible in an ideal environment, their degenerate constitution must be hereditary if their predecessor had the same degenerate constitution. The belief among Dutch eugenicists that every individual was just one link in the chain of an ahistorical population had both a physiological and material meaning: the chain stood for the hereditary material; its direction—if you will—was determined through the reproductive decisions of every individual. Hence, individual reproduction directly influenced the developmental starting points of the members of the future population. With their emphasis on 'social responsibility', Dutch eugenicists underlined that individuals were part of the society as a whole: earlier generations determined their heritable starting point for development. Thus to effectively improve collective health, Dutch eugenicists argued that only after an optimal context for development was created, reproductive measures might be necessary. In the end, improving the hereditary health of the population would improve the constitutional health of the individual. But as Dutch eugenicists regarded population health a matter of individual responsibility, they reasoned, collective health started at the level of the individual.

vi. Conclusion

In this chapter, I showed how Dutch eugenicists conceptualised hereditary transmission in the interwar years as a biological process separated from developmental health. They insisted that the environment could not influence the hereditary material, considered germ damages highly unlikely, and explained individual difference by recombination of the germ-line and environmental influence on the developing body. Moreover, Dutch eugenicists were no genetic determinists. They emphasised the importance of a proper environment in individual development; nurture was as important as nature. This conceptualisation of heredity should be contextualised by looking at the interwar political culture in which top-down state intervention was dismissed, making collaboration between eugenics and the state impossible. As a result, the academic activists identifying themselves with eugenics were forced to ally with medicine. The envisioned symbiosis between eugenics and medicine resulted in highlighting the importance of environmental reform and individual development in addition to reproductive intervention. Dutch eugenicists dismissed the creation of an ideal race; thereby explicating their self-image of being public health reformers.

Within the domain of public health reform, Dutch eugenicists envisioned a division of labour in two ways. On the one hand, eugenics saw themselves as compensating medicine. Sanitary reform a therapeutic improvement kept degenerate individuals alive so that they can reproduce and foster degeneration of the population. To neutralise this process of 'counter-selection', two possibilities lied at hand. Although laissez-faire politics in which medicine had to be abandoned to let nature run its course was attractive from a biological point of view, eugenicists regarded reproductive measures as a humanitarian alternative. On the other hand, as Dutch eugenicists tried to become part of medicine instead of replacing it, they employed a

Weismannian conceptualisation of heredity to legitimise how eugenic reform was an extension to environmental improvement. The heredity material formed an individual's starting point, but environmental conditions were equally crucial for successful development. Dutch eugenicists presented themselves as critical for the former, the rest of medicine for the latter.

Hence, Dutch interwar eugenic debates on degeneration are shaped by its institutional context which, in turn, resulted from a political culture in which state-led reproductive interference was regarded as inappropriate. This context had its influence on how eugenicists conceptualised heredity. Dutch eugenicists liked to present themselves as biomedical academics worried about degeneration; not as politicians. They were outspoken opponents of collective, top-down sterilisation policies in Germany, the United States, Great Britain, which they criticised as' race delusion' and 'unscientific'. However, they also criticised how state power had overruled individual citizens, a political course of events they regarded 'un-Dutch'. The response to foreign applications of their knowledge moreover reflects the Dutch political culture of confessional-liberal egalitarianism. In the interwar years, the governing parties dismissed eugenics as too much state-interference with individual life. After all, health was a private matter. The central place of 'social responsibility' in eugenic debates has to be understood as a reflection of and contribution to Dutch public health discourse in which collective health started at the level of the individual.

In that regard, the relationship between context and concept does not go into one direction. Hereditarianism in Dutch eugenics, on its turn, contributed to an individual-oriented public health discourse in which, as we will see in the next chapters, decentralised solutions to social diseases had a central place. This chapter characterised Dutch eugenic discourse in response to degeneration as holding a middle ground position in between individual and population oriented public health while lending towards the individual (Fig. 1.1). The conceptual separation between development and inheritance legitimised a position in which degeneration was eradicable by improving the environment to ensure equal conditions for development, which in turn fostered a sense of social responsibility making degenerate individuals aware of their obligation to restrain from reproduction.

Interwar conceptualisation of heredity	**Individual oriented public health approach**	**Dutch Eugenics**	**Population oriented public health approach**
Which traits are transmittable?	Acquired characteristics	Only those resulting from an inherited blueprint	Hereditary blueprint
How is the development of the phenotype explained?	Nurture	Nurture is equally important as nature	Nature
How is collective survival achieved?	Enhancing Individual health	Enhancing individual health	Survival of the fittest
What is the direction of intervention?	Bottom-up	Bottom-up (Social responsibility)	Top-Down

Fig. 1.1 – A schematic visualisation of how Dutch eugenics relates to the ideal typic conceptualisations of public health, oriented towards the individual or population

Chapter II

Alcoholism and anti-alcohol reform

'Alcoholism is one of the most apparent modern 'social scourges' (*volksgesels*) we should start to eliminate,' physician and state inspector Willem Ruijsch (1874-1920) stated at a speech he delivered at the opening of the Utrecht 'consultation office' (*consultatiebureau*) for alcoholics in 1911.[176] Ruijsch's remark reflects a widespread mix of both fear and optimism regarding the social problem of alcoholism in the first half of the twentieth century. Even though alcohol consumption had started to decline in the 1880s, and reached a historical low point at the start of the Second World War after a brief increase after the First World War, it was still experienced as a great danger to society.[177] Especially in the first decades of the twentieth century, a motley collection of health reformers, politicians and physicians shared the feeling of a 'certain urgency' (*bepaalde noodzakelijkheid*) to eradicate the disease to alter the menacing decline of society.[178] On the other hand, historian of addiction Gemma Blok understands the growing momentum for the battle against alcoholism as a response to 'triumphs of modern medicine' in the nineteenth century. That century 'had known the victory over devastating diseases such as cholera and the plague.'[179] As a result, the possibility that public diseases could be eradicated by sanitary reform, as well as the social-liberal sense of elevating the lower classes of Dutch society fostered a sense of optimism that besides tuberculosis, also alcoholism could be surmounted.[180]

The sentiment of sanitary optimism and fear for degeneration culminated in the interwar consensus that alcoholism had to be seen as an issue of collective health.[181] Instead of understanding alcoholism an example of individual sin, reforms, politicians, and scientists began to conceptualise alcoholism a medical condition that could be transmitted socially. Auguste Forel (1848-1931), a Swiss Catholic physician and anti-alcohol reformer, articulated at the end of the 19th century the substantiating conceptual framework for the interpretation of alcoholism as a social disease—in which the concept of heredity played a central role. He identified alcohol as 'germ-poison' that could literally damage the soma of the developing individual *and* permanently change the hereditary material in the reproductive cells. Forel's emphasis on germ-damages enabled anti-alcohol reformers to conceptualise individual

[176] W.P. Ruijsch, 'Toespraak bij de opening van het Utrechtse Consultatiebureau voor alcoholism', *Het Centrum* (1911).
[177] Stel, *Drinken, drank en dronkenschap,* 69.
[178] Snelders, Meijman, en Pieters, 'Alcoholism and Hereditary Health in Dutch Medical Discourse, 1900–45', 137; Blok, *Ziek of zwak : geschiedenis van de verslavingszorg in Nederland,* 81.
[179] Blok, *Ziek of zwak,* 70.
[180] Stel, *Drinken, drank en dronkenschap,* 228.
[181] Blok, *Ziek of zwak,* 71; M. Otto, "Geschiedenis van de drankwetgeving", *TSS* 1 (1987): 19.

alcoholism as biologically transmittable, making it a hereditary and social disease.[182] Nevertheless, as new experimental results and concepts were introduced in the Dutch interwar years, and Dutch eugenicists and geneticists began to analyse processes of reproductive transmission separately from development, the existence of germ-damages came under pressure. How did alcohol-reformers respond to these conceptual developments? And how did they employ and modify the concept of heredity to define alcoholism as a public health issue while legitimising the reformer's proposed solutions?

It is not unproblematic to talk about Dutch alcohol reform in general terms. The Netherlands knew dozens of local anti-alcohol associations, steered in the spirit of catholic, protestant, socialist or liberal belief systems. Nevertheless, these Dutch associations were unified in their preference for individual restraint as a response to the collective thread of social alcoholism. This chapter formulates an explanation for this preference in terms of the broader individual-oriented public health discourse in the Netherlands. First, I will sketch the political and legal context for the Dutch response to social alcoholism to explain the decentralised character of Dutch public health reform. I will then propose how to analyse public health discourse relating to alcoholism by looking at the *De Wegwijzer*, an overarching periodical in which alcohol reformers debated conceptual issues. These methodological considerations set the stage for my conceptual analysis of heredity in relation to the causes of alcoholism. In the last two sections of the chapter, I deploy the conceptual changes I identified in the third section to investigate to which extent Dutch alcohol reformers related to either a population- or individual-oriented public health approach. Ultimately, this chapter reveals remarkable differences with the way eugenicists and alcohol reformers conceptualised heredity during the interwar years. Nevertheless, and more interestingly, the conceptual analysis of how anti-alcohol reformer employed heredity to define alcoholism as a public health problem, indicates similarities in the prominent place for developmental health and individual responsibility in responding to issues of collective health.

i. A decentralised collective response

With the increasing focus on the social consequences of alcoholism in early twentieth-century Europe, the condition became a political issue. In contrast to eugenics, the Netherlands certainly knew a collective response to alcoholism as a social disease during the interwar years: alcohol legislation existed, and alcohol reformers succeeded in institutionalising themselves. However, and similar to eugenics, this collective response was never centralised nor directed by a powerful state. Per the Dutch political culture, the Dutch collective response to alcoholism included a big emphasis on individual citizenship while being organised on a local level.

[182] William F. Bynum, 'Alcoholism and Degeneration in 19th Century European Medicine and Psychiatry', *British Journal of Addiction* 79:1 (1984), 64.

Decentralised legislation

The history of Dutch alcohol legislation before the Second World War illustrates how liberal and confessional cabinets decentralised alcohol legislation in the spirit of the municipal laws (*gemeeentewet*) of 1851, in which governmental prominence lied at the local level.[183] The conservative-liberal cabinet led by Theo van Lynden van Sandenberg instigated in 1881 the 'law to restrain liquor' (*wet tot beteugeling van sterke drank*). Its implementation was mainly motivated by worries about public order, and primarily aimed to 'regulate retail and eradicate public drunkenness'. The 1881 law introduced a system of permits (*vergunningenstelsel*) for local retailers to sell liquor. The local council was responsible for issuing these licenses (*verloven*), taking a maximum of one license per 500 citizens into account. Alcohol consumption itself was not prohibited or restricted. In the spirit of egalitarian optimism, Dutch politicians generally agreed that citizens were responsible for their own (ab)use. The national government was only willing to restrict access to alcohol if authorised by local councils.[184]

The alcohol legislations in the first half of the twentieth century did not indicate a change of direction compared to the 1881 law. In the second alcohol law of 1904, the confessional cabinet led by Calvinist theologist Abraham Kuyper expanded the system of permits for low-alcohol drinks, which again had to be issued by local councils. Moreover, the cabinet initiated state inspection on the proper execution of alcohol legislation, and legally recorded that children under the age of sixteen were not allowed in pubs. In 1919, the Dutch government explicitly recognised alcoholism as a matter of public health; not solely as an issue of public order. This resulted in adding state inspection on alcohol to the state inspection on the existing public health laws in 1919, but it did not directly result in the new legislation.[185] It took until 1931 to introduce a new alcohol law. The proposed changes were far from radical, and primarily built on the 1904 laws: the government added a maximum amount of permits for sell points of low-alcohol drinks, and local councils were able to lower the number of licenses for selling alcohol every year.

The primacy of local government collided well with the egalitarian view that political decisions should be made close to the individual citizen. Full prohibition, as was being implemented in the United States in the 1920s, was rejected in a similar vein: it interfered too much with private life—alcoholism was a matter of individual responsibility.[186] This is quite explicitly voiced by Frans Drion (1872-1948), a liberal member of parliament, who passionately—and successfully—opposed early attempts to initiate prohibition in 1920:

> I am most certain that Dutch citizens generally acknowledge the state's utter inability to think, feel, and act on the individual's behalf. It would be ridiculous to implement alcohol legislations of which we can be sure that hundreds of thousands will outrageously question its legitimacy. I would understand such sentiments based on fears that the state overrules individual freedom and self-determination.[187]

[183] Robert L. Morlan, 'Local Government in the Netherlands', *American Political Science Review* 52:3 (1958): 835–837.
[184] Otto, 'Geschiedenis van de drankwetgeving' *TSS*:1 (1987): 19.
[185] Otto, 19.
[186] Otto, 19.
[187] Handelingen Tweede Kamer der Staten Generaal (1921:75). 'Voorstel van wet van den heer Rutgers c.s. tot wijziging van de Drankwet,' 2148.

Moreover, the dominant place that arguments of autonomy and decentralisation hold in interwar Dutch discourse on alcoholism, is especially apparent in the debate on 'local choice' (*plaatselijke keuze*). In the late 1910s, a coalition of alcohol reformers and politicians started a discussion of the possibility of organising a local referendum every five years, enabling citizens to propose a lowering of the number of permits for selling alcohol in their municipality. The initiators hoped that 'local choice' would result in 'local prohibition' in due course. In 1914, they initiated a massive petition which resulted in 670.000 signatures. This enormous number (10% of the whole population) encouraged the protestant member of parliament Victor Rutgers (1877-1945) to propose local choice as an addition to the 1904 alcohol laws in 1921. In his passionate address in the house of representatives, he rhetorically asked the parliament whether 'the phenomenon of alcoholism wasn't just as bad as the latest war, the plague and poverty altogether,' thereby trying to frame local choice as a solution to alcoholism as a matter of public health.[188] His proposal passed the Dutch 'second chamber' (*Tweede Kamer*), but the Dutch 'First Chamber' (*Eerste Kamer*) dismissed Rutger's plans 1924 because they regarded local choice as incompatible with the Dutch municipal laws (*gemeentewet*).[189] It would take until 1964 when a new alcohol law would be proposed. Altogether, collective responses to alcoholism in the form of national legislation did exist in the Netherlands, albeit in a decentralised manner. After all, municipal authorities shaped the practical implications of the Dutch alcohol laws in the first half of the twentieth century.

Figure 2.1 – Poster by Albert Hahn, commissioned by Drankbestrijding: Nederlandsch Comité voor Plaatselijke Keuze (1918).

Private initiatives

We have to understand the absence of a centralised response to alcoholism next to to the colourful patchwork of privately funded, local initiatives, which were encouraged and explicitly acknowledged by the national government.[190] I already outlined in my introduction how the primacy of local governance, together with 'private initiatives' (*particulier initiatief*) contributed to and interacted with so-called 'pillarisation' of society.[191] This meant that civilian life was structured by associations and activities solely for one's socio-cultural group: either

[188] Handelingen Tweede Kamer der Staten Generaal (1921:76). 'Voorstel van den heer Rutgers c.s. tot wijziging van de Drankwet.'
[189] Handelingen Tweede Kamer der Staten Generaal (1925:18) 'Voorstel van wet tot wijziging der Drankwet (62 der Zitting 1923—1924).'
[190] Marcel Hoogenboom, 'Particulier initiatief en overheid in historisch perspectief', *Beleid en maatschappij* 38:4 (2011): 388–401.
[191] The name 'verzuiling' is firstly coined by the Dutch political historian Arend Lijphart in 1986. For a more recent edition of his canonical text, see: Arend Lijphart, *Verzuiling, pacificatie en kentering in de Nederlandse politiek* (Amsterdam University Press, 2008).

the Catholics, Protestants, socialists, and the rest (mainly liberals).[192] I need to briefly sketch these private initiatives in response to alcoholism in the context of pillarisation to understand the Dutch welfare infrastructure during the interwar period to grasp the Dutch collective response to alcoholism sufficiently.

In 1842, members of *Maatschappij tot Nut van 't Algemeen* found the *Nederlandsche Vereeniging tot bestrijding van Sterke Drank* in Leiden. Initially, its members consisted out of elite members of Dutch society with various socio-cultural backgrounds.[193] The alcoholism eradication movement gained a more political and religious orientation when liberals founded the *Volksbond tegen drankmisbruik* in 1875 to enhance both developmental conditions as well as individual morality. Additionally, the protestant clergyman Carel Steven Adema van Scheltema (1815-1897) founded the *Nationale Christen Geheel-Onthouders Vereeniging* in 1881. In response to these new pillarised anti-alcohol associations, the *Nederlandse Vereniging tot Bestrijding van Sterke Drank* developed into a socialist organisation with a different name: *Nederlandsche Vereeniging tot Afschaffing van Alcoholhoudende Dranken*. The more independent *Algemene Nederlandsche Geheel-onthouders Bond* was founded in 1897. The Catholic anti-alcohol movement started on the initiative of Alfons Ariëns (1860-1928) a wild collection of catholic cross-societies in Twente at the end of the 19th century. These united in 1898 within the Catholic anti-alcohol association (with an incredibly long name): *Sobriëtas – Federatie van Rooms Katholiek Diocesane Bonden tot Bevordering der Christelijke Matigheid en tot bestrijding van het Alcoholisme*. Charles Ruijs de Beerenbroeck (1873-1936), who would become Dutch president in 1918, served as its chair. These late-nineteenth-century associations, in which Catholics, Protestants, Socialists, and Liberals founded independent organisations, formed the core of Dutch pillarised alcohol reform in the first half of the twentieth century

Figure 2.2 – Poster by Aart van Dobbenburgh, commissioned by the Nederlandsche Commissie tegen het Alcoholism (1935)

In his dissertation on the Dutch response to alcoholism, Jaap van der Stel argues that anti-alcohol reformers in the first half of the twentieth century were primarily part of the Dutch intellectual and cultural elite. They shared hope for 'elevating' (*verheffen*) the Dutch society as a whole, by encouraging members of their own pillar to restrain from alcohol.[194] There existed some independent platforms in which alcohol-reformers interacted, such as the overarching *Nederlandsche Commissie tegen het alcoholism*, jokingly called 'the blue parliament' (*blauwe parlement*) in which reformers discussed overarching issues regardless of their background.[195] Another example includes *De Wegwijzer*; this authoritative

[192] Hellemans, 'Pillarization ("Verzuiling"). On Organized "Self-Contained Worlds" in the Modern World'.
[193] Stel, *Drinken, drank en dronkenschap,* 142.
[194]Ibidem, 169.
[195] Ibidem, 164.

journal by anti-alcohol reformers from various religious and political backgrounds discussed their struggles and questions in light of scientific developments.[196] These platforms reveal an emphasis on individual behavioural change as a crucial solution for alcoholism. In doing so, they generally preferred abstinence over temperance.[197] How did these pillarised associations put their ambition to eradicate alcoholism in practice?

In a context without national policies that explicitly prohibited or criminalised alcohol consumption, Dutch alcohol reform took shape in two concrete directions: propaganda and consultation offices. Almost every anti-alcohol association circulated their own periodical and produced a sheer amount of propagandistic brochures, leaflets, posters (fig. 1). [198] Most associations organised public lectures and published advertisements in newspapers for their own religious and political group. In terms of concrete institutions, additionally, Dutch alcohol reform was shaped trough sanatoria, so-called 'coffee shops' (*koffiehuizen*), and most importantly: 'consultation offices' (*consultatiebureaus*). Only but a few sanatoria existed in the Netherlands. Due to their inaccessibility, they only held a relatively minor place within the Dutch response to alcoholism, especially from an international perspective.[199] More successful were 'consultation offices' (fig. 2). During the interwar years, over twenty-five of these privately organised offices existed in the major Dutch cities.[200] In the consultation offices, alcoholics could talk to ex-alcoholics—the so-called 'Good Templars' (*Goede Tempelieren*)—or activist abstainers to help them restrain from alcohol. The persuasive, somewhat manipulative conversation-style consultation officers employed, became known as the preventive 'moral-didactic' (*moraaldidactische*) method.[201] Next to the formal settings in the consultation offices, some private initiatives also found informal 'coffee houses', in which members of the community were able to socialise without the temptation of alcoholic beverages.[202] Both propaganda and moral therapy in consultation offices and coffee shops, have in common that they targeted individual behaviour change as a solution to alcoholism as a problem of public health.

My characterisation of the Dutch legal and institutional context of the interwar collective response to alcoholism again fits the political preference for a decentralised government. Top-down national policies overruling individual autonomy to eradicate alcoholism did not exist in the Netherlands. Despite the fact that alcohol consumption held a central place in Dutch culture, the federal government furthermore dismissed proposals for prohibition and 'local choice' because they inferred or were incompatible with local governance.[203] This organisational vacuum enabled 'pillarised' private initiatives to flourish in the first half of the twentieth centuries. These initiatives generally shaped their 'anti-alcohol activism through propaganda

[196] Stel, *Drinken, drank en dronkenschap*, 170.
[197] Stel, *Drinken, drank en dronkenschap*, 157–61.
[198] Stel, 164–65; Blok, *Ziek of zwak*, 72–74.
[199] H. F. P. Hillen, E. S. Houwaart, en F. G. Huisman, *Medische Geschiedenis* (Springer, 2018), 250.
[200] Blok, *Ziek of zwak : geschiedenis van de verslavingszorg in Nederland*, 73.
[201] Ibidem, l82.
[202] Blok, *Ziek of zwak : geschiedenis van de verslavingszorg in Nederland,* 74-75.
[203] See, for an overview of the relation between the 'wet' Dutch drinking culture in relation to a lack of 'dry' policies: Jan de Lint, 'Anti-drink propaganda and alcohol control measures: a report on the Dutch experience', *Single, E. et al*, 1981, 87–102, esp. 94; and also: Robin Room, 'The impossible dream?—Routes to reducing alcohol problems in a temperance culture', *Journal of Substance Abuse* 4 (1992), 91-106, esp. 94-96.

and consultation offices to train individuals in restraining from alcohol use—they envisioned abstinence over temperance.

The focus on behavioural change leaves us with a somewhat paradoxical image: if they understood alcoholism as a problem of public health, why would alcohol reformers focus on individual restraint rather than top-down limitations? The institutional climate I have sketched above offers an external argument; politicians were not open for such measures. However, it seems unlikely that Dutch alcohol reform focussed on individual restrained solely because of their incompetence to gain political support. Therefore, I want to dig deeper in the way anti-alcohol reformers explained alcoholism as a problem of public health to find out how these reformers conceptualised the relation between individual and collective health. In the following, I will argue that the concept of heredity played a vital role to articulate alcoholism as an issue of public health—albeit in almost the opposite way as the eugenicists did. However, before I can investigate how Dutch alcohol reformers employed heredity to articulate alcoholism as an issue of public health, I have to overcome a methodological problem: how can I investigate general trends in case of such a diverse, pillarised group as the Dutch alcohol reformers?

ii. De Wegwijzer as 'scientific crown on pillarised reform'

If I want to investigate how Dutch alcohol reformers conceptualised alcoholism as a public disease in the interwar years, my source material needs to meet two requirements. On the one hand, I should investigate sources enabling me to investigate how reformers with various political and religious backgrounds interacted to discuss alcoholism as a problem in need of a solution. Only then, I will be able to trace discursive trends within Dutch alcohol reform as an example of Dutch public health—without denying the significant differences within the group of alcohol reformers. On the other hand, I need to investigate sources that enable me to examine how Dutch alcohol reformers explicitly discussed and employed heredity to substantiate their explanation on alcoholism as an issue of public health. Therefore I have decided to investigate a journal that meets both these criteria: *De Wegwijzer – Tijdschrift voor de Studie van het Alcoholvraagstuk*.

Overarching ambitions

To investigate the conceptual relationship between heredity and alcoholism, I have systematically analysed all issues of *De Wegwijzer*, published between 1919 and 1940. Every edition was circulated monthly and contained a motley collection of articles written by scientists, physicians, politicians, and well-known alcohol reformers. The journal contained reflections on political debates, translated talks, and earlier published articles written by foreign, mainly British, German and Swiss academics. Some articles were accompanied by editorial comments displaying strong encouragements or disagreements with the author. Although the editors had the final say in most cases, the fact that they also published articles that didn't necessarily fit their own explanatory framework, allows me to dissect specific disagreements and the changing consensus on how alcoholism was conceptualised as a problem of public

health. The first edition of *De Wegwijzer* was issued in 1899 and gained, almost immediately, an authoritative reputation. According to both Gemma Blok and Jaap van der Stel, the journal 'set the tone within the Dutch anti-alcohol movement for decades.'[204]

The initiative for *De Wegwijzer* came from social-liberal teacher Theodoor van der Woude (1863-1946), initiator of the first consultation office in Amsterdam. A particular 'contagious enthusiasm' characterised the former teacher, and many historians interpret him as the most influential Dutch anti-alcohol reformer who was—almost singlehandedly—responsible for a spirit of optimism and success within the Dutch anti-alcohol reform movement in the interwar period.[205] Herman Bouman (1874-1947), a professor in neurology at the University of Amsterdam, stated that Van der Woude's 'remarkable working ethos made him a central figure of the anti-alcohol movement as a whole. He was a source of information for policymakers and governmental institutions, a consulting figure and pedagogue not only for the alcohol abusers but also for all anti-alcohol reformers themselves.'[206] Municipal physician Wytze Hingst (1870-1953) complimented van der Woude for the fact that 'his personal sympathies don't play any role in his judgment on issues relating to alcohol abuse.' This 'objectivity and thorough study of the alcohol problem', Hingst stated, made *De Wegwijzer* one of the most authoritative sources of information on the issue at the time.[207]

Being the only over-arching journal of the Dutch anti-alcohol movement, members of various Protestant, Catholic, socialist and liberal associations praised *De Wegwijzer* for how it transcended political and cultural boundaries that had existed in the Dutch interwar period. In 1924, to celebrate the 25th anniversary of the periodical, a wide range of Dutch and foreign academics, as well as well-known reformers from various Dutch anti-alcohol associations, were invited to write short congratulatory remarks to be published in *De Wegwijzer*. Chairpersons of catholic *Sobriëtas*, the liberal *Voksbond*, and the protestant *Gereformeerde Vereniging tegen Alcoholisme* wrote complimentary comments. The Amsterdam teacher and social democrat Frits Schmidt (1873-1936) even stated that '*De Wegwijzer* established itself as the scientific crown on the vast amount of pillarised (*verzuilde*) anti-alcohol associations.'[208] Also, Frans Snijder van Wissenerke, chairman of the liberal *Volksbond Tegen Drankmisbruik*, praised the editors. 'The information and direction drew from science,' Snijder van Wissenerke stated,' could provide invaluable services. That is why also the "Volksbond" congratulated the jubilee periodical with sympathy.'[209] Schmidt's and Snijder van Wissenerke's comments are interesting because it shows how *De Wegwijzer* facilitated debate between reformers from various socio-cultural backgrounds. Moreover, it reveals the second promising characteristic of the journal: the prominent place for discussing scientific issues concerning alcoholism.

[204] Quoted from: Blok, *Ziek of Zwak*, 70; Jaap van der Stel gives the journal the same central place: van der Stel, *Drinken, drank en dronkenschap*, 268.
[205] Blok, *Ziek of zwak : geschiedenis van de verslavingszorg in Nederland*, 73.
[206] Div. authors, 'Oordeelvellingen over de Wegwijzer bij het jubileumnummer', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk*, 1924, 260.
[207] Div. authors, 'Oordeelvellingen over de Wegwijzer bij het jubileumnummer', 311.
[208] Ibidem, 262.
[209] Ibidem, 304.

The authority of science

Compared to other Dutch interwar periodicals dedicated to the alcohol issue, *De Wegwijzer* stands out for its explicit goal to synthesise 'objective' and 'scientific' knowledge. From the beginning, the editors believed that 'sustainable results could only be reached if measures were based on scientific truth.'[210] *De Wegwijzer* was explicitly a platform in which alcohol reformers discussed scientific theory in relation to practical contexts relating to alcoholism. Contributors to the journal never intended a one-way dialogue between science and proposals for reform. Experience—knowledge from 'the field'—that was brought in by the practising physicians who wrote for the journal, was put into dialogue with recent experimental findings. The editors of *De Wegwijzer* pointed out repeatedly how this dialogical character formed the core identity of the journal.

In 1936, to give an example, the *Nederlandsche Vereeniging voor Gematigde Drinkers* asked one of its members to submit a piece on the relationship between alcoholism and degeneration to *De Wegwijzer*. The editors clearly disagreed with its content, but published it regardless: 'despite that various considerations and statements of the author differ from what has been established by numerous authoritative researchers,' the editors wrote in a short introduction, 'we are still happy to publish his piece. After all, instead of one-sided propaganda, we aim to foster the study of alcohol issues from various angles.' Additionally, in the spirit of dialogue, the editors published an afterword in which they elaborated on how the piece contradicted established scientific conclusions. Lastly, they provided the author 'with the opportunity to write a closing statement,' to enable him to respond to the editors' criticism.[211]

Despite their aim to publish investigations on alcoholism from various angles, the editors employed their stage to promote full abstinence from alcohol rather than just temperance. This happened not explicitly, but the editor's commentaries on the 'objectivity' or 'quality' of the contributions they published certainly reflected the extent to which they found the conclusions fitting their goal to promote abstinence. To illustrate how the editors of *De Wegwijzer* employed the authority of science to promote abstinence is apparent in an interesting dispute over the relationship between criminality and alcohol use in 1937. In a 1936 study based on a 'heredity survey', the Groningen professors Gerardus Heijmans (1857-1930) and Enno Dirk Wiersma (1858-1940) asked hundreds of physicians across the Netherlands to fill in a questionnaire on their patient's behavioural characteristics and drinking habits. Wiersma, who published the results in *De Wegwijzer*, argued that their study provided proof of there being no behavioural difference between those who drunk occasionally and those who didn't drink alcohol at all. In a commentary piece that accompanied the article, the editors accused Heyermans and Wiersma of the data they used 'was not gathered objectively'. Instead, the editors claimed, 'the study has a strong subjective character'.[212]

This was not meant as a compliment. The editors of *De Wegwijzer* argued that the respondents of the survey did not describe behavioural characteristics in a sufficiently quantitative, biological, and factual manner, in which environmental factors were controlled.

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[210] Div. authors, 'Oordeelvellingen over de Wegwijzer bij het jubileumnummer', 250.
[211] Redactie, 'Naschrift - in reactie op Dr. D. Wiersma', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk*, 1937.
[212] Redactie, 'Naschrift - in reactie op Dr. D. Wiersma', *Wegwijzer* (1937), 36.

'The data may consciously or unconsciously be influenced by the opinion individual respondents held regarding the meaning and value of drinking habits.' And this 'opinion', the editors argued, 'is more than often not based on objective data regarding the influence of alcohol.'[213] Of course, the editors of *De Wegwijzer* claimed to be wise enough by having a sufficient level of biological knowledge. By pointing at the experimental results of mainly German biologists—research that 'delivered factual biological data instead of value-judgments'—the editors contradicted the results of the 'heredity survey' of Heyermans and Wiersma. This 'established data' showed clearly that any form of alcohol use caused long-lasting damage. These 'objective observations of facts differ to a huge extent from the strong subjective value judgments in Heyermans and Wiersma's survey'.[214]

In a final word that was offered to Wiersma to respond to the editors' commentary, the Groningen professor wanted to reply especially to 'the editor's criticism on the way data was gathered.' By pointing at the randomised way in which the researchers selected the respondents, Wiersma argued that the influence any personal opinions could have would be neutralised. However, the most important reason for his response was the accusation of subjectivity. The allegation of a lack of objective data, Wiersma stated, 'attacks the intrinsic value of my research.'[215] The Groningen professor experienced the comments of *De Wegwijzer'*s editorial board as a direct attack on his authority as a scientist and his professional integrity. Blaming a researcher for lack of objectivity meant that the knowledge he produced did not count as scientific.

The editor's internal criticism did not necessarily serve the good cause of fostering pure science; it was primarily a case of boundary work. Because Wiersma and Heryermans' investigations had shown that it did not make a big difference whether someone drunk a little bit of alcohol or not at all, the study could serve as an argument for temperance rather than abstinence. But instead of debating the practical measures that could follow Wiersma's conclusions, the editors tried to problematise the study's experimental design and theoretical presumptions. In other words, although the editors claimed to 'facilitate scientific debate on the alcohol issues', they had a preference for those results promoting abstinence. Hence, *De Wegwijzer* was not a journal that just published scientific research and discussion on alcoholism in a politically neutral manner; it primarily reflects how alcohol reformers employed scientific concepts and results to promote and legitimise abstinence. Having clarified how the practical aims interact with scientific concepts in *De Wegwijzer,* I will now examine how Dutch alcohol reformers deployed the concept of heredity to connect individual behaviour to collective health.

[213] Redactie, 'Naschrift - in reactie op Dr. D. Wiersma' (1937), 36.
[214] Ibidem, 37.
[215] D. Wiersma, 'Slotwoord - in reactie op het naschrift van de redactie', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk,* 1937, 41.

iii. The causes of social alcoholism

Chicken or the egg?

The most important reason that alcohol reform gained such momentum in the first half of the twentieth century lied in the worry that alcoholism was a social disease—it could somehow spread through society. In this section, I will examine how Dutch anti-alcohol reformers conceptualised the transmission of alcoholism; how they explained that individual alcohol abuse could become a matter of collective health. Stephen Snelders, Toine Pieters, and Frans Meijman showed earlier that the Dutch medical discourse on alcoholism 'biologised' during the first half of the twentieth centuries.[216] This emphasis on biological explanations is essential to take into account, as indeed the concepts and results of experimental biology were employed by Dutch alcohol reformers to legitimise their solution of individual restraint to solve the social problem of alcoholism. I will, therefore, investigate how Dutch anti-alcohol reformers employed the concept of heredity to explain transmission by a close analysis of contributions in *De Wegwijzer* during the interwar years.

The late 19th and early 20th century debate on alcoholism as a collective disease cantered primarily around questions of causality. At the 16th conference against alcoholism in Lausanne, the Norwegian psychiatrist Johannes Scharffenberg (1869-1965) outlined the most pressing problems in a talk called 'the organisation of the scientific study of the alcohol issue', which was translated and republished in *De Wegwijzer* in 1922. 'What share did endogenous and exogenous circumstances respectively have in constituting chronic alcoholism? And to what extent,' Scharffenberg asked, 'is alcohol the cause for individual degeneracy and to what extent is alcoholism its consequence? Would chronic drinkers still be considered degenerate if they could not access alcohol?'[217] Scharffenberg's question's show that the conceptual relation of heredity and alcoholism was a chicken-or-egg problem. Could alcoholism cause inheritable degeneracy, or was alcoholism the result of inherited degeneracy? Or was it caused by both? If the former was true, alcoholism was transmitted through an alcohol-containing environment; if also the latter was true, alcoholism was caused by individual misbehaviour and transmitted through reproduction. In other words, to define individual alcohol abuse as a problem of public health, the concept heredity played a crucial role to facilitate the discussions on cause and effect.

Ultimately, the conceptual relation between heredity and alcoholism depended on the possibility of inheritable 'germ-damages' (*kiembeschadiging*). Could individual alcohol consumption damage the hereditary material in such a way that later generations were predisposed to alcoholism? I showed in chapter I that Dutch eugenicists refuted such a possibility during the interwar years: damages to the developing body could not alter the hereditary material. Dutch alcohol reformers, interested in hereditary theory insofar it was useful for their envisioned response to alcoholism, initially dismissed such an explanation. They preferred a conceptualisation of heredity enabling the possibility of inheriting damages—called 'Blastophthoria'—until the mid-1930s. Only when biological experimentations (primarily

[216] Snelders, Meijman, en Pieters, 'Alcoholism and Hereditary Health in Dutch Medical Discourse, 1900–45', 130.
[217] J. Scharffenberg, 'De Organisatie van de wetenschappelijke arbeid op het gebied der alcoholkwestie', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk* (1922) 99.

coming from the United Stated) increasingly criticised the existence of heritable 'germ-damages', alcohol reformers began to agree with reluctancy that alcoholism was the result of heritable degeneracy. In this section, I will show that despite these conceptual changes, reformers remained able to define individual alcoholism as transmittable and, therefore, as a social thread.

Fase I – Alcohol as the cause for degeneration

In a 1921 piece called 'Are alcoholics degenerates?', the Dutch abstainer and *Wegwijzer* editor Antony Don (1872-1936) reflected on the scientific debate on alcoholism and heredity in terms of his own practical experiences at the Amsterdam consultation office. He passionately emphasised that alcohol consumption could lead to damages and inheritable alterations in many stages of development. 'The alcoholic's inferior offspring does not necessarily spring from innate mistakes alone,' Don stated, 'it can also be a consequence of immediate germ petrifaction (*kiembeschadiging*) caused by parental alcohol consumption.'[218] Such conclusions were convenient: the developmental and generational effects of alcohol consumption substantiated his impression that any form of individual alcohol consumption was wrong.[219] At the beginning of the Dutch interwar period, however, experimental studies claiming to prove the lasting hereditary damages on which anti-alcohol reformers relied received a lot of criticism—especially in light of how Dutch eugenicists conceptualised processes of heredity separate from development, based on the theorem of August Weismann. Alcohol could indeed damage the developing individual at various stages, these critics argued, but it could not harm the hereditary material.[220]

The anti-alcohol reformers were aware of the mastodontic reputation August Weissman, and the influence his conceptualisation of heredity had on Dutch biologists in the first half of the twentieth century. In their attempts to uphold the possibility that germ-damages were hereditary, many alcohol reformers strategically targeted interpretations of Weissman. This is, for example, the case in responding to fierce criticism of Charles Stockard's experiments in the 1920s on guinea pigs, that claimed to have shown how alcohol caused lasting hereditary mutations. In a translated and endorsed talk published in *De Wegwijzer* in 1922, Caleb Saleeby (1878-1940) indicated that 'in England, Stockard's research received heavy criticism. After all, his results are quite devastating for those in favour of alcohol consumption. However, criticism of Stockard's experiments is primarily rooted in a wrong explanation of the well-known theorem of August Weismann that acquired characteristics aren't hereditary.' Remarkably, Saleeby countered this argument by arguing that Weismann, and his conceptualisation of heredity, is widely misunderstood. 'Weismann himself, to which many refer without actually having read his work,' Saleeby stated, 'has said himself that alcohol and other poisons could damage the germ cells while emphasising that this is in no way in contradiction with his opinion on acquired characteristics.'[221] In their struggle to maintain all arguments justifying the

[218] A. Don, 'Zijn Drankzuchtigen gedegenereerden?', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk,* 1921, 229. A. Don, 'Zijn Drankzuchtigen gedegenereerden?', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk* (1921) 229.
[219] Don, 'Zijn Drankzuchtigen Gedegenereerden?', 229.
[220] Ibidem.
[221] C.W. Saleeby, 'De Alcohol als ras-vergift', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk,* (1922) 201.

damaging capacity of alcohol on future generations, conceptualisations of heredity played a crucial role.

In that regard, it is no surprise that social democrat and neurologist Gerrit Frets (1879-1957) became a frequent contributor to *De Wegwijzer*. He was a renowned expert in the relationship between alcohol and heredity as well as an active member in both the Dutch eugenics and anti-alcohol movement. At the beginning of the Dutch interwar period, he published many articles on alcohol as a germ poison. In a 1925 publication on 'alcohol and germ damage', Frets expounded on the 'toxic effect of alcohol on the hereditary material, thereby harming next generations.' In his article, he outlined three origins of alcoholism. Besides hereditary predisposition and environmental factors, the third major cause is 'blastophthoria'—the specific name Auguste Forel coined for hereditary germ damages caused by parental alcohol use.

Frets was aware of the challenges experimental biologists faced in their attempts to claim that germ damages turn into hereditary mutations—especially in controlling all environmental factors in an experimental setting. Therefore, he proposed to substantiate experimental results with genealogical data so that geneticists were able to examine family trees of alcoholics to trace hereditary defects. Gathering biological and scientific facts on 'blastophthoria' was crucial, according to Frets. 'These scientific investigations on blastophthoria are important because they form a crucial component of our knowledge on the damaging effect of human alcohol consumption, and provide a strong argument for individual restraint *(individuele onthouding*).'[222]

Already at the beginning of the interwar period, Dutch anti-alcohol reformers had to respond to the consensus among Dutch physicians, biologists, and eugenicists that environmental factors such as alcohol could damage the developing individual, but not the hereditary material. In their attempts to show that alcohol consumption had severe consequences for future population, alcohol reformers contributing to *De Wegwijzer* remained loyal to a conceptualisation of heredity in which 'blastophthoria' was still a dangerous possibility. They stuck to the idea that alcohol consumption caused hereditary defects at various stages of development, thereby explaining the alcoholism of children as an effect of parental alcoholism. It fitted their propaganda for individual restraint to secure developmental health as a solution to the collective problem of alcoholism way too well.

Fase II – Heredity and aftereffects

Towards the end of the 1920s, also alcohol reformers themselves started to doubt the possibility that alcohol consumptions caused heritable germ-damages. Initially, alcohol reformers admitted that alcohol might not cause permanent changes, but it still caused harm for the next one, two, or three generations.[223] In a 1929 article called 'The alcohol issue in light of recent findings in biology', alcohol reformer Johannes Mjoen indeed doubted whether alcohol use leads to germ-damages which doesn't only influence the first generation, 'but all future generations as

[222] G.P. Frets, 'Alcohol en Kiembeschadiging', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk* (1925), 107.
[223] Redactie, 'Een bijdrage tot de kennis van het Erfelijkheidsvraagstuk - in reactie op Dr. H.M. Kroon', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk* (1924), 228.

well.'[224] In light of 'new' research of the 'American Muller-school' suggested that chemical toxins such as alcohol indeed alter hereditary material. However, because these modifications disappear after a couple of generations, Mjoen stated, 'the cause of chronic alcoholism seems more likely to be a hereditary and innate weakness of character or mental defects, and predisposes to unrestrained pleasure and senseless self-destruction.'[225] In this statement, Mjoen slightly altered the meaning of 'heredity' and 'germ damage': alcohol use still harms the germplasm and its hereditary material, but it doesn't have a long-lasting and irreversible effect on all future generations. This move enabled the reformers to stick to a conceptual relation between heredity and alcohol that explained individual abuse as the cause for alcoholism as a social disease while complying with the new research findings of the American geneticists.

As convenient as this conceptual engineering may seem, contributors to *De Wegwijzer* remained struggling with the meaning of 'heredity' (*erfelijkheid)* and 'hereditary' (*erfelijk*). Although the first years of the interwar period showed quite some support for 'blastophthoria', Forel's explanation of heredity got problematised increasingly towards the end of the 1920s. This transition took place quite literally, as a 1929 article on 'heredity and offspring' by a physician and abstainer E.J. Verwey showed. 'The lasting influence of alcohol on future generations, which had been demonstrated by prof. Forel, has to be explained in terms of non-hereditary factors, according to current biological views. And yet,' Verwey continued slightly frustrated, 'Forel remains clinging to the notion of 'hereditary' (*erfelijk*). He doesn't bother confusing 'aftereffects' (*nawerking*) with 'hereditary' (*erfelijk*).' According to Verwey, such sloppy conceptual language was grist to the mill of the opponents of the anti-alcohol movement. 'The fact that alcohol has a deteriorating effect on more than one generation may be clear,' the alcohol reformer stated, 'that is why we should not offer our rivals such wonderful attack points by remain using the word "hereditary" *(erfelijk*).'[226]

In an attempt to untangle the conceptual confusion, Verwey admitted that both germ damages and heredity predisposition 'leave their mark on the germ, which, once fertilised, accepts life with a certain potential. What is achieved in life may or may not comply with this promise, but it can never surpass it.' To that extent, maternal alcohol use damages the germ during pregnancy, by which it compromises the 'individual inherited capacities' and limits its 'potential'. If alcoholism had been a matter of heredity, Verwey argued, 'the hereditary material of the reproductive cells would have been changed permanently.' The resulting difference between hereditary mutations and germ damages Verwey pointed at, lay in the fact that 'germ damages have an influence on many future generations, but its effects can be reversed through regeneration, whereas hereditary degeneration remains everlasting.'[227] Verwey's piece on alcohol and germ damages illustrates the difficult dilemma alcohol reformers were confronted with: in their attempt to establish authority over the social problem of alcoholism, abstainers relied on their 'scientific basis' in which the hereditary consequences of alcoholism played a central part. When the biologists to which reformers referred to started questioning these

[224] J.A. Mjoen, 'Alcoholproblemen in het licht der biologiche bevindingen', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk* (1929), 232.
[225] Mjoen, 'Alcoholproblemen in het licht der biologische bevindingen', 237.
[226] E. J. Verwey, 'Alcohol en Nageslacht', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk* (1929), 43.
[227] Verwey, 'Alcohol en Nageslacht', 45.

hereditary effects, Dutch alcohol reformers had to choose between sticking to their story or somehow interact with the changing consensus among biologists.

Nevertheless, and in contrast to what Verwey suggested, most contributors to *De Wegwijzer* remained using the concept of heredity to legitimise their proposed solutions to alcoholism. However, they indeed admitted that earlier ways in which the reformers used the concept in their propaganda required change. In the early 1930s, even the editors of *De Wegwijzer* themselves felt the urgency to discuss the concept of heredity in relation to alcoholism. These considerations culminated in a lengthy article on 'Alcohol and heredity' written by *De Wegwijzer*'s chief editor Antony Don in 1931.[228] Aware of the interaction between conceptual debates among Dutch geneticists and the interests of the anti-alcohol movement, Don started his article by admitting that 'many anti-alcohol reformers like to point at the concept of heredity for propagandistic reasons.' Ideas on progressive degeneration, the mental inferiority of children from alcoholic parents, Forel's theory of blastophthoria had one thing in common. 'They all make a terrifying impression' and show how individual alcohol abuse decreases collective health. However, Don admitted, 'popularisation follows scientific investigations with a few decades of delay. Much of what we regarded as correct or likely has not past recent scientific tests conducted with better resources and methods.'[229] Anti-alcohol activism 'should only rely on the truth and nothing more than the truth.' Therefore, Don reluctantly confessed, 'despite that some of our earlier opinions and former arguments cannot be used for longer, many disadvantages brought about by alcoholism can motivate us to continue our labour with diligence.'[230] Temporal, but still 'multi-generational aftereffects' *(geslachtelijke nawerking*) were beyond doubt one of the most significant 'disadvantages' alcohol reformers emphasised.[231] Individual alcohol consumption still affected the (future) collective.

Unfortunately, even the idea of aftereffects came under fire. In the middle of the 1930s, an increasing amount of American biologists concluded that alcohol could only harm the developing embryo and not the hereditary material of the germplasm because deviations in offspring already disappeared after one generation. Even that last interpretation had now come under fire. To counter such views, *De Wegwijzer* paid much attention to the experimental work of the German physician Agnes Bluhm (1862-1943), herself an active anti-alcohol reformer. Dutch alcohol reformers did not like her research in the first instance. She was known for criticising the statistical analyses of the German physiologist Gustav von Bunge (1803-1890), which were presented as proof for how alcohol use of the father would lead to the inheritable maternal inability to breastfeed, as 'misleading'.[232] Bluhm's experiments on mice, conducted with the support of the Rockefeller Foundation in the 1920s, pointed out that these inabilities could indeed be observed, but disappeared after a couple of generations.

[228] A. Don, 'Alcohol en Erfelijkheid', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk*, (1931), 120.
[229] Don, 'Alcohol en Erfelijkheid', 121.
[230] Ibidem, 122.
[231] G.P. Frets, 'Alcohol en Nakomelingenschap', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk* (1932) 109.
[232] Redactie, 'De erfelijkheid van het Zoogonvermogen', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk* (1935) 241.

Only later, in the last years of the interwar period, Dutch anti-alcohol reformers framed Bluhm as a hero who focused on the question of whether 'parental alcoholism leads to hereditary defects,' as Gerrit Frets wrote in a 1936 piece to celebrate her 75th birthday. 'Based on her scientific experiments, Bluhm answered that question positively.' New research, Frets stated, suggested that 'actual hereditary (*echt erfelijke)* defects caused by alcohol abuse didn't exist'. Bluhm's research on breastfeeding abilities of maternal mice now played a role as an argument in maintaining the idea that alcohol had damaging effects: 'the differences she found between the characteristics of offspring of alcoholised mice and the control-group, suggest damages to the hereditary material. An important result for anti-alcohol reform,' Frets stated.[233] By leaving out Bluhm's goal to show that these deficits lasted for only but a couple of generations, Frets presented Bluhm's research—rather desperately—as an argument against those who denied the existence of 'aftereffects' caused by alcohol.

The changing way in which Frets interpreted Bluhm's research reflects the shifting conceptualisation of heredity in the 1930s. In contrast to the Dutch eugenicists, some of whom already in the early 1920s regarded alcoholism as a case of 'apparent heredity', the anti-alcohol reformers remained to emphasise the 'hereditary effects' of alcohol consumption until the end of the 1930s. However, Dutch anti-alcohol reformers reconceptualised the meaning of heredity and admitted that alcoholism caused genetic effects that lasted for three or four generations. This new understanding of the relationship between heredity and alcoholism did not cause heredity to disappear from the rhetorical repertoire of the anti-alcohol reformers. They could still employ the concept to argue that individual use threatened future collective health.

Fase III – Alcoholism as a consequence of degeneration

Despite Gerrit Frets's brave attempts to save to the possibility of germ-damages, the view that alcohol was a cause for lasting hereditary deviations disappeared as the end of the interwar period came closer. In their commitment to the scientific consensus on which they based their professional identity, as well as there preference for individual restraint, Dutch anti-alcohol reformers began to approach the concept of heredity from a different angle. Despite that alcohol could not cause hereditary deviations, they admitted that alcoholism was still caused by inherited degeneration. Those having a degenerate hereditary constitution were more susceptible to alcoholism than others. Antony Don, the chief editor of *De Wegwijzer*, argued that reformers had to justify individual restraint from a completely different angle. 'It is not alcoholism itself that is passed on from father to son; what is inherited is a certain character which leads with a fatal certainty to alcoholism in a particular environment.'[234] As individuals not *predestined* to alcoholism due to parental alcoholism, but *predisposed* for substance abuse because of his or her hereditary makeup, alcohol reformers began conceptualising the availability of alcohol as a condition in developmental health. As a result, contributors to *De Wegwijzer* conceptualised transmission not in biological but in environmental terms; they still regarded individual alcoholism to be a social disease. If alcohol abuse remained normal in society, it would threaten those with a weak constitution.

[233] G. P. Frets, 'Agnes Bluhm 75 jaar', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk* (1937), 103.
[234] Don, 'Alcohol en Erfelijkheid', 199.

This conceptual shift put disagreements within the anti-alcohol movement on edge. On the one side stood the temperance reformers, who believed that the new, more specific conceptualisation of heredity implied that *only* those with a degenerate constitution became chronic alcoholics. The part of society with a healthy hereditary constitution might contain cases of alcohol abuse. Still, with the right amount of propaganda for more moderate alcohol consumption, the temperance reformers believed, this abuse was reversible. It would moreover never lead to chronic alcoholism. Additionally, the temperance reformers were keen on emphasising that a clear and observable difference between abstainers and moderate drinkers did not exist in the case of a normal hereditary constitution. The abstainers, on the other hand, emphasised the more gradual distinction between normal and degenerate hereditary predisposition for chronic alcoholism. Having alcohol around, everybody was a potential substance abuser; not only those having a degenerate constitution. It was, therefore, better to restrain from it.

At the end of the interwar period, the tension between abstainers and temperance reformers over how the relation social alcoholism ought to be conceptualised, culminated in a passionate debate over the interpretation of a 'heredity survey' (*herediteitsenquete*), which was conducted in 1923 by Gerardus Heijmans (1857-1930) and Enno Dirk Wiersma (1858-1940) in the late 1910s. The two Groningen professors of psychiatry had invited over a hundred physicians to respond to a questionnaire containing 90 questions on the behavioural characteristics and drinking habits of their patients and their families. Despite that that they published the results in a German edited volume called the *Gesammelte Kleinere Schriften zur Philosophie und Psychology* in 1927, it didn't initially receive a lot of attention among alcohol reformers. That changed in 1936 when F.F. Hazelhoff and R. Horst used Heijmans's and Wiersma's results, both chief-physicians at the alcoholism sanatorium of Hoog-Hullen. In a 1935 book called *De Geestesgesteldheid der Alcoholisten*, Hazelhoff and Horst investigated the apparent correlation between alcoholism and personality deviations; they further substantiated it with observations from the sanatorium at which both authors worked.

In 1936, the sanatorium-physicians from Hoog-Hullen published some of the results in *De Wegwijzer*. 'In contrast to chronic alcoholics with a normal hereditary constitution,' they argued, 'it is clear that alcoholics with a degenerate hereditary constitution have a very different personality; their mental status bears specific characteristics. Heijman's and Wiersma's data suggests that these hereditary (*van-huis-uit-verkregen*) degenerate characteristics cause chronic alcoholism.' Individuals lacking these specific characteristics, because they have a healthy constitution can be permanently cured of alcoholism with proper treatment at the sanatorium, the physicians from Hoog-Hullen claimed.[235] Although degenerates might be helpless, individuals with a healthy hereditary constitution could consume alcohol occasionally without having lasting effects.

In a commentary that accompanied the article, the editors of *De Wegwijzer* criticised the naivety that only individuals with a degenerate constitution had these 'specific characteristics' that predisposed for chronic alcoholism. 'Might it be the case,' the editors asked, 'that the author's conclusions are based on seeing the patients solely during sanatorium treatment?' The

[235] Redactie, 'De Geestesgesteldheid der alcoholisten', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk* (1936), 151.

abstainers from *De Wegwijzers* argued, based on 'their long-term experience with alcoholics' in the consultation offices, that 'the specific mental traits typical for alcoholics are still visible in individuals with all sorts of constitutions—even after alcohol abuse.'[236] Not only those having a detectable degenerate hereditary constitution were susceptible to alcoholism, but persons with a 'normal' constitution could as well show behaviour typical for alcoholism—if only they would drink enough. The majority of physicians believed in the 1930s that curative sanatorium treatment combined with propaganda for moderate alcohol consumption would be enough to stop social decay caused by alcoholism.[237] The editors of *De Wegwijzer,* however, emphasised that the difference between a normal and weak or degenerate hereditary constitution was not as black-and-white as Hazelhoff and Horst claimed: especially abstinence could prevent chronic alcoholism because every individual was potentially susceptible.

Towards the end of the interwar period, Dutch anti-alcohol reformers generally admitted that alcohol use could not cause lasting alteration of the hereditary material and threaten hereditary health of the future population. They thereby followed the consensus among eugenicists on a 'Weismannian' explanation of heredity, in which the hereditary material could not be influence by external factors. As a result, Dutch alcohol reformers began to explain alcoholism as a consequence of inherited degeneration. They discussed heredity primarily in terms of development: was an individual predestined to heredity or predisposed to alcoholism? Within the Dutch anti-alcohol movement, temperance reformers believed that only degenerate individuals would become alcoholics, for the rest of the population, temperance was enough. Abstainers thought that every individual was potentially predisposed to alcoholism, and to eradicate social alcoholism, only full abstinence from alcohol would help.

The differences within the anti-alcohol movement show that heredity was conceptualised to its legitimising purpose; it even served to articulate differences between temperance reformers and abstainers. However, the similarities between these two groups of alcohol reformers are even more remarkable. Both reasoned that environmental factors were as significant as an inherited constitution in developing alcoholism. The Dutch alcohol reformers were no genetic determinist; nurture was as important as nature. Alcohol consumption, in that regard, was a developmental condition. Overall, Dutch reformer agreed that whereas predisposition was transmitted through reproduction, alcoholism itself was transmitted through the environment.

In this section, I showed how the concept of heredity remained important for anti-alcohol reformers in justifying their proposed response towards the problem of alcoholism throughout the Dutch interwar period. Heredity was used in trying to specify *how* alcohol precisely was harmful. The conceptual relation between alcohol and heredity changed gradually over the interwar period. At the beginning of the interwar period, reformers regarded alcohol as directly damaging the hereditary material, leading to lasting genetic mutations threatening future collective health. At the end of the 1920s, this understanding was more nuanced. Alcohol did not damage the hereditary material, but these alterations lasted for no more than three generations. As a result, anti-alcohol reformers started to pay attention to the possibility that

[236] Redactie, 'De Geestesgesteldheid der alcoholisten', 153.
[237] Blok, *Ziek of zwak*, 88–90.

alcohol was not so much a cause for hereditary deterioration, but instead an effect of a weak and hereditary constitution. As they began to discuss heredity in relation to development rather than transmission, Dutch anti-alcohol reformers started to perceive alcohol as an environmental factor from which degenerates should refrain themselves.

The different conceptualisations have to be explained by the reformer's reliance on the authority of science as the basis of their professional authority. Dutch anti-alcohol reformers, as becomes apparent with my analysis of *De Wegwijzer*, tried to legitimise their approach with scientific concepts and experimental results. Whereas consensus within the biological community began to shift, the reformers followed along—albeit it with a slight delay. And yet—regardless of this change, it becomes clear that alcohol reformers responded, employed and modified scientific concepts and experimental results to substantiate the claim that alcoholism was transmittable. Whereas they argued at the beginning of the interwar period that this transmission happened through biological reproduction, towards the end of the 19th century, they admitted that alcohol abuse was transmitted through the social environment. The way in which Dutch alcohol reformers conceptualised alcoholism as a matter of public health reveals how they conceptualised that the social problem of alcoholism starts at the level of the individual. Now that I have shown how Dutch anti-alcohol reformers defined alcoholism as a social *problem*, we can turn to their envisioned *solution* of individual restraint built on the orientation towards the individual in reaching public health.

iv. Against laissez-faire sentiments

In chapter one, I elaborated on how the possibility that disease had a regenerating and purifying capacity for the human 'population' served as an argument to criticise the ambitions of public health reformers. These views, primarily popular in Great Britain, the United States, and, later, Germany, regarded public diseases that eradicated a big (and weak) part of the population as a necessary evil. Such 'laissez-faire' public health approaches were inspired by Malthusian views on an economy of nature and combined with 'Darwinian' sentiments that understood evolution as being caused by 'natural selection'. Such a stance implied that only the best adapted would survive the 'struggle for life', and reproduce themselves.[238]

Against this theoretical background, laissez-faire Darwinists argued that public health initiatives such as alcohol reform kept weak individuals alive, enabling them to reproduce while fostering further degeneration of the human population as a whole. Alcohol consumption, they believed, could indeed lead to alcoholism, and alcoholism could lead to the inability to reproduce, and to death. That may sound tragic on the level of the individual, but it had 'selective' capacities on the level of the population, laissez-faire Darwinist's believed. Dutch

[238] As I made clear in chapter 1, the words 'Malthusian' and 'Darwinian' are misleading in that they suggest that social interpretations of *The Origin of Spieces* formed a crucial aspect of the Charles Darwin's work, and suggest that the work of Thomas Robbert Malthus played a central part in these discussions. This is an interesting debate, but it is not the point of me using 'Darwinism'. Instead of the formerly popular analytic category 'social Darwinism', I use 'Darwinism' as the analytic category that refers to the application of the theory of evolution by means of natural selection—albeit in a loose way—to society. I prefer 'Darwinism' because it better translates the Dutch actor' "Darwinisme" or "Neo-Darwinisme".

alcohol reformers disagreed with such pessimism. Their explicit conviction of the 'selective' capabilities of alcohol remained an essential topic of discussion throughout the interwar period. After all, the foundations of the good cause of alcohol reform were at stake. To fully understand how Dutch alcohol reformers defined and proposed a solution to social alcoholism as a problem of public health, we need to stand still by challenges of laissez-faire Darwinism as the ultimate example of a population oriented public health approach. After all, the refutation of laissez-faire approaches formed a big part of how Dutch reformers articulated their approach to improving public health. I will follow the debate through the three conceptual stages I characterised in the previous section and point at the reasons for dismissing the idea that nature should be let run its course.

Fase I – Germ-damages

At the beginning of the interwar period—as I showed earlier—the majority of Dutch anti-alcohol reformers believed that alcohol caused lasting hereditary mutations, and could, therefore, lead to degeneration. I have also pointed out that this was an excellent argument to define individual alcohol use as a problem of public health. Individual restraint would not only prevent alcoholism; it stopped degeneration as well. For that reason, the anti-alcohol reformers who wrote for *De Wegwijzer* were in the early 1920s sceptical about claims that alcohol leads solely to alcoholism in case of degenerate individuals. Reformers regarded this as being naïeve because it underestimated the damages consumption could do to the hereditary material. Dutch reformers fiercely disliked claimes that there was no point in saving these affected individuals because alcohol would help the human race to get rid of 'undesired' individuals. In a 1922 piece, on 'scientific research regarding the alcohol issue,' the editors of *De Wegwijzer* endorsed a translated part of a talk given by the Norwegian psychiatrist Johan Scharffenberg (1869-1965) at the 16th international conference on alcoholism in 1921. In this lecture, he stated that 'some argued how alcohol helps society to eradicate individuals with a worthless hereditary constitution and thus improves the human race. Some even spoke of "alcoholic selection"!' These laissez-faire Darwinists, Scharffenberg recalled quite upset, 'even propose that everyone should drink whatever he or she wants: and those who cannot stand it would drink themselves to death. In this way, only alcohol-resistant persons would survive and reproduce.'[239] Scharffenberg was disgusted by the naïeve, careless, and unethical sentiments of these 'misery theorists' (*ellendetheoretici*).[240]

An essential component of the "neo-Darwinian" message of 'misery' was the belief that in sharp contrast to those with a degenerate hereditary constitution, the ones having a 'normal' or 'desired' disposition could handle alcohol very well. A proponent of this interpretation was the famous British biostatistician Karl Pearson (1857-1936), who conducted several statistical investigations on British citizens who consumed alcohol in the early 1910s. The publications that followed from these investigations showed significant differences between the reproductive capacities within this group of alcohol consumers. Pearson's results were discussed extensively in *De Wegwijzer*—especially by psychiatrist Gerrit Pieter Frets. In a 1924

[239] Scharffenberg, 'De Organisatie van de wetenschappelijke arbeid op het gebied der alcoholkwestie', 267.
[240] Div. authors, 'Oordeelvellingen over de Wegwijzer bij het jubileumnummer', *De Wegwijzer* (1924), 253.

piece, he wrote that 'Pearson explains this difference in terms of how the physically strong like alcohol better and withstand it better, whereas in case of the weak, alcohol causes infertility and child mortality. Only the better adapted, and physically strong individuals will survive—leading to a more healthy population.'[241] Pearson regarded this to be an essential argument against alcohol reform: alcohol could show the difference between undesired and desired individuals because it had only effects on the latter group. Having a fundamentally different understanding of heredity in which the germplasm of *every* individual could be damaged, leading to hereditary mutations, Frets emphasised that 'alcoholism is not only apparent among a handful of degenerates; everybody could be affected.'[242] For Dutch alcohol reformers at the beginning of the interwar period, the selective capacities of alcohol were out of the question based on their faith in the lasting hereditary damages of the germplasm.

Fase II – Regeneration

In response to new results experimental genetics, however, Dutch alcohol reformers began to admit towards the end of the 1920s that alcoholism was more an effect of degeneration than its cause. If alcoholism was an innate characteristic—as Pearson indeed assumed—this new conceptualisation of heredity challenged their position that every individual was vulnerable to alcohol; it moreover limited the reformer's possibilities to counter laissez-faire Darwinism. They especially had a problem with American population control reformer Raymond Pearl (1879-1940), who conducted several convincing experiments on the effects of alcohol on marmots in the late 1920s. In the spirit of Karl Pearson, he observed differences in the reproductive capacities of these marmots. The offspring of alcoholised marmots were disabled in most cases, but whereas some of these defects disappeared after a couple of generations, other marmots became infertile and died.[243] In a discussion of Pearl's research in 1927, the Dutch abstainer Harold Westergaard stated in *De Wegwijzer* that Pearl concluded from these outcomes 'that alcohol has a good effect on the population as a whole. This is the selective result on the level of the germ cells and embryo's so that only the strongest survive while carrying on the race.'[244] Pearl, in line with the British biometrician Pearson, concluded that 'these experimental results could be applied to the human alcohol issue. It can be concluded, that this elimination of undesired individuals benefited the European races, as most of the dominating races most certainly have an alcoholic history.'[245] For Dutch reformer Westergaard, this was a wrong and worrisome explanation: 'it may be a relief that the alcoholism of our great-great-grandfathers does not eradicate the human population. And yet, what has alcohol consumption costed intermediate generations in terms of infertility and constitutive disabilities?'[246] A lot—is the implied answer to this question.

Westergaard's response, explicitly endorsed by the editors of *De Wegwijzer*, can only be understood in terms of the changing conceptualisation of heredity at the end of the 1920s

[241] Frets, 'Alcohol en Kiembeschadiging', 48.
[242] Div. authors, 'Oordeelvellingen over de Wegwijzer bij het jubileumnummer', *De Wegwijzer* (1924), 253.
[243] Frets, 'Alcohol en Kiembeschadiging', 99.
[244] H. Westergaard, 'Alcohol en Levensduur', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk*, 1927, 100–101.
[245] Westergaard, 'Alcohol en Levensduur', 101.
[246] Ibidem, 103.

and the early 1930s I outlined in section 3. Although anti-alcohol reformers increasingly admitted that germ damages caused by alcohol could not lead to lasting hereditary mutations, they embraced the idea of 'aftereffects' (*nawerking*) that lasted for a couple of generations. Westergaard understood the costs of 'intermediate generations' in terms of these 'aftereffects'. Despite that Pearl had correctly argued that alcohol had not caused the extinction of the human race, Westergaard believed that alcohol had at least done temporary harm.[247] 'Alcohol,' as Antony Don, the chief editor of *De Wegwijzer*, stated it in a supportive commentary on Westergaard's discussion of Pearl, 'damages too much and kills too little.'[248]

In terms of public health, the conceptualisation of heredity in terms of 'aftereffects' had a more positive implication as well. If germ damages did not lead to lasting hereditary mutations, the population could regenerate from the harmful effects of alcohol consumption over a couple of generations in case alcohol was prohibited or individuals abstained from it. Frets developed such a line of reasoning in a couple of articles on alcohol and germ damages in the late 1920s and early 1930s in *De Wegwijzer*. In a 1927 report, Frets used the more limited conceptualisation of heredity as an argument against the 'selective capacity' of alcohol as it was pointed out by Raymond Pearl. 'Over a couple of generations, the differences between disabled and normal ones decrease if the marmots are properly nurtured. "Marmot hygiene", in which alcohol is taken out of the environment, had helped the alcoholic and disabled marmots to regenerate.' Additionally, the editors of *De Wegwijzer* stated in an afterword to Frets' article that this criticism on Pearl was an exemplary argument against laissez-faire Darwinism while being in favour of individual restraint to maintain and improve the collective health.[249]

Fase III – Ethical considerations

However, I showed in section three that even the conceptualisation of germ-damages as 'aftereffects' came under pressure towards the end of the Dutch interbellum. This criticism supported the argument that *only* hereditary degenerates were receptive to alcoholism and that healthy, fit, and alcohol-tolerant individuals did not have to worry. It also caused a situation in which alcohol-reformers had to relate themselves again to the uncomfortable idea of the 'selective capacity' of alcohol in terms of population health, as was propagated by British and American heredity researchers. Additionally, in the second half of the 1930s, anti-alcohol reformers struggled to admit that alcoholism was an effect of hereditary degeneration. Now that contributors to *De Wegwijzers* could not counter 'Darwinist' laissez-faire with their explanation of heredity, the Dutch anti-alcohol reformers relied on morality. Maybe alcohol could not damage the hereditary material, and perhaps alcohol would lead to alcoholism only in cases of the hereditary degenerates. However, they reasoned in a similar vein as Dutch eugenicists, to let these degenerates die was just 'immoral'.

A great example of this position is illustrated in a 1936 editorial in *De Wegwijzer*, in which opinions of Dutch anti-alcohol reformers on the conclusions of researches like Pearl and Pearson were summarised and synthesised. 'Even if alcohol would not permanently damage the hereditary material, and because of selection—or preferably: the eradication of the weak—have

[247] Ibidem, 103; Frets, 'Alcohol en Kiembeschadiging', 99.
[248] Redactie, 'De alcohol geen selectieve factor in gunstige zin', *De Wegwijzer* (1936) 79.
[249] Frets, 'Alcohol en Kiembeschadiging', 109.

an improving effect on the 'hereditary mass' (*erfmassa*) of the population; even then would the population health reformer have a great interest in the eradication of alcoholism.' After all, 'brutal life selection' in terms of laissez-faire population health reform, was considered 'immoral.' If individuals were encouraged to restrain from alcohol, even degenerate individuals would not become alcoholics, Dutch reformers agreed. 'The people should become aware of the ideal of physical and moral efficiency. Alcohol is the arch-enemy of this idealism.'[250] The measures of prohibition and abstinence were now not legitimised in terms of fear for the hereditary effects of alcohol consumption, but in terms of the environmental influence, the absence of alcohol could have on the individual (even the degenerate ones), and therefore the health of the population as a whole.

Throughout the interwar period, Dutch anti-alcohol reformers who published in *De Wegwijzer* remained hostile towards the idea that nature should be enabled to run its course to maintain and improve public health, and the 'irresponsible, cruel, and immoral' principle of natural selection.[251] In contrast to population-oriented public health, Dutch reformers regarded it unethical that individuals were sacrificed to maintain the health of the population. Despite the changing conceptualisation of heredity, their aversion towards laissez-faire public health approaches remained stable. If we zoom out a bit, that is not necessarily a surprise: also Dutch eugenicists condemned 'Darwinian' criticism of public health initiatives on moral grounds. The different ways in which Dutch alcohol reformers conceptualised heredity in relation to collective survival reveals that they were never willing to sacrifice developmental health for the sake of an abstract population.

v. A Matter of individual responsibility

Now that I have explained why and how Dutch anti-alcohol reformers were convinced that laissez-faire public health policy was out of the question, how then would a change in individual alcohol consumption improve the health of the population? How would individual restraint—either temperance or abstinence—lead to collective health? In this section, I aim to show how, throughout the interwar period, anti-alcohol reformers employed the concept of heredity to explain that collective health was a matter of individual responsibility. In a similar vein as Dutch eugenicists, they reasoned that social change started at the individual level. The 'collective', here, was not conceptualised as a population intelligible through statistics but interpreted as a 'series' or 'multiplicity' of individuals. Thus to solve the social problem of alcoholism, developmental health needed to be secured first. The 25th-anniversary issue of De Wegwijzer nicely illustrates such a conceptualisation of collective health. In this edition, Theodoor van der Woude (1863-1946), being one of the journal's founders, wrote a synopsis of all earlier contributions and concluded that the social understanding of the alcohol issue formed one of the keystones of the anti-alcohol movement. 'Above all single person stands society—the collective (*gemeenschapsbouw*)—of which individuals form single cells,' he stated. 'No

[250] Redactie, 'De alcohol geen selectieve factor in gunstige zin', *De Wegwijzer* (1936), 207.
[251] R. Strecker, 'Het congres te londen en het voorkomen van erfelijk belast nakroost', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk*, 1935, 47–48.

wonder, then, that the social aspects of the drinking problem receive a lot of editorial attention in *De Wegwijzer*,' van der Woude remarks in his overview.[252]

Biological transmission

The concept of heredity played a fundamental role in explaining the population in terms of future generations. The relationship between these generations materialised in terms of a 'hereditary mass' (*erfmassa*), transmitted 'vertically' through reproduction.[253] Every individual developed its phenotypic constitution from its share of this hereditary mass. The differences between individuals, then, were explained in terms of environmental factors influencing development, and the recombination of parental genetic material. Moreover, the crucial problem regarding the alcohol issue centred around the question of whether an *individual* of one generation could alter its hereditary content and that these alterations could be transmitted to its offspring—resulting in permanent modifications of the genetic mass of the cross-generational collective. This explains why the debate on germ-damages played such a central role in legitimising individual restraint as a public health measure.

At the beginning of the interwar period, contributors to *De Wegwijzer* were quite sure of the adverse effects of alcohol on offspring. As newly appointed chief editor Antony Don remarked in 1919: 'recent experimental observations appear to point at the disadvantageous influence parental alcoholism has on offspring; it may be the most important evidence that shows how alcoholism endangers the health of the population.'[254] Don was talking of the many experiments still trying to prove Forel's ideas on 'blastophthoria', in which alcohol was perceived as a germ poison that could cause mutations during embryological development. In Forel's framework, these mutations were permanent and multi-generational.

However, as I showed earlier, that conceptual framework became problematised increasingly as the interwar period progressed. Especially the multi-generational aspect became the topic of debate. The editors of *De Wegwijzer,* for example, admitted in a discussion of Johan Scharffenberg's keynote speech at the 16th International Congress against Alcoholism in 1922: 'Could alcoholism really cause lasting hereditary effects, or does it only weaken some of the next generations?', Scharffenberg asked while addressing the most pressing scientific questions at the time.[255] As I have shown, the eugenicists reached a consensus regarding the second option in the early 1920s. The anti-alcohol reformers, on the other hand, stuck to the conclusion that alcoholism caused lasting hereditary effects until the late 1920s. In their propaganda for prohibition and abstinence, contributors to *De Wegwijzer* were keen on pointing out that alcohol had as much impact on the next generations as they could conceptualise. Their loose use of heredity helped in connecting individual behaviour to collective interests and substantiated certain alarmism regarding alcohol use. If individual alcoholism damaged reproductive cells and embryo in such a way that it leads to hereditary mutations, alcohol use harmed the next generations—finally leading to degeneration on population-level.

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[252] Div. authors, 'Oordeelvellingen over de Wegwijzer bij het jubileumnummer', *De Wegwijzer* (1924), 251.
[253] Gaudillière en Löwy, *Heredity and infection,* 3.
[254] A. Don, 'Onze huidige kennis omtrent den invloed van den alcohol op het menschelijk organisme', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk,* 1919, 251.
[255] Scharffenberg, 'De Organisatie van de wetenschappelijke arbeid op het gebied der alcoholkwestie', 99.

A 1930 piece on 'Alcohol and Heredity' written by editor Antony Don clearly illustrates the continuous relation between individual alcoholism and population health, and the role the concept of heredity played therein. It moreover highlights how this conceptual connection enabled the reformers to emphasise individual responsibility as a bottom-up solution to alcoholism as a collective problem. It is worth citing the introductory paragraph here:

> One of the most critical issues concerning alcoholism regards *heredity*. If someone disadvantages one's health and shortens one's life by drinking alcohol, that's regrettable, but that only goes for himself. The case worsens when he causes damage to his family—by high personal expenses, absenteeism, maltreatment, and neglect. If he, because of fateful habits, comes into contact with the police, poor relief, or a sanatorium, the society as a whole suffers from his misbehaviour. But this trouble ends when the alcoholic dies or abstains. If, however, his children are born with hereditary defects *(erfelijk belast)*—if it, in other words, brings about hereditary degeneration—then the alcoholic forms not only a threat for his immediate environment and the present but also all future generations. As a consequence, the future population bears the penalty for the alcoholic's misbehaviour.[256]

Environmental transmission

In the early 1930s, anti-alcohol reformers reluctantly reconceptualised the relationship between alcoholism and heredity. Following the consensus that Dutch heredity theorists had reached the beginning of the 1920s, it became considered highly unlikely that alcohol caused lasting hereditary mutations leading to degeneration. In reverse, hereditary degeneration was increasingly perceived as the cause for alcoholism, leading to a fundamental shift in how anti-alcohol reformers conceptualised alcoholism as a matter of population health. Paradoxically, the contributors of *De Wegwijzer* used to the concept of heredity to substantiate a more environmentalist stance towards public health: individual alcoholism became perceived to be an environmental factor acting on the hereditary constitution that could only be eliminated employing individual restraint.

If some individuals had a degenerate hereditary constitution and were thus more susceptible for alcoholism if they started consuming it, and if alcoholism was not considered a selective force that helped the population as a whole to get rid of its diseased components, anti-alcohol reformers could conceptualise alcohol as an environmental factor affecting developing individuals with degenerate dispositions. Now that anti-alcohol reformers began to understand alcoholism as not transmitted through biologically defined hereditary matter, they explained alcohol abuse as a social habit being collectively preserved. 'Humans are herd animals in their comings and goings: they do what "one" does, and they let what "one" lets,' as the editors of *De Wegwijzer* stated in 1936.[257]

This shifting conceptualisation in which the hereditary constitution implied that alcohol reform could not protect the population from hereditary degeneration—it could protect the individual with a hereditary degenerate constitution from harmful habits that were preserved collectively and transmitted through the environment. In 1936, the editors of *De Wegwijzer*

[256] Don, 'Alcohol en Erfelijkheid', 121. Not my italics.
[257] Redactie, 'Naschrift - in reactie op Dr. D. Wiersma', 39.

responded to the physician Dirk Wiersma, who justified occasional alcohol consumption and criticised individual restraint because he believed that solely degenerate individuals developed chronic alcoholism. The editors argued that Wiersma's 'point of view might be understandable from the viewpoint of the physician, caring about the health of the individual patient, while the great danger of occasional use lies in the example drinkers set other members of society.' Not the actual (occasional) consumption of alcohol was necessarily considered dubious. The problem was that 'one helps to maintain a habit that is harmful to many'.[258]

'Many' referred in this context primarily to those having a degenerate hereditary constitution. In a 1938 article on the relation between alcohol and mental disabilities, the psychiatrist Gert Vermeylen stated that it was not necessarily important anymore 'whether the psychological characteristics were congenital or acquired'. Moreover, degenerates had no 'own will or energy; they behave cowardly towards their reality, and their weak character expresses itself in all their actions.' In other words, individuals with a hereditary constitution could not resist and reflect upon collective habits. While citing Auguste Forel—who passed away seven years earlier—Vermeylen stated that degenerates 'could not solve the problem of the "self" (*ik*), they have no awareness of their individuality in relation to their collectivity.'[259] The presence of alcohol could, therefore, 'provoke the existing hereditary deviation, which makes alcohol use lead to chronic alcoholism.'[260]

As a result, anti-alcohol reformers spoke increasingly of an 'alcoholic environment' (*tot-alcohol-voerende omgeving*) in discussions over collective health and alcoholism at the end of the interwar period. In that regard, the editors of *De Wegwijzer* published quite a few translations of German articles in which alcohol was considered an environmental factor that could harm the developing potential of certain races. In a 1938 report, for example, the editors enthusiastically endorsed Michal Gnatowksy's viewpoints on social measures in the eradication of alcoholism. 'More recently, alcohol reformers start to realise what biologists already knew for decades. Alcoholic beverages, more than any other harmful environmental circumstances, undermine the physical and mental capacity of every race, by bringing those with a hereditary burden to further degeneration.'[261]

At the end of the interwar period, and in sharp contrast with the beginning of the interbellum, anti-alcohol reformers reached the consensus that alcoholism transmitted to next generations through habits creating a harmful environment; not through their biological material. The reformers thereby employed the concept of heredity to oppose 'these habits'. Individuals with a 'strong' hereditary constitution maintained with his or her alcohol consumption a harmful environment that was dangerous for individuals with a degenerate hereditary constitution and was predisposed to alcoholism. As a result, the relation between heredity and the social disease of alcoholism began to be discussed in terms of developmental health. In words of the editors of *De Wegwijzer* in 1938: 'Substantiated by scientific observations, it can be considered true and dangerous that a degenerate individual's inherited

[258] Redactie, 'Naschrift - in reactie op Dr. D. Wiersma', 39.
[259] G. Vermeylen, 'Alcohol en Geesteszieken – Bier als oorzaak van alcoholpsychose', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk*, 1938, 11.
[260] Vermeylen, 'Alcohol en Geesteszieken', 23.
[261] P. Gantowsky, 'Sociale en eugenetische gezichtspunten in de bestrijding van het alcoholisme', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk*, 1938, 135.

susceptibility to alcoholism will inflame again and again in an alcoholic environment.'[262] At the end of the interwar period, Dutch anti-alcohol reformers who propagated abstinence and prohibition while employing the concept of heredity began to see themselves as environmentalist reformers.

This new attention to the importance of environmental factors and developmental health in the late interwar period cannot be understood in isolation from the increasing amount of birth control measures in Western Europe during the 1930s. The hesitant, slightly condescending interpretation of the German sterilisation laws of 1934 so typical for Dutch eugenicists is also apparent among Dutch alcohol reformers. Carel Kortenhorst (1882-1950), one of the most influential protestant psychiatrists and one of the leading figures of the *Dutch Mental Health Movement*, used *De Wegwijzer* a few times as a platform to discuss and condemn sterilisation practices. In a 1935 piece, in which he explained how alcoholics formed a big group of the degenerates the German law targeted, Kortenhorst admitted that 'improving public health is a deed of compassion and social justice. But for this good cause, it is not ethically justified to use immoral measures,' sterilisation.[263] In articulating their criticism of the sterilisation of alcoholics, Dutch anti-alcohol reformers primarily dismissed the deterministic interpretation of hereditary factors. In words of Kortenhorst, clearly referring to Hitler: 'If a national-socialist politician in Germany wants radical racial hygiene, they would have to sterilise not only the chronic alcoholics themselves but their relatives, bearers of hidden hereditary factors, as well.' Moreover, this would never be enough: 'sterilisation will never eradicate alcoholism; not every individual with a hereditary predisposition for the disease will develop an alcoholic constitution.'[264]

For that reason, Dutch anti-alcohol reformers proposed individual restraint in contrast to sterilisation as the most effective measure to eradicate the social disease of alcoholism, thereby improving the health of the population. In a report on the 1934 London eugenic conference, the editors praised in this regard a talk by E.A. Strecker, who stated that 'influencing the environment by abstinence propaganda is still the most sensible and most successful preventive method in our field of work.' After all, Strecker argued, 'an alcoholic environment creates "ordinary drinkers" through the existence of harmful drinking habits, from which hereditary degenerates develop chronic alcoholism.'[265] Sterilisation of some degenerates will have no decisive effect 'if the environmental breeding ground for chronic alcoholism remains existing.'[266]

My investigation of how anti-alcohol reformers justified their response towards the threat of social decay in the interwar period through the scope of heredity shows much conceptual change. In that regard, this chapter can be read as an internalist history of how ideas on alcoholism and heredity changed throughout the interwar period, and how (international) canonic 'science' was 'received' by Dutch social reformers. But that is only one side of the

[262] Gantowsky, 'Sociale en Eugenetische gezichtspunten in de bestrijding van het alcoholisme,' 136.
[263] C. T. Kortenhorst, 'Eugenetica en Alcohol', *De Wegwijzer: tijdschrift voor de studie van het alcoholvraagstuk*, (1935), 53.
[264] Kortenhorst, 'Eugenetica en Alcohol,' 57.
[265] Strecker, 'Het congres te londen en het voorkomen van erfelijk belast nakroost', 52.
[266] Ibidem, 52.

story. As the third section of this chapter showed how Dutch alcohol reformers employed the concept of heredity to define alcoholism as a collective problem during the interwar years. In the fourth section, I furthermore explained how they were never willing to sacrifice individual health for the sake of population health. This fifth section adds to the emerging picture that Dutch alcohol reformers regarded developmental health to be of fundamental importance in eradicating alcoholism as a social disease—regardless of the conceptual developments. In respect of how Dutch alcohol reformers employed the concept of heredity to legitimise how individual restraint as the solution for social alcoholism, an important continuity and discontinuity can be identified.

On the one hand, I shown how the shift in how Dutch alcohol reformers conceptualised the relation between heredity and the causes of alcoholism in the interwar period, which has earlier been sketched by Stephen Snelders, Toine Pieters and Frans Meijman for the 'general medical discourse', interacted with the practical goals Dutch anti-alcohol reformers envisioned.[267] In the 1920s, they believed that as parental alcoholism caused alcoholism by future generations through, it was transmitted biologically through the hereditary material. Individual restraint was thereby conceptualised as a solution for social alcoholism because it prevented germ damages from happening. In the 1930s, this began to change. Because alcoholism was instead regarded to be an *effect* of hereditary degeneration, anti-alcohol reformers began to perceive alcohol as an environmental factor that influenced developmental health. As the degenerate predisposition might still be transmitted through reproduction, the actual condition of alcoholism was conceptualised as transmitted through the social environment. With an emphasis on nurture besides nature, alcohol reformers thus promoted individual restraint as environmental improvement, in which a collection of well-developed individuals could grow up. In other words, even individuals who inherited a degenerate constitution would not become alcoholics in an environment in which nobody consumed alcohol. While the Second War was nearing, Dutch anti-alcohol reformers increasingly became environmentalists.

This historical change, however, reflects two sides of the same coin. Throughout the interwar period, Dutch anti-alcohol reformers remained approaching public health bottom-up: developmental health led to collective health, they believed. Despite Darwinist social theory within reach, Dutch anti-alcohol reformers agreed that health of the population never overruled individual health. They remained outspoken critics of laissez-faire public health approaches for theoretical and ethical reasons. My conceptual analysis of the relationship between alcoholism and heredity enforces that health was understood as a private matter: alcohol reformers never

[267] One the one hand, my conceptual history of the relation between heredity and alcoholism is different because whereas I focus on alcohol reformers, Snelders (e.g.) focus on the general medical discourse, deploying a different set of sources. In that sense, my conclusions show how the earlier identified conceptual shifts were received and employed in other arena's. On the other hand, my story is different from Snelders' account, because I provide an explanation of why the chicken-and-egg-question relation between degeneration and alcoholism settled precisely in the interwar era. Although the debate existed already in the early 19th century (see: John Lidwell Durnin, 'The Children of Intemperate Parents: Heredity, Observation, and the Production of Consensus Before the Rise of Eugenics in America.', *Isis* (forthcoming 2021).), my story shows that the debate on 'aftereffects' resulting from the experimental results of the American Muller school settled the debate. My identification of a 'middle fase' in between conceptualising alcoholism as the cause for and later the cause of degeneration, is a contribution to Snelders', Meijman's and Pieters' work. See: Snelders, Meijman, en Pieters, 'Alcoholism and Hereditary Health in Dutch Medical Discourse, 1900–45'.

had explicitly the intention to force alcoholics to do whatever was necessary for the interests of the state—change had to come from the individuals themselves. In defining alcoholism as a social problem while proposing a solution of individual restraint, Dutch alcohol reformers were oriented towards the individual; not towards the population. The social problem of alcoholism required an egalitarian solution: the individual had to be reminded of his responsibility in improving society and eradicating social alcoholism.

vi. Conclusion

Time to go back to the question I posed at the beginning of this chapter. Why did Dutch alcohol reformers propagate individual restraint as a solution to alcoholism as a public health problem? The answer, I showed, lies in the egalitarian, decentralised political culture in the Netherlands. On the one hand, reformers responded to the Dutch existing health infrastructure, which was local and pillarised. Because the Dutch constitution prioritised local government over state government, a state-led, top-down public health programme to eradicate alcoholism was lacking. As a result, members of all four socio-cultural pillars founded a patchwork of private initiatives which encouraged individual alcoholics to restrain from alcohol through propaganda and moral therapy in consultation offices. The interwar legal context made alcohol reformers to focus primarily on improving developmental health. As Dutch politicians highly valued individual autonomy, top-down measures were regarded as problematic in the Dutch collective response to alcoholism.

Furthermore, Dutch alcohol reformers themselves embraced an individual-oriented approach towards alcoholism in the Dutch interwar period. I showed this through my analysis of the changing way in which alcohol reformers employed the concept of heredity to focus on developmental health as having a continuous relationship with collective health (fig 2.3). At the beginning of the interwar period, alcohol was regarded as directly damaging the hereditary material, leading to lasting genetic mutations. That understanding nuanced at the end of the 1920s; alcohol did not damage the hereditary material, anti-alcohol reformers believed, these alterations lasted for no more than three generations. Despite these nuances, the focus on germ-damages enabled alcohol reformers to argue that alcoholism was caused by parental alcohol consumption biologically transmitted through reproduction. Not only the cause of the problem of collective alcoholism but also its solution could be found at the level of the individual. After all, individual restraint prevented germ damages, and therefore the genetic alteration leading to collective degeneracy.

In response to new results from experimental biology, anti-alcohol reformers during the 1930s had to pay attention to the possibility that alcohol was not so much a cause for hereditary deterioration, but instead an effect of a weak and hereditary constitution. Consequently, they perceived alcohol as an environmental factor acting upon developmental health. As a degenerate predisposition might still be transmitted through reproduction, the actual condition of alcoholism was conceptualised as transmitted through the social environment. Regardless of this conceptual shift, alcohol reformers were still able to legitimise individual restrain as the solution to social alcoholism. If every individual took his or her responsibility, the developmental conditions would improve for every individual citizen—even those who inherited a degenerate constitution. Throughout the interwar period, alcohol reformers remained to emphasise that collective change started with the individual. To that extent, my conceptual analysis of alcoholism as a matter of

public health reveals that Dutch public health discourse was oriented towards the individual. Additionally, my analysis of heredity further exposes an egalitarian stance towards social change. The individual never had to be sacrificed for population health, which is especially visible in how Dutch reformers dismissed laissez-faire public health policies. Instead, they regarded the collective as a series of individuals. Whether alcohol reformers targeted biological or environmental transmission did not really matter—they would achieve public health if developmental health was multiplied through individual restraint.

Interwar conceptualisation of heredity	**Individual oriented public health approach**	**Anti-Alcohol Reform 1920s**	**Anti-Alcohol Reform 1930s**	**Population oriented public health approach**
Which traits are transmittable?	Acquired characteristics	Germ damages as acquired characteristics	Only those resulting from an inherited blueprint	Hereditary blueprint
How is the development of the phenotype explained?	Nurture	Nature and nature equally significant	Nurture prevails	Nature
How is collective survival achieved?	Enhancing Individual health	Enhancing Individual Health	Enhancing individual health	Survival of the fittest
What is the direction of intervention?	Bottom-up	Bottom-up (individual restraint to prevent degeneration)	Bottom-up (Individual restraint as environmental reform)	Top-Down

Fig. 2.3 – A schematic visualisation of how Dutch anti-alcohol reformers related to ideal typic conceptualisations of public health oriented towards the individual or the population.

At this point, it has become clear that Dutch anti-alcohol reformers and Dutch eugenicists had quite a different understanding of heredity throughout the Dutch interwar period. Whereas eugenicists conceptualised heredity by separating processes of reproductive transmission from developmental matter, anti-alcohol reformers initially relied on the possibility that alcohol damaged the hereditary material permanently during development, leading to heritable alterations. Only when alcohol reformers admitted that alcohol was, in fact, an effect of inherited weakness rather than its cause, they complied to a conceptualisation of heredity similar to the one eugenicists already held at the beginning of the interwar period.

However, although eugenicists and alcohol reformers had different conceptualisations of heredity at different points in time, they were very much part of the same individual-oriented public health discourse interacting with the Dutch political culture of egalitarianism and decentralisation. Both eugenicists and alcohol reformers shared their disdain for laissez-faire

Darwinism and agreed that reform was necessary for maintaining the health of the population; just let nature run its course so that weak individuals perish was considered immoral. Additionally, neither Dutch eugenicists nor anti-alcohol reformers were big enthusiasts of state-led sterilisation policies during the 1930s. It is in that regard quite remarkable that both groups based their criticism on radical reproductive measures on the significance of developmental health in achieving public health. Dutch eugenicists generally adopted the egalitarian view that reproductive actions were only justified in terms of the best possible environment. Similarly, Dutch alcohol reformers agreed that collective health was achievable if individuals took their responsibility by restraining from alcohol. In both cases, individual autonomy held a prominent place.

Chapter III

Tuberculosis and sanitary reform

Dramatically called 'the white plague', 'public disease (*volksziekte*) number one', or 'the most devastating cancer of our society', tuberculosis was, besides alcoholism, one of the most critical targets of Dutch sociomedical reformers in the first half of the twentieth century. Its unpredictable nature, unknown origin, and frightening symptoms were essential elements of the disease's scary reputation. However, primarily due to the vast amount of Dutch citizens it killed, tuberculosis was a prime target for those who cared about the health of the population. In 1901, when the Netherlands counted five million citizens, approximately 10.000 people were killed by tuberculosis. According to the Dutch Central Office for Statistics (*Centraal Bureau voor de Statistiek*), tuberculosis-causalities formed 15% of all deaths in that year.[268] How did Dutch health reformers respond to tuberculosis during the interwar years?

It may be tempting to associate tuberculosis with the foundation of bacteriology at the end of the 19th century, as Robert Koch discovered the *Tubercle Bacillus* as the contagious agent for the severe respiratory disease. Retrospectively speaking, his investigations appear to be the definitive argument for tuberculosis to be considered an infectious disease transmitted through the environment. This picture is problematic for two reasons. On the one hand, Koch's discoveries did not immediately lead to a vaccine or a 'magic bullet.' The disclosure of the contagious agents did not directly lead to a solution. On the other hand, not every medical professional believed Koch's findings immediately. Koch's contagious conceptualisation of transmission competed with a hereditary one. In the 19th century, many considered tuberculosis as a sign of inherited degeneration—transmitted biologically.[269]

In my earlier chapters, I showed that conceptualisations of transmission are crucial in understanding how public health reformers defined diseased conditions as a public health issue. Whether the aetiology and the transfer of tuberculosis were conceptualised in contagious-environmental or in biological-heredity terms moreover reflects a preference for either an individual or population oriented public health approach. In line with my overall aim to examine how public health was conceptualised in the interwar Netherlands, this chapter investigates how Dutch sanitary reformers conceptualised the relationship between tuberculosis and heredity in interaction with the solution these reformers envisioned, against the background of the Dutch interwar political culture.

[268] Deuting, 11 M. van Daal en A. de Knecht-van Eekelen, 'Over aetiologie en therapie van tuberculose: Het debat in Nederland (1900-1910)', *GEWINA/TGGNWT* 15:4 (2012): 211; Ernest Hueting en Agnes Dessing, *Tuberculose : negentig jaar tuberculosebestrijding in Nederland* (Zutphen: Walburg Pers, 1993), 25.
[269] Liesbet Nys, 'De Ruiters van de Apocalyps:'Alcoholisme, tuberculose, syfilis' en degeneratie in medisch België, circa 1870-1940', *Tijdschrift voor Geschiedenis* 115:1 (2002): 26–46.

In this chapter, I focus on the Dutch sanitary reformers and their conceptualisation of tuberculosis to complete my portrait of Dutch public health. I mean 'sanitary reformers' analytically to group Dutch physicians aiming to solve collective health problems trough environmental reform. Examples include both personal hygiene, as well as proper housing, sufficient nutrition, and sometimes even higher salaries. In order to legitimise these solutions, sanitary reformers employed scientific concepts and results. This analytic grouping helps to reveal the similarities between 'social medicine professionals' (*sociaal-geneeskundigen*), 'company physicians' (*bedrijfsartsen*), 'public health experts' (*volksgezondheids-deskundigen*),[270] and what Eddy Houwart famously—and also analytically—identified as 'the hygienists' (*de hygïenisten*).[271] However, the category of 'sanitary reformers' is not unproblematic as such a group did not historically exist in an institutionalised sense. My solution is to analytically relate the sanitary reformers to those health reformers targeting the social problem of tuberculosis: the 'anti-tuberculosis reformers' (*tuberculosebestrijders*) centred around the 'Dutch Commission to eradicate Tuberculosis' (*Nederlandsche Centrale Vereniging* [NCV]). This chapter thereby focusses on the sanitary reformer's struggle to define the disease as a public health problem in need of environmental reform.

The chapter follows a similar road as my examination of interwar eugenics and anti-alcohol reform. After I have elaborated on the Dutch political culture in response to tuberculosis, I show how Dutch sanitary reformers employed the concept of heredity to substantiate the plausibility of environmental reform by downplaying its significance. I will furthermore explain how Dutch sanitary reformers conceptualised transmission horizontally in an infectious sense rather than vertically in reproductive terms. This context sets the stage for my analysis of the conceptual tension between sanitary reformers and other medical professionals over the role the individual's ancestry played in constituting tuberculosis. Despite this conceptual transition, I will show that Dutch sanitary reformers remained faithful to their preference for improving developing conditions of individuals to solve issues of public health regardless of its inherited differences. Similar to Dutch anti-alcohol reformers and eugenicists, sanitary reformers employed heredity to legitimise their presupposed answer on public health issues. My analysis of how precisely sanitary reformer conceptualised heredity, again reveals a big emphasis on individual, development health. Moreover, the underlying belief that collective health started at the individual level further substantiates the overall claim of this thesis: Dutch public health discourse during the interwar years was oriented towards the individual.

i. A public-private collaboration

The Dutch collective response to tuberculosis reflects the Dutch political culture in similar ways as we have seen with alcoholism and degeneration. Politicians and other legislators regarded health as a private matter; even in the case of social diseases requiring a collective solution. It

[270] Johan Mackenbach, 'De ontwikkeling van de academische public health in Nederland: twee eeuwen geschiedenis, nog altijd springlevend', *TSG* 87:5 (2009): 216–232.
[271] Eduard Simon Houwaart, *De hygiënisten: Artsen, staat en volksgezondheid in Nederland, 1840-1890* (Maastricht University, 1991).

is no surprise in that context that the Netherlands never knew forced segregation or reproductive measures in need of top-down governance. In a similar vein as alcoholism and tuberculosis, the Dutch interwar response to tuberculosis should be regarded as decentralised, local, and focused on individual citizenship. However, in slight contrast to the other examples of public health reform, the relation between the sanitary reformers and the Dutch state was slightly more complex and intertwined. This section sketches the political context of interwar public health. I will moreover argue that the Dutch response to tuberculosis materialised in close collaboration between a funding state, and private initiatives were taking up organisational tasks.

Private initiatives and environmental reform

The first civil initiatives focussing tuberculosis, founded in the nineteenth century, primarily organised 'climate-therapeutic' (*klimatotherapeutische)* trips to regions known for their healthy environment. Besides the Dutch coast, mountain-areas in Switzerland, Germany, and Austria were popular destinations.[272] Only in the first decades of the twentieth century, these private associations funded the construction of sanatoria. Built near remote towns such as Hellendoorn and Hoog-Laren, these sanatoria claimed to cure (primarily wealthy) patients through a 'sanitary cure'; treatment focussed on nutrition, rest, and clean air. Besides ensuring physical recovery, however, sanatorium cure also consisted of disciplinary education in the basic principles of hygiene to secure future health and prevent future transmission of the disease.[273]

Nevertheless, and in contrast to many other countries, pharmacological or operative treatment of a tuberculous condition never became a top-priority of Dutch sanitary reform (*tuberculosebestrijding*). Instead, they initially focused on what they called 'direct eradication' (*directe bestrijding*) of the proximate cause of tuberculosis through 'prophylaxis': measures that prevented infection by the contagious agent, such as better personal hygiene.[274] The preference for sanitary reform rather than surgical, pharmacological, and sanatorium treatment set the tone within the Dutch anti-tuberculosis attitude until the end of the Second World War. It is in that light not surprising that—similar to Dutch alcohol reform—the 'consultation office' played a central role in Dutch sanitary reform in the first half of the twentieth century. In these privately funded offices, someone who suspected himself to be suffering from tuberculosis could acquire information regarding diagnosis, options for potential treatment at a sanatorium, and, most importantly, get a consultation on proper physical hygiene to prevent further transmission of the disease.[275] From 1910 onward, most of the consultation offices appointed so-called 'visiting nurses' (*huisbezoekers*). These nurses worked responsively rather than pro-actively. Their job was to inspect residences from those who had asked for consultation and help them improve their living condition, educate a hygienic lifestyle, and explain how home-treatment by family members could take place.[276] To put it briefly, the Dutch focus on prevention of transmission culminated in the first of decades of the twentieth century in a

[272] F. N. Sickenga, *Korte geschiedenis van de tuberculosebestrijding in Nederland, 1900-1960* ('s-Gravenhage: Koninklijke Nederlandse Centrale Vereniging tot Bestrijding der Tuberculose, 1980), 25–26.
[273] Hueting en Dessing, *Tuberculose : negentig jaar tuberculosebestrijding in Nederland*, 21.
[274] Ibidem, 23.
[275] Ibidem, 17
[276] Ibidem, 30-34.

disperse patchwork of private initiatives with the consultation offices and visiting nurses as the core of their concrete activities.

The first steps to foster collaboration between the many private initiatives shaping anti-tuberculosis movement were taken in the first decade of the 20th century. At the 1901 international tuberculosis conference in London, the attending tuberculosis specialists articulated an 'international consensus', stating that all private initiatives should be centralised to operate effectively. A group of Dutch academics and medical tuberculosis doctors also participated. Responding to the 1901 conference, they founded the 'Central Committee on the eradication of tuberculosis' in 1903. The Central Committee, primarily consisting of physicians, had as its most important goal to form an overarching platform to discuss general issues and the potential implementation of joint strategies. In that regard, the Central Committee founded a periodical called *Tuberculose* in 1905, remaining the central medium in the fight against tuberculosis over the whole 20th century.[277] This professionalisation indeed attracted a vast number of private initiatives that wanted to take part in the Central Committee's activities. In that respect, the Centraal Committee (which changed its name in *Nederlandsche Centrale Vereniging tot de bestrijding van tuberculose* [NCV]), is comparable to the *Nederlandsche Commissie tegen het Alcoholisme*.[278] The central association facilitated dialogue and discussion, thereby ending the dispersed character of a nonetheless decentralised and local collective response to tuberculosis.

Many medical historians already convincingly pointed out that before the Second World War, the Dutch government restrained from facilitating and organising healthcare on a national level.[279] The liberal and confessional cabinets in the first half of the twentieth century shared the viewpoint that health was as a private matter; state-intervention was both undesirable and regarded impractical.[280] However, the Dutch government did not completely ignore the tuberculosis-movement, nor did it deny its importance. As of 1904, it started to provide a little bit of funding for private, prophylactic initiatives and trusted the NCV with the inspection and distribution of its contribution. The intertwined relationship between the state and the NCV became subject to change. Nevertheless, the early twentieth-century public-private collaboration between a financing state and private initiatives that were responsible for the concrete organisation of health care set the tone for the first half of the twentieth century.

The shock of the First World War

Although the Netherlands retained its neutral position during the First World War, food supply and economic activity decreased as much as impoverishment and compromised housing conditions increased. Also, the number of tuberculosis patients increased at a rapid pace. Based

[277] Sickenga, *Korte geschiedenis van de tuberculosebestrijding in Nederland*, 63–64.
[278] Hueting en Dessing, *Tuberculose : negentig jaar tuberculosebestrijding in Nederland*, 21; Sickenga, *Korte geschiedenis van de tuberculosebestrijding in Nederland, 1900-1960*, 41–43.
[279] Strik en Knols, 'Public health, private concern', 81-86.
[280] I elaborated on this point in the introduction (see, especially, p.14 and 15 of this thesis). In case of tuberculosis, more specifically, Dutch historians generally pointed at the Dutch decentralised approach, see: Nelleke Bakker, ''Gezonde buitenlucht'en "krachtige voeding": kinderen en de anti-tuberculosecampagne in Nederland (ca. 1910–1940)', *Studium: Tijdschrift voor Wetenschaps-en Universiteits-geschiedenis| Revue d'Histoire des Sciences et des Universités* 6:1 (2013): 5–6; Hueting en Dessing, *Tuberculose : negentig jaar tuberculosebestrijding in Nederland*, 25; Sickenga, *Korte geschiedenis van de tuberculosebestrijding in Nederland, 1900-1960*, 45–47.

on statistics published in *Tuberculose* at the end of the First World War, 1914 had known 140 cases per 100.000 citizens. In 1918, this number had risen to over 213 per 100.000 civilians that had suffered from tuberculosis.[281] In this context, an increasing amount of sanitary reformers began to emphasise the causal relation between the growing number of tuberculosis cases in connection to the changing socio-economic environment. 'Mortality-rates have been declining steadily until 1914,' J.M.W Indemans, chairman of the Limburg department of the NCV stated in 1919. 'However, the outbreak of the war and its aftermath of impoverishment, misery, bad living conditions, insufficient nutrition, clothing, and heating, made the number of casualties increase to a level higher than ever before.'[282]

The attention for the connection between tuberculosis and its socio-economic environment paralleled increasing support for an 'indirect eradication' (*indirecte bestrijding*). Instead of prevention of transmission, the 'indirect' approach aimed to prevent constituting the actual disease. It focused on the improvement of environmental conditions that strengthened developmental health while eliminating circumstances that decreased physical fitness. According to Indemans, the changing context of the First World War had shown that 'besides contact with a contagious agent, the constitution of the disease depended heavily on disadvantageous circumstances that weaken the body, so that infection develops more severe effects.'[283] Moreover, he regarded the correlation between a growing number of patients and decreasing environmental conditions in the context of the war proved that tuberculosis 'was not only an infectious disease but foremost a social condition.' Indemans even claimed that this 'principle' should be the NCV's main-focus.[284]

He was not alone. The shifting discourse on tuberculosis in response to the First World War, as primarily a condition caused by unfortunate social circumstances, led to a heated debate among the Dutch sanitary reformers. Especially since the NCV's response to tuberculosis in the first two decades of the twentieth century primarily characterised an emphasis on the prophylactic prevention of transmission—an approach that came under pressure as tuberculosis became conceptualised as a social disease. The resulting tension over which environmental reform should be preferred, culminated at an (infamous) general meeting in 1917 in which over 170 members of the NCV participated to discuss the future strategic direction of the Dutch anti-tuberculosis movement. Due to the stenographical minutes, integrally published in *Tuberculose* in 1918, it is still possible to enjoy the lively debate in great detail.[285] Many prominent reformers, among which the Amsterdam physician and well-known publicist H.L. Heijermans, and the chairman of the NCV itself, M.W. Pijnappel, began to question the efficacy of the prophylactic consultation offices and the work of visiting nurses. Instead of a 'medico-technocratic' approach, an increasing amount of sanitary reformers agreed that the NCV should additionally focus on propagating better socioeconomic environment. Consultation on improving hygiene was not enough; the eradication of tuberculosis required proper houses and sufficient nutrition.[286] Despite a consensus on the necessity of environmental reform, whether

[281] 'Overzicht der tuberculosebestrijdign in Nederland in 1918', *Tuberculose* (1919), 161
[282] J.W.M. Indemans, 'De tuberculosebestrijding in de Provincie', *Tuberculose* (1919), 109.
[283] Indemans, 'De tuberculosebestrijding in de Provincie', 109.
[284] Ibidem, 110.
[285] Redactie, 'Stenografische verslag van de besprekingen in de vergadering van 11 november 1917', *Tuberculose* (1918), 26.
[286] Redactie, 26. 'Stenografische verslag van de besprekingen in de vergadering van 11 november 1917', *Tuberculose* (1919), 26.

or not improvement had to happen 'directly' or 'indirectly' remained an important issue of debate among the Dutch sanitary reformers during the interwar years.

Strengthening the public-private collaboration

Not only the reformers themselves started to debate the growing amount of tuberculosis-patients during the First World War. Dutch politicians similarly began to re-evaluate the efficacy of the public-private collaboration in collective action towards tuberculosis. In a 1918 debate in which the parliament discussed the state's attitude towards tuberculosis, the increasing number of patients during the First World War convinced many members of parliament that tuberculosis was as a 'public disease' (*volksziekte*), known for its tight relationship with economic and social circumstances. This new political attention for the social side of tuberculosis led to more funding for the still privately organised tuberculosis eradication movement. While the state spent *f* 220.000 in 1918 on tuberculosis eradication,[287] the budget quintupled to *f* 1.100.000 in 1922. To supervise and control the allocation and distribution of state funding to private initiatives, the Dutch government invoked the state inspection for tuberculosis. This change was disappointing for the NCV, who had earlier been in charge allocating state money.

The Dutch confessional government headed by the catholic prime minister Ruys de Beerenbroeck operated primarily in the spirit of preventing infection and transmission (in Dutch known as *de preventiegedachte*); it opposed measures of segregation that had been implemented in other Western countries. Therefore, we have to understand the increasing budget for tuberculosis eradication as enforcing the typical Dutch collaboration between public funding and decentralised organisation. In that regard, we can characterise the 1920s in terms of further professionalisation of a network between regional consultation offices. On the one hand, these bureaus coordinated the distribution of patients over the few Dutch curative initiatives for children and adults—ranging from sanatoria, 'open-air schools' (*buitenluchtscholen*), vacation colonies *(vakantiekolonies*), and temporary foster families. But more importantly, they facilitated prophylactic control of moral, physical, and environmental hygiene on a regional level employing the growing army of visiting nurses.[288]

Parallel to the stronger public-private collaboration, the NCV bit into dust in respect of their previous, and central role in the Dutch response to tuberculosis. Consequently, the association began to focus on the scientific legitimation of sanitary reform by facilitating and funding the 'Dutch Tuberculosis Investigative Committee' that started to publish yearly from 1927. Moreover, the NCV became quintessential in spreading propaganda on environmental improvement that had to lead to both direct and indirect eradication. From 1920 onwards, mainly under the devoted editorial leadership of the Rotterdam municipal physician Johan Putto (1899-1865), the NCV started to campaign in an increasingly popularised, less diplomatic manner about for better hygiene, and socioeconomic reform.[289] By facilitating and trying to unify various perspectives on the eradication of tuberculosis, the NSV aimed to develop an overarching and representative voice on behalf of the many local anti-tuberculosis associations

[287] Handelingen Tweede Kamer der Staten Generaal (1918), 998.
[288] Hueting en Dessing, *Tuberculose : negentig jaar tuberculosebestrijding in Nederland*, 51–52.
[289] Sickenga, *Korte geschiedenis van de tuberculosebestrijding in Nederland, 1900-1960,* 151–52.

in sanitary propaganda. To achieve that, they did not solely employ their journal *(Tegen (de)) Tuberculose* in the Dutch interwar period; the NCV also distributed popularised brochures, pamphlets, propaganda films, and a frequently updated textbook on the eradication of tuberculosis.[290]

Stagnation in severe economic times

As the consequences of the Great Depression in 1929 started to become apparent in the Netherlands, it initially seemed that matters on tuberculosis were sparsed from budget cuts. Throughout the 1920s, state expenses on tuberculosis reform had increased moderately, but from 1929 to 1931, the government froze this growth, despite a small increase in tuberculosis casualties in these years.[291] And from 1932, the state decided to cut its expenses on public health. In the case of tuberculosis, this meant a cut of 15%.[292] Moreover, the independent 'state inspections' (*staatstoezicht*) on tuberculosis, venereal disease, and infectious disease were to merge into a single state inspection for public health from 1933. Although the government legitimised these cuts in terms of efficacy, reformers themselves related them to the 1929 crisis.[293] Tuberculosis reformer R.N.M. Eijkel became the first head inspector on public health.[294] Besides budget cuts and reorganisations due to the great depression, income from the 'Emma flower collection' (*Emmabloemcollecte*) also decreased.[295] Until as late as 1936, the first page of *Tegen de Tuberculose* consisted of dramatic statements that 'especially in times of crises, one should think about for those suffering from tuberculosis.'[296]

As the government began to leave both funding and organisation health care to private initiatives in comparable ways as the first two decades of the twentieth century, the 1930s were experienced as a period of relative stagnation. A. D. Bloemsa, secretary of the North Holland department of the NCV, stated in 1958 while looking back 'that the tight financial conditions took away much of the momentum and growth that had characterised the tuberculosis movement in the 1920s.'[297] The Dutch government itself framed the shrinking role the state played in the tuberculosis policies from the beginning of the 1930s in terms of transferring more responsibility to private initiatives.[298] Nonetheless, we are still looking at a public-private collaboration. The lower amount of state-funding had very little influence on the activities of the private sanitary reform focussed on tuberculosis.

I draw two conclusions from this brief overview of the institutional and political context of the interwar response to tuberculosis as a social disease in the Netherlands. First, the Dutch interwar response to tuberculosis materialised as a public-private collaboration between a funding state

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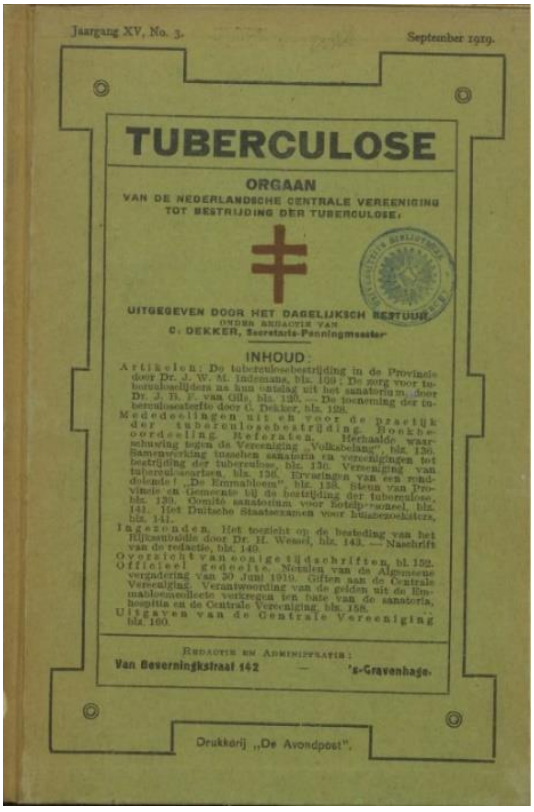
[290] Hueting en Dessing, *Tuberculose : negentig jaar tuberculosebestrijding in Nederland*, 63–69.
[291] Rijksinstituut voor Volksgezondheid, 'Curvekaart *Tuberculose* in Nederland 1901-2015', https://www.rivm.nl/sites/default/files/2018-11/009377_96690_Curvekaart_V5_TG.pdf.
[292] J.A. Putto, 'Robert Koch. Na vijftig jaren.', *Tegen Tuberculose* (1932), 180.
[293] Sickenga 186-188. Sickenga, *Korte geschiedenis van de tuberculosebestrijding in Nederland, 1900-1960*, 166–68.
[294] J.J. van Lochem, 'In memoriam R.N.M. Eijkel', *Nederlands Tijdschrift voor de Geneeskunde*, 95 (1951): 7.
[295] Redactie, 'Ten Geleide', *Tegen Tuberculose*, (1933).
[296] Redactie, 'Emmabloemcollectie 1935', *Tegen Tuberculose* (1935), 28.
[297] A.D. Bloemsma, *Gedenkschrift*: indrukken van 50 jaar tuberculosebestrijding in Noord-Holland (behalve Amsterdam). Uitgegeven ter gelegenheid van het houden jubileum op 4 mei 1958 van de Noordhollandse vereniging tot bestrijding der tuberculose, 37.
[298] Sickenga, *Korte geschiedenis van de tuberculosebestrijding in Nederland, 1900-1960*, 187–89.

and many local initiatives taking out organisational duties. Although the Dutch state increasingly funded the battle against tuberculosis in the 1920s, there never was political support for centralised, top-down, and restrictive policies to eradicate tuberculosis. Second, Dutch sanitary reformers focused on the environment as the locus of intervention to improve individual health in two respects. In addition to prophylactic prevention of infection and transmission, Dutch reformers generally plead for socioeconomic reform to improve developmental conditions, preventing the constitution of the disease itself. An internal debate over the priority of either 'direct' or 'indirect' environmental reform remained existing during the interwar years. We should understand both these generalisations in interaction with the interwar Dutch political culture: the emphasis on private initiatives fits the preference for local government and the orientation towards environmental reform to improve developmental health reflects the focus on the individual.

Having set the contextual stage, the remainder of this chapter shows how sanitary reformers themselves employed the concept of heredity to establish a professional identity of reform-spirited optimists by downplaying the concept's significance. Moreover, following Dutch eugenicists and the alcohol reformers, their conceptualisation of heredity reflects the social struggle of defending and propagating a very practical response to social diseases. In the case of the anti-tuberculosis movement, this regarded a focus on environmental improvement in terms of 'direct' but foremost 'indirect eradication'. Building on the Dutch political context, I will show how sanitary reformers explained heredity relating to their preference for environmental reform to improve developmental conditions of every individual to eradicate tuberculosis and maintain collective health.


Jaargang XV, No. 3. September 1919.

TUBERCULOSE

ORGAAN
VAN DE NEDERLANDSCHE CENTRALE VEREENIGING
TOT BESTRIJDING DER TUBERCULOSE.

UITGEGEVEN DOOR HET DAGELIJKSCH BESTUUR
ONDER REDACTIE VAN
C. DEKKER, Secretaris-Penningmeester

INHOUD:

Redactie en Administratie:
Van Beverningkstraat 142 — 's-Gravenhage.

Drukkerij „De Avondpost".

Fig. 3.1 – Het "Groene Boekje" (The Green Booklet)

ii. An Optimistic Professional Identity

With the First World War behind, the NCV believed it to be quintessential to establish an explicitly optimistic professional identity to fight the battle against tuberculosis effectively. The reformers thought that a message of optimism and hope was necessary for confronting the fatalism with which the disease was associated. After all, many explained tuberculosis as one of the 'knights of the apocalypse' leading to degeneration and social decay.[299] The professional identity of optimism was, as I will show through an analysis of the form and content of *Tegen Tuberculose*, carefully impregnated by countering the sentiment of tuberculosis-fear (*tuberculosevrees*), and emphasising malleability of tuberculosis suffering. The fight against tuberculosis, as the Dutch sanitary reformers argued, had to be framed as a victory within reach.

Articulating optimism

A fruitful way to analyse how building a professional identity becomes explicit in conceptual engineering is to take a look at the key publication of the anti-tuberculosis reformers: *Tuberculose – Orgaan van de Nederlandstche Centrale Vereeniging tot bestrijding der Tuberculose*. As stated in the first section of this chapter, the periodical initially served as a platform to facilitate debate and communication between all existing 'pillarised' particular initiatives regarding the eradication of tuberculosis and discuss overarching issues such as the distribution of state subsidies, as the most important responsibility of the NCV until the early 1920s.[300] Political debates regarding tuberculosis, as well as institutional reports on the local organisation of its eradication, were reprinted and discussed extensively in long scholarly reports (*referaten*). The layout and its cover reflect this dry content: with a small A5-format and a green, plain cover on which the cross of Lorraine—which internationally indicated the 'crusade' against tuberculosis officially as of 1905—was printed, signified the clean and sober content of ´Het Groene Boekje´, as the periodical became known (fig. 3.1).[301]

Fig. 3.2 – The Cover of Tegen Tuberculose as of 1920.

[299] Liesbet Nys, 'De Ruiters van de Apocalyps. "Alcoholisme, tuberculose, syfilis" en Degeneratie in Medische Kringen 1970-1940', in: Tollebkee, Vanpaemel, Wils, *Degeneratie in België* 1860-1940: Een geschiedenis van ideeën en praktijken (Leuven, 2003), 11-42, esp. 24-26.
[300] Putto, 'Ons tijdschrift gedurende vijfentwintig jaren', 36.
[301] Ibidem, 38.

This changed in 1920 when the allocation and supervision of subsidies became a responsibility of the government itself.[302] The NCV, as a result, shifted its attention and goals: creating and distributing propaganda on behalf of the nation-wide tuberculosis eradication movement became one of the NCV's top-priorities. The form of *Tuberculose* reflects this change.[303] The single task of the periodical became to 'eradicate tuberculosis using propaganda (*volksvoorlichting*).'[304] And indeed—with a bigger size, more pictures, shorter articles, and an attractive layout, the journal began to look like an accessible newspaper. With the new format, the implied reader changed from being insiders of the anti-tuberculosis movement to an imagined public that had to be convinced of the optimistic message of prevention and the ideal of total eradication, and as a result, participate in achieving this noble goal. The content changed as well. The periodical wasn't just descriptively dealing with tuberculosis but began explicitly emphasising a battle against the disease. It was, as chief editor Putto admitted, in that light, a very conscious move to change the name of the journal from *Tuberculose* in *Tegen Tuberculose*.[305]

Moreover, the most unequivocal evidence of the changing public-minded spirit of the NCV can be found at the new 1920 cover of *Tegen Tuberculose*. The somewhat gloomy but remarkable illustration was drawn by Albert Hahn Jr. (1894-1953), whose stepdad, the famous political cartoonist Albert Pieter Hahn, had died of tuberculosis two years earlier. As you can see in fig. 3.2, the darkness of death is expelled by the light of the three environmental virtues of light, nutrition, and air—thereby protecting the mother and the developing child from external threats. The reformers consciously portrayed the battle against tuberculosis in strong relation to environmental reform. As the editors stated in the introductory remarks of the 1920 issue that served to explain the cover: 'The mother, making her child enjoy proper nutrition, fresh air, and light, helps to protect her little one against today's great evil: *tuberculosis*. Because of these three pillars,' the editors stated, 'individual resistance increases so that the baby remains strong in the fight against pathogens. Not the least against the Tubercle Bacillus, which is the causative agent of the disease that carries ten thousand Dutch citizens to the grave every year.'[306]

This militant, slightly aggressive language on a fight against an invisible enemy is exemplary for the first five years after the journal changed its format. As historians such as Roger Cooter pointed out, modern responses to infectious diseases were often represented as a 'war on disease'.[307] Quite literally so, as becomes clear from an editorial piece on 'the eradication of tuberculosis'. 'There is only *one* way to conquer the enemy: to be stronger than he is.' Fortunately, 'one doesn't have to be a celebrated warlord to understand that two preconditions are indispensable to secure a victory.' On the one hand, 'one has to acquire accurate intelligence regarding the deployment of the enemy troops.' On the other hand, 'one has to organise defensive and offensive measures that are more powerful than the enemy's,

[302] Redactie, 'Nederlandsche centrale vereeniging tot bestrijding der tuberculose', *Nederlands Tijdschrift voor de Geneeskunde* (1920) 3427.
[303] Putto, 'Ons tijdschrift gedurende vijfentwintig jaren', 35.
[304] Ibidem, 36.
[305] Putto, 'Ons tijdschrift gedurende vijfentwintig jaren', 37; Redactie, 'Ten Geleide', *Tegen Tuberculose* (1921), 1.
[306] Redactie, 'Ten Geleide', 1921, 1–2.
[307] See: Roger Cooter, 'Of war and epidemics: Unnatural couplings, problematic conceptions', *Social History of Medicine* 16:2 (2003): 283–302.

regulated by a well-defined plan.'[308] Tuberculosis was the enemy attacking civilians; only an almost military response could stop it.

Militaristic language helped define the professional identity of anti-tuberculosis reformers as protective, active, and optimistic reformers; but it had a flipside. The picture of tuberculosis as a frightening enemy; as a monstrous creature threatening the vulnerable members of society also fostered 'fear of tuberculosis' (*tuberculosevrees*). Although this fear was an instrumental tool in convincing citizens of the necessity of environmental reform, it compromised the cheerful and optimistic picture the NCV tried to uphold. As the NCV made the first national 'tuberculosis-movie' in 1925, *Tegen Tuberculose* contained many different viewpoints on how such a propaganda film had to look. 'It would have been easy,' one of the film-makers said, 'to display a strongly dramatic image—even we would stick strictly to the topic of tuberculosis and its eradication. After all, the subject lends itself perfectly to drama. However,' the film-maker emphasised, 'we must always be cautious not to nurture so-called "fear of tuberculosis".'[309]

Fig. 3.3 – The changing cover of Tegen Tuberculose

Fear and optimism did not blend well, Dutch sanitary reformers realised in the mid-1920s. In that regard, both board-members of the NCV and editors of *Tegen Tuberculosis* reconsidered the slightly scary cover of *Tegen Tuberculose*. As you can see in fig. 3.3, they softened the cover by taking the personified death out of Hahn's drawing in 1922.[310] It was not enough. In 1925, the editors commissioned a new cover-illustration to Pieter Hofman (1886-1965), who

[308] Redactie, 'Tuberculose en hare bestrijding', *Tegen Tuberculose* (1921), 81.
[309] Redactie, 'Eerste Nederlandsche Tuberculose-film', *Tegen Tuberculose* (1925), 160.
[310] Putto, 'Ons tijdschrift gedurende vijfentwitnig jaren', 36.

made a ‘new and fresh’ cover by which the editors hoped to ‘caress the eye and tune the heart to mildness’ to convince readers to ‘playing a part in the NCV’s important task to propagate the eradication of tuberculosis.’[311] Instead of Hahn’s gloomy illustration with an implicit message of fear and despair,[312] the ‘clean and sanitary’ cross of Lorraine again got a prominent place at the cover, signifying hope and optimism with which the reformers wanted to be associated so explicitly (fig. 3.4). It would set the tone for the rest of the interwar period.

Fig. 3.4 – The Cover of Tegen Tuberculose from 1922

Weaponising malleability to overcome fatalism

Throwing the towel in the ring was never an option for the Dutch anti-tuberculosis reformers. In line with their professional identity of heroic optimists, they were conscious to repeatedly emphasise that it was possible to overcome the social scourge of tuberculosis. They relied heavily on 19th-century success-stories in which contagious diseases with severe consequences for society as a whole could be eradicated by sanitary reform. Moreover, the still apparent social-liberal project of ‘elevating’ (*verheffen*) the lower classes of Dutch society, enforced hope that besides alcoholism, also tuberculosis could be surmounted.[313] In their missionary work, however, Dutch reformers had to overcome a certain pessimism both internal and outside of the movement. As becomes apparent in the introductory paragraph of the 1925 issue of *Tegen Tuberucoluse*: ‘It has been discovered only recently that the social problems arising from tuberculosis can be eradicated and expelled, just as has happened with smallpox and other contagious diseases.’ Unfortunately, this message of hope did not yet reach every citizen. ‘The few who have learned of this discovery are still in doubt or think they know better. And as a result,’ the editors of the journal concluded with disappointment, ‘everything remains as it always has been. Ignorance and disbelief are still predominant.’[314]

‘Fear of tuberculosis’ (*tuberculosevrees*) was based on this wide-spread sentiment that tuberculosis was a given reality that could not be changed or prevented. ‘It is unsettling that the public still thinks that not that much can be done about tuberculosis,’ Johan Putto, chief-editor of *Tegen Tuberculose* stated in 1923.[315] These ‘public’ beliefs were considered a serious threat

[311] Redactie, ‘Ten Geleide’, *Tegen Tuberculose* (1925), 1–2.
[312] Putto, ‘Ons tijdschrift gedurende vijfentwintig jaren’, 37.
[313] Christianne Smit, *De volksverheffers: sociaal hervormers in Nederland en de wereld, 1870-1914* (Uitgeverij Verloren, 2015), 253.
[314] Redactie, ‘Ten Geleide’, *Tegen Tuberculose* (1925), 37.
[315] J.A. Putto, ‘Het Rapport van de Staatscommissie inzake Tuberculosebestrijding (2)’, *Tegen Tuberculose* (1923), 13.

to environmental reform. In a propagandistic pamphlet, NCV-member Willem Schuurmans-Steckhoven (1894-1980) stated that 'the spectre of "tuberculosis-fear" is no less than a means to cause agitation among the people and thus increase susceptibility without any practical utility.' He considered it disadvantageous for the tuberculosis eradication movement since 'it fogs the people's minds, and the instability that arises thereof inhibits the harmonious development of the social-hygienic care of our homeland.'[316] Therefore, the reformers themselves had to carry out a professional identity characterised by a confident and optimistic attitude. When, for example, the social-Christian politician Dirk Deetman, in a radio lecture that was reprinted in *Tegen Tuberculose*, discussed the work of 'visiting nurses' (*huisbezoeksters*), he described the many disappointments with which they were confronted. However, 'who doesn't have setbacks when fighting harmful things?!', Deetman rhetorically asked. 'The visiting nurse, however, is an optimist by nature; she believes and trusts her work. She is convinced, and thus even the most severe obstacles cannot make her give up her fight.' That mentality, according to Deetman, was representative for the rest of the tuberculosis-reform movement: 'This mentality is contained so beautifully in the NCV's emblem (fig. 5): the Cross of Lorraine, with its double beam, suffering under the burden of responsibility, printed on a field of pure blue—the symbol of faith. And around that cross, sun rays shine of hope!'[317]

And yet, Dutch citizens had to be convinced that it was indeed possible to solve the social problem of tuberculosis. It is important to emphasise that this was a rather new message, even in the 1920s. The message of hope and optimism had to compete with the popular, and 19th-century belief that tuberculosis was a hereditary disease. As it appeared to be more present in individual families, many believed that the disease was biologically transmitted through reproduction, and could not be prevented. No wonder that around 1900, tuberculosis was a popular disease among degeneration theorists. Sanitary reformers countered such 'conservative pessimism' by explaining transmission in terms of infection, based on Robert Koch's discovery of the Tubercle Bacillus in 1905 that tuberculosis was caused by bacteria instead of reproduction paved the way for environmental reform. One the one hand, both the infection itself could be directly prevented if the contagious agent could not 'attack' the human body. And on the other hand, once the individual was infected, robust developmental health—also enabled by a healthy environment—lessened the severeness of how the disease constituted. No wonder that a lot was at stake in explaining the aetiology of tuberculosis.

Recalling the militaristic rhetoric of the early 1920s in *Tegen Tuberculosis*, the only way to achieve victory, the editors preached, 'is to acquire information on how enemy troops plan their attack.' Thus the central question of the interwar sanitary movement constituted 'how knowledge on the strength and strategies of enemy forces can be obtained.' The answer had to be found in 'well-guided research' on the causes of tuberculosis. 'Military officers,' the editors of *Tegen Tuberculose* dramatically stated, 'call this the "intelligence service" (*ophelderingsdienst*) in which investigative observers play a decisive role.'[318] No wonder that as of 1922, the NCV invoked a 'tuberculosis research committee' (*Tuberculose Studie-*

[316] W. Jr. Schuurmans Stekhoven, *De tuberculose : populair-geneeskundige beschouwingen over wezen, verschijnselen, behandeling en voorkoming* (Amsterdam: Meulenhoff, 1925), 6.
[317] D. E. Ch. Deetman, 'Het Werk der Tuberculose-Huisbezoekster', *Tegen Tuberculose* (1928), 138.
[318] Redactie, 'Ten Geleide' (1921), 81.

Commissie), and that all scientific expert-knowledge on the cause of tuberculosis was followed closely in *Tegen Tuberculose*.[319]

By looking at the format of the NCV's most crucial communicative tool, as well as its tone and intended audience, I showed how optimism was a critical characteristic of the professional identity of the tuberculosis reform. Instead of tuberculosis-fear, the 'public' had to be convinced that society's relation with tuberculosis was malleable through environmental improvement. However, this optimism had to be plausible. In the next section, I will show how tuberculosis reformers legitimised this frame of optimism through the conceptualisation of tuberculosis as a disease transmitted through the environment; not through biological reproduction.

iii. Conceptualising Transmission: Contagion and Heredity

Tuberculosis is a contagious disease…

Even today, Robert Koch (1843-1910) is remembered as a significant scientific hero for his contributions to the germ theory of disease utilising his four postulates to identify the specific causative agent for an infectious disease. More specifically, he is celebrated for identifying the causative agent of anthrax and—important for my story—for pointing at the Tubercle Bacillus as the contagious agent of tuberculosis in 1882. For many sanitary reformers in the late 1920s, Koch's finding still marked the climactic ending of the exciting history of figuring out the cause of the disease. As the Leiden professor Willem Nolen (1854-1939) stated in an article on the history of tuberculosis: 'although the classics and Arabs already supported the contagious cause of *phthisis pulmonum*', it was Robert Koch who 'convincingly showed the that an external intruder caused tuberculosis.'[320]

Historical narratives played an important role in legitimising the trustworthiness and ultimate victory of those who supported the contagious explanation of transmission. In a 1930 article on the 'history of tuberculosis', late state inspector R.N.M. Eijkel characterised the nineteenth century as 'a period in which many insights on the damaging tuberculous processes inside the lungs were acquired. But on questions of how the disease was precisely transmitted, however, researchers were still left in the dark,' he claimed. 'Both the theories of heredity and contagion struggled for prominence.' In Eijkel's story, Koch secured the triumph of the latter explanation: 'As of March 24, 1882, we know with certainty that tuberculosis is not only a transmittable disease but contagious as well. After many ages of quarrel,' Eijkel dramatically stated, 'the theory of contagion achieved victory.'[321]

Moreover, tuberculosis reformers framed Koch as a hero regarding the actual practical response to tuberculosis as a collective problem. The contagious understanding of tuberculosis did not only matter in correctly understanding the nature of the disease, but it also served as a fundament in legitimising any environmental reform. In the glorifying and militaristic stories

[319] R.P. Van de Kasteele, 'De bescherming van het kind tegen de tuberculose (2)', *Tegen Tuberculose* (1922), 50.
[320] W. Nolen, 'Het Verleden der Tuberculosebestrijding', *Tegen Tuberculose* (1929), 9.
[321] R.N.M. Eijkel, 'Geschiedenis van de Tuberculose', *Tegen Tuberculose* (1930), 46–48.

of Robert Koch, the German scientist was considered—sometimes even literally—as the imaginary general in the war on tuberculosis. 'Before his big discovery in 1882, many explained tuberculosis as a hereditary disease,' physician and anti-tuberculosis reformers E.W. Jongmans stated in *Tegen Tuberculose*. 'Since Koch discovered the Tubercle Bacillus, it was undeniably established that the disease ought to be classified as a contagious. From that moment onwards, the *real* battle against tuberculosis could start: with its infectiousness affirmed, the possibilities for prevention were confirmed as well.'[322] 'Robert Koch' thus became a name of crucial importance in legitimising the optimistic reform spirit of the anti-tuberculosis movement in the Dutch interwar period. This is beautifully captured in the words of W.J. van Gorkom in 1931: 'It is almost 50 years ago that Robert Koch revealed the truth to humanity; the truth from which the conviction can be drawn that in the currently waged battle its goal can be achieved. In this knowledge,' Van Gorkem orated, 'lies the *power of our movement*.'[323] Altogether, for sanitary reformers, the story of the discovery of the contagious cause—with Koch as the ultimate protagonist—was of fundamental importance in the conceptualisation of tuberculosis as a controllable disease.

… so it is not a hereditary disease!

If we take the reformers and contributors to *Tegen Tuberculose* at face value, then the conceptual debate to explain tuberculosis in contagious terms was a done deal at the end the 1910s. Throughout the interwar period, those involved in the eradication of tuberculosis demarcated and defined their understanding of the disease in contrast to wrong and competing conceptualisations, of which the hereditary interpretation was the most explicit one. In other words: the progressive environmental reformers identified themselves with a contagious and preventable disease by explicitly distancing themselves from a conservative, pessimistic 'public' that relied on a hereditary conceptualisation of tuberculosis while believing that nothing could be done about the disease and its social consequences. As a result, the conceptual contagious-hereditary dichotomy reflects the tension between progressive and conservative responses to social diseases and the extent to which social and environmental reform could help release social from the scourge of tuberculosis. All in all, explicitly stating that tuberculosis was *not* a hereditary disease was equally important as explaining why tuberculosis was contagious.

Heynius van den Berg (1882-1969), physician and chair of the Amsterdam district of the NCV, visited the third conference of the *Union Internationale contra la Tuberculosa* in 1922. In his lengthy report, published in *Tegen Tuberculose*, Van den Berg stated that the explicit distancing from the hereditary conceptualisation of tuberculosis was an internationally shared desire amongst environmental reformers. 'The speakers did not introduce that many new viewpoints,' van den Berg complained, 'but the participants all agreed it should be propagated how infant tuberculosis is hereditary and acquired through post-natal infection. Therefore,' Van den Berg summarised the many talks at the 1922 conference, 'all nations have to start environmental reform to prevent infection.'[324]

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[322] E.W. Jongmans, 'De consultatiebureaux voor de bestrijding der Tuberculose', *Tegen Tuberculose* (1930), 157.
[323] W.J. Van Gorkom, 'Helpt ons de Tuberculose bestrijden!', *Tegen Tuberculose* (1931), 37. Not my italics.
[324] H. Van den Berg, 'De 3e conferentie der Union Internationale contra la Tuberculosa', *Tegen Tuberculose* (1922), 91.

To achieve that consensus, first, the public had to be convinced of the non-hereditary nature of tuberculosis. In the 1920s, the NCV initiated the production and circulation of propagandistic pamphlets on the initiative of the NCV; most of the texts these brochures contained were reprinted in *Tegen Tuberculose.* One of the most widespread examples might be Willem Schuurmans-Stekhoven (1892-1961) and his *Tegen de Tuberculose*: *populair-geneeskundige beschouwingen over wezen, verschijnselen, behandeling en voorkoming*, initially published in 1925. In that booklet, the physician stated that 'many believe that tuberculosis not only threatens one but many generations. I, however, believe that contagion is way more important than a potential hereditary factor in the constitution of the disease.' Without denying the potential significance of a 'hereditary factor', Schuurmans-Stekhoven regarded it more relevant to emphasise the infectious cause for rhetorical reasons. 'It is crucial to highlight the urgency for developing sufficient socio-medical (*sociaalgeneeskundige*) involvement and counter viewpoints on the incurability and danger of tuberculosis,' the physician argued.[325]

The way Schuurmans-Stekhoven discussed struggles to pinpoint the meaning of the notion of heredity reflects a broader conceptual struggle to define and defend a specific conceptualisation of 'heredity'. 'It is wrong to say that tuberculosis is 'inherited' (*over-erfelijk*) or 'hereditary' (*erfelijk*). After all, the concept of 'congenital disease' (*besmettelijke ziekte*) excludes the possibility of hereditary transmission,' Schuurmans-Stekhoven reasoned. An 'ignorant public' misused the notion of heredity to explain transmission: 'I say "transmission" (*overdragen)* not to use the notion "inherited" (*over-erven),* a word that the public uses too often in the context of contagious diseases. In the case of tuberculosis,' Schuurmans Stekhoven stated, 'the "transmission" of the disease has nothing to do with heredity'.[326] Tuberculosis reformers received Schuurmans Stekhoven's booklet with great enthusiasm, precisely for this conceptual engineering. *Tegen Tuberculose'*s chief editor Johan Putto agreed with Schuurmans Stekhoven 'that the public's (*groote publiek*)—and not only the illiterate's—pessimistic conceptualisation of tuberculosis overrule a proper understanding of the nature of the disease.'[327] Putto praised Schuurmans Stekhoven's precise explanation of heredity and agreed that 'the notion is unfit and very misleading' in explaining tuberculosis.[328]

Even ten years later, the conceptualisation of heredity and contagion still bothered sanitary reformers. A good (slightly exaggerated example) regards a speech held at the 25th anniversary of the anti-tuberculosis association at the local town of Baarn by Gerrit Huët in 1935. On the one hand, he emphasised how tuberculosis is a contagious disease thanking its discovery to Koch: '25 years ago, we already knew that the tubercle germ caused tuberculosis. Its discovery was the most genius and most auspicious of all, and for that humanity still has to be grateful to Robert Koch,' Huët stated with a proper sense for drama. On the other hand, the environmental reformer explicitly contrasted the contagious understanding with a hereditary, 'conservative' explanation:

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[325] Schuurmans Stekhoven, *De tuberculose : populair-geneeskundige beschouwingen over wezen, verschijnselen, behandeling en voorkoming*, 11.
[326] Schuurmans Stekhoven, *De Tuberculose*, 46.
[327] J.A. Putto, 'Boekbespreking: Tegen Tuberculose (van W. Schuurmans)', *Tegen Tuberculose* (1925), 176.
[328] Ibidem.

> Notwithstanding all existing enlightenment and progressiveness, the world is, by nature, very conservative (*oer-conservatief*). After all, we are still stuck in old dogma's of heredity and predisposition, and it has already cost decades of quarrel (*strijd*) to break from these conceptualisations. To put it differently, despite the atmospheric signs announcing the arrival of new ages, the 'rooster on the church tower', as Genestet has put it so beautifully, sometimes still seems to point at the severe Nordic winds of inevitable fate.[329]

Huët's speech, referring to the famous and melancholic poem *Het Haantje van de Toren*, not only showed how also in the 1930s, sanitary reformers liked to portray themselves as progressive and optimistic by explicitly distancing themselves from those being critical of reform. It also demonstrates how they conceptualised heredity as conservative and pessimistic, explicitly in contrast to a contagious explanation of the transmission of tuberculosis to defend and define plausibility of their optimism regarding the effects of environmental reform.

In 1935, Jan Putto displayed the dichotomic heredity-contagion conceptualisation in lesser rhetoric terms. 'The fact that tuberculosis can be diagnosed in the same family has led to the public understanding of tuberculosis as a 'hereditary disease' (*erfelijke ziekte*),' Putto stated. 'Non-physicians (*niet-medici*), often conceptualise tuberculosis as an "inheritable" (*over-erfelijke*) disease. But one should not forget that the big public (*het groote publiek*) often uses the word "hereditary" (*over-erfelijk*) instead of "contagious" *(besmettelijk*).' For Putto, the difference mattered and needed further explanation. 'We now know that children of tuberculous mothers are almost always born healthy.' There indeed were exceptions, Putto admitted, but those cases were understood in similar terms as Dutch eugenicists did: 'even in the rare cases were the prenatal child gets infected before birth, it is a case of "apparent heredity" *(schijnerfelijkheid*).' In general, Putto stated that tuberculosis was a 'transmittable and preventable disease, that could not be caused without a contagious Tubercle Bacillus.' However, the chief editor now added a subtle nuance: 'this can be stated without relating to one of the important disputes (*strijdvragen*) in the medical world over hereditary predisposition.'[330] What do this 'disputes' precisely entail? And what involves this 'medical world' to which Putto refers?

Before I answer those questions, let's briefly recapitulate. This section revealed how Dutch sanitary reformers employed the dichotomy between a contagious and a hereditary explanation of transmission to define their optimistic professional identity, and to legitimise the plausibility of environmental reform. More precisely, reformers claimed to convince the 'ignorant public' about the possibilities of Koch's discovery that tubercle germs ultimately caused tuberculosis. It legitimised their orientation towards environmental reform, both in terms of direct and indirect eradication. However, Dutch sanitary reformers still explicitly dismissed a hereditary conceptualisation of disease at the end of the interwar period, when Koch's discovery was more than forty years old. Why was this still necessary?

[329] G.J. Huët, Geneesheer-Directeur van Hoog-Blaricum), '25 jaar tuberculosebestrijding. (Naar een voordracht bij de 25 –jarige herdenking van de vereeniging tot bestrijding der tuberculose te Baarn)', *Tegen Tuberculose* (1935), 11.
[330] J.A. Putto, 'Tuberculose en de Tuberculosebestrijding', *Tegen Tuberculose* (1935), 4.

For a big part, because other medical professionals remained discussing the biological nature of tuberculosis during the interwar period. In contrast to the external propaganda sanitary reformers disseminated through *Tegen Tuberculosis*, the internal conceptual struggle to articulate the relationship between heredity and tuberculosis in response to the rest of the medical profession was far from being a done deal after Koch's discovery. Over the interwar years, medical professionals began to argue that tuberculosis was not vertically transmitted through reproduction. However, many medical experts still pointed at the difference between individuals raised in highly comparable environments; some individuals seemed more susceptible to tuberculosis than others. The debate shifted from discussing heredity in relation to development instead of transmission. If heredity was not the proximate cause for tuberculosis, was instead predisposition hereditary?

That question fostered an intense debate in a series of doctoral dissertations between 1920 and 1939. In the next section, I will trace the scientific discussion on the conceptualisation of heredity in relation to tuberculosis and identify a shift in how the disease was explained as a matter of public health. At the beginning of the interwar period, heredity was approached as the 'wrong' proximate cause for tuberculosis, as reformers argued that the disease—more specifically, the contagious agent—was transmitted vertically through the environment. This conceptualisation changed as sanitary reformers explained tuberculosis in terms of epidemiological units in the 1930s. They thereby embraced 'inherited disposition' as causative health determinant, although playing only a minor role among the environmental factors in the need for improvement. This analysis of the conceptual change enables me to reveal a continuity similar to how eugenicists conceptualised degeneration, and how Dutch anti-alcohol reformers explained alcoholism. Dutch tuberculosis reformers believed that the solution to tuberculosis as a collective problem started by guaranteeing indiviudal developmental health. In that respect, this chapter adds to the general claim of this thesis: Dutch public health discourse was oriented towards the individual in the interwar years.

iv. Conceptualising tuberculosis as a developmental condition

Fase I – Hereditary or Contagious transmission

In order to understand the interwar medical debate on the aetiology of tuberculosis, and especially how anti-tuberculosis reformers came to adopt the concept of heredity to explain disposition as a determinant instead of a proximal cause, it is helpful to take a step back and look at the origins of the contagion-heredity debate in the early 1900s. As pointed out in section iii, although Koch pointed at the Tubercle Bacillus as a necessary causative agent to constitute tuberculosis, such a contagious explanation of transmission did not explain why some individuals, who lived in almost the same environment as tuberculous patients, did not develop the disease. Moreover, it seemed that in some households tuberculosis was more apparent than in other families. In the early 1900s, these questions culminated in a debate on the proper explanation of 'disposition' (*aanleg* or *dispositie*).

On the one hand, scientists such as the Leiden professor of internal medicine Willem Nolen (1854-1939), who was a very active member of the NCV and especially involved in the

organisation of the early Dutch tuberculosis movement, understood disposition in terms of resistance (*weerstand*). Disposition was not inherited, Nolen believed, it was instead developed in a lousy environment: 'deficient nutrition, unhealthy housing, transient physical disturbances caused by cold, over-fatigue, exertion, all foster disposition for tuberculosis.'[331] On the other hand, Dutch scientists such as the Groningen professor of hygiene Abraham P. Fokker (1840-1906) and the Amsterdam professor of anatomy Louis Bolk (1854-1934), argued that individual disposition was transmitted through reproduction and therefore hereditary. Based on genealogical investigations, he claimed that genetic disposition explained both individual deviation and the predominance of tuberculosis in certain families.

In need of a consensus, the Groningen department of the NMG (Dutch Medical Association) decided to propose a nationwide questionnaire at the 1902 general meeting of the NMG held in Zwolle. The NMG agreed and appointed beside Abraham Fokker, the Rotterdam physicians Catharinus Nolen (1857-1914) and Constance Charles Delprat (1854-1934) as members of the *Commissie van enquete naar de in de Praktijk gedane waarnemingen omtrent de besmettelijkheid van tuberculose*. The commission sent almost three thousand questionnaire-cards to practising Dutch physicians—about 1950 responded. Due to internal conflict over the correct interpretations of the results, the committee did not reach a definitive conclusion. The Groningen department of the NMG that initiated the questionnaire admitted in response to the disappointing results of how they had had too high expectations of the survey.[332]

It took about a decade for the NMG to continue facilitating the debate on heredity and tuberculosis. As discussions on heredity in relation to many other diseases had yet not reached a satisfactory consensus, the NMG initiated in the summer of 1915 a prize competition on the following problem: 'many desire statistical and other data, gathered through observation and original research, on the familiar *(familiair*) and hereditary (*hereditair*) appearance of one of the following diseases: metabolic diseases, kidney disease, cardiovascular diseases, and tuberculosis.'[333] The first, quite outraged response came from Gabbe Scheltema (186401851), a professor of paediatrics at the University of Groningen and an active member of the anti-tuberculosis movement. In 1915 he wrote a booklet with an unambiguous title: *Erfelijkheidsvragen aangaande tuberculose: tuberculose, syphilis en andere, van uitwendige aanleidingen afhankelijke ziekten, kunnen niet erfelijk wezen, en erfelijkheid van een aanlegverandering is zeer onwaarschijnlijk*. Scheltema argued that the conceptual relation between heredity and tuberculosis rests on a fallacy. 'The human race (*De Mensch)* counts as one of the species that are absolute-responsive (*absoluut-ontvankelijk*) for the tubercle germ, and every single human can get infected under certain circumstances. Of course,' Scheltema argued, 'this responsivity is inherited.'[334] However, the disease itself is not caused by heredity; it is caused by a contagious agent and developed under certain circumstances. This was good news: by improving the environment, the social transmission of tuberculosis could be prevented, Scheltema argued.[335]

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[331] W. Nolen, 'Grondlagen voor een rationel bestrijding der tuberculose als volksziekte', *Geneeskundige Bladen* (1905), 175-215.
[332] Daal en Knecht-van Eekelen, 'Over aetiologie en therapie van tuberculose', 220.
[333] G. Scheltema, 'De Prijsvraag der Maatschappij', *Nederlands Tijdschrift voor de Geneeskunde* (1915), 2030–35.
[334] G. Scheltema, *Erfelijkheidsvragen aangaande tuberculose: tuberculose, syphilis en andere, van uitwendige aanleidingen afhankelijke ziekten, kunnen niet erfelijk wezen, en erfelijkheid van een aanlegverandering is zeer onwaarschijnlijk* (Leiden: 1915), 1.
[335] Scheltema, *Erfelijkheidsvragen aangaande tuberculose*, 2.

Jacob Doyer and disposition

The NMG's prize competition and Scheltema's response fostered a series of dissertations written by general practitioners on the conceptual relation between tuberculosis and heredity. Jacob Doyer (1880-1937), at that point a physician at the little town of Warffum, wrote the first one. Retrospectively speaking, Doyers dissertation was the starting point of a successful career in public health: he was appointed head state inspector of public health in 1937.[336] The first two statements of his dissertation show what Doyer claimed to have demonstrated by his research. One the one hand, he declared that 'it is unjust to call the Tubercle Bacillus "the cause" (*oorzaak*) of tuberculosis.' On the other hand, Doyer reasoned that 'it is unproven that within the constitution of tuberculosis, the hereditary disposition plays only a secondary role.'[337]

To explain the first statement, the physician emphasised in the first pages of the introduction that 'it is beyond doubt that tuberculosis is an infectious disease; for its constitution, the intrusion of the Tubercle Bacillus is a *conditio sine qua non*.'[338] But although Doyer agreed that tuberculosis was an indispensable and essential ingredient, 'this does not at all reversely mean that when the Tubercle Bacillus intrudes the individual, it inevitably causes the clinical condition of we to call tuberculosis.'[339] For Doyer, the contrary was the case: 'we can learn from experience that only a few who underwent infection will suffer from the disease. Therefore, it is incorrect to say that the Tubercle Bacillus is *the cause* (*de oorzaak*) of tuberculosis.'[340] In that regard, Doyer explicitly disagreed with Scheltema that every individual human inherits a certain 'absolute-responsiveness' (*absoluut-ontvankelijk*) to tuberculosis but that the disease itself is not hereditary. After all, the Warffum physician argued, 'Scheltema's sloppy use of "absolute-responsiveness" implies that every individual would develop tuberculosis once infected; it denies the observed differences between how individuals respond to infection.'[341]

To explain individual differences in responding to infection, Doyer argued that it was necessary to rehabilitate disputes over the meaning of '*Anlage,* disposition (*dispositie),* constitution (*constitutie*), or however one wants to call it' and subject it to 'pure scientific reasoning.'[342] While following the Prague professor of bacteriology Ferdinand Hueppe (1852-1938), Doyer conceptualised these notions in somewhat esoteric terms. 'In his or her organs, tissues, cells and moistures, every single human contains certain potential energy (=capacity

[336] R. N. M. Eijkel, 'In Memoriam Dr. Jan Jacob Theodoor Doyer', *Nederlands Tijdschrift voor de Geneeskunde,* 83.I.8, 1939.
[337] With 'statement', I here refer to the mandatory *stellingen* that had—and still has—to accompany the a doctoral dissertation in the Netherlands. See: Jan Jacob Theodoor Doyer, *Tuberculose en erfelijkheid : proeve van een onderzoek omtrent het familiair en hereditair voorkomen van tuberculose volgens de wetenschappelijk-genealogische methode* (Groningen: Wolters, 1920), i.
[338] I wish to stick to the original Latin, which can be translated to English as '[a condition] without which it could not be,' or 'but for...' or 'without which [there is] nothing'. It is tempting to translate it as 'proximate cause', but Dutch authors tend to use it more as a *condition* without which a certain causal process could not take place.
[339] Doyer, *Tuberculose en erfelijkheid,* 4. His italics – and this is important, since the conceptualisation of 'oorzaak' or cause was contested. I am precise in my translations here.
[340] Ibidem, 4. Not my italics.
[341] Ibidem, 9.
[342] Doyer, *Tuberculose en erfelijkheid,* 5.

=cause) at a given time and place, which we could call "physiological disposition, susceptibility, innate weakness, degenerate constitution, or immunity. This condition,' Doyer furthermore explained, 'is the consequence of heredity, individual development, and adaptation to environmental circumstances. These circumstances act as environmental conditions on the innate, hereditary disposition.'[343] In the case of tuberculosis, Doyer stated, 'it is better to say that hereditary disposition, as well as external circumstances, together form the *cause* of infectious disease.'[344] For Doyer, this helped to explain different individual responses to tuberculous infection in a similar environment, in terms of differences between individual hereditary potential. The difference between 'hereditary disposition' had to be understood in gradual terms: 'it ranges from absolute-insusceptible to absolute-susceptible.' [345] Based on data he acquired through a 'scientific-genealogical method', Doyer concluded in addition that some family histories show more cases of tuberculosis than others, implying an 'individual difference in disposition for tuberculosis, transmitted by reproduction in consecutive generations.'[346]

However, Doyer admitted that his investigation of pedigrees did not completely meet the 'methodological precondition that the living circumstances are as meticulously investigated as possible, to be completely sure that they are comparable.'[347] Therefore, Doyer acquired biographical data of the families he investigated. This information confirmed his expectations: the environments were comparable and didn't have a decisive influence on the constitution of tuberculosis: 'my data doesn't reveal a decisive role for environmental influences. On the contrary, for many cases, the role of external influence doesn't play a role at all. Many who were undoubtedly exposed to infection, did not suffer from tuberculosis.'[348] Tuberculosis thus was an infectious disease at which the intrusion of the Tubercle Bacillus was a *conditio sine qua non*; it was caused by both hereditary disposition and external conditions. But as the latter did not play a decisive role in constituting the disease, improving the environment would not necessarily lead to the eradication of the disease. Anyhow, Doyer admitted that further investigations were necessary to substantiate his results. It would give him 'great satisfaction in case more colleague-physicians, practising under similar circumstances,' followed his example.[349]

The reception of Doyer's investigations

Many Dutch physicians received Doyer's book with great enthusiasm. School physician Elias Deyll (1877-1944) for example, celebrated the study's 'outstanding objective characters'. He was especially impressed with Doyer's introductory chapters 'containing outlines on the concepts of susceptibility *(vatbaarheid*), and the difference between infection (*besmetting*) and disease, and his explanation of hereditary burden (*erfelijke belasting*) is written convincingly and with great clarity.'[350] However, sanitary reformers did not respond as kind as Deyll. In the

[343] Doyer, *Tuberculose en erfelijkheid*, 7.
[344] Ibidem, 7.
[345] Ibidem, 11.
[346] Ibidem, 213.
[347] Ibidem, 178.
[348] Ibidem, 214.
[349] Ibidem, 213.
[350] C.L. Deyll, 'Recensie van "Erfelijkheid en Tuberculose"', *Nederlands Tijdschrift voor de Geneeskunde* (1921), 2042–43.

first Dutch textbook on respiratory tuberculosis, written and edited by sanatorium director Bernhard Herman Vos (1871-1945), and published in 1925, Doyer's research was approached with hostility. The thick textbook contained a chapter on heredity and tuberculosis, in which both Doyer's research design as well as his conclusions received explicit criticism. 'Doyer's investigations are for a big part based on information about the cause of death as it had been identified pathologically, and on orally acquired notices. Both sources,' Vos stated, 'have been identified as problematic by many authorities at home and abroad—its trustworthiness is questioned increasingly. It is hence understandable that an increasing amount of scientists don't attach that much value anymore to hereditary disposition in constituting tuberculosis.'[351]

Besides methodological criticism, the authors of *Leerboek der Longtuberculose* especially considered Doyer's conceptualisation of 'hereditary disposition' very problematic. Referring to how Scheltema's and Nolen's ideas on the absolute-responsivity (*abtolute ontvankelijkheid)* of the human species, Vos stated 'what has been called "hereditary disposition" is in many cases not much more than being subjected to infection by tubercle bacilli. It is called disposition, but in reality, it cannot be distinguished from exposition: it generally *is* exposition.'[352] Based on Doyer's data, Vos admitted that 'generally offspring from a tuberculous family (*geslacht*) seems to develop tuberculosis sooner and easier as compared to young people from a healthy family.' Remarkably, the textbook author explained this phenomenon in a completely different manner: 'we are convinced that this is the consequence of a higher degree of exposition to tuberculous infection in case of the children of unhealthy families. As such, it is a case of acquired disposition (*verkregen dispositie*) by infection with a contagious agent.'[353]

The authors of *Leerboek der Longtuberculose* agreed with Doyer that tuberculosis was transmitted to a higher degree in certain families, but whether this transmission had to be explained in terms of exposure to an unhealthy environment or inherited disposition remained unsettled. In other words, in response to Doyer's argument that tuberculosis was transmitted hereditary, Vos tried to explain tuberculosis as a developmental disease. He conceptualised tuberculosis as an environmental problem, not as a reproductive one. Vos himself captured the conceptual struggle quite accurately:

> The 40-years old heredity-contagion dispute will not be solved by arguments currently available. In case one of the two parties comes with new proof, it is regarded as meaningless for the other side. One has gathered data and inferred conclusions, but much space is reserved for subjective judgment. We do not yet have objective methods that can solve this issue.[354]

Jan Tazelaar and exposition

Vos's worry did not withhold Jan Tazelaar, a general practitioner at Sint-Maartensdijk in the province of Zeeland, to conduct a similar study as Jacob Doyer. He published his research in 1925 as a book titled *Over expositie en hereditaire dispositie bij tuberculose.* Tazelaar placed

[351] Bernhard Herman. Vos en J.Th. Leusden, *Leerboek der longtuberculose* (Utrecht: A. Oosthoek, 1925), 131.
[352] Vos en Leusden, *Leerboek der Longtuberculose*, 131.
[353] Ibidem,133.
[354] Ibidem, 133.

himself in the investigative tradition which Doyer started: they shared the conviction that research based on genealogical data gathered in the municipality in which he knew the families and the environmental conditions as an important addition to 'laboratory and clinical data'.[355] Tazelaar aimed to contribute to the same 'grand dispute (*groote strijdvraag*) on heredity or contagion as a predominant cause in constituting tuberculosis.'[356] A remarkable difference with Doyer, though, can be found in the acknowledgements, in which Tazelaar explicitly associated himself with Dutch tuberculosis reform and thanked two prominent members of the Dutch anti-tuberculosis movement. Next to Johan Putto, the chief editor of *Tegen Tuberculose*, Tazelaar showed gratitude for health inspector Christine Bader (1878-1965) responsible for tuberculosis and venereal disease, for 'their substantive contributions on his dissertation.'[357]

The most crucial difference with Doyer, however, can be found in the dissertation's statements. On the one hand, Tazelaar argued that 'open tuberculosis is a contagious disease as opposed to closed tuberculosis'—a condition in which patients show tuberculous symptoms and the contagious germs cannot be found in the patient's mucus. This is an essential premise for his second statement: 'A hereditary disposition for obtaining tuberculosis, because the disease appeared in the patient's ancestry, cannot be assumed for various reasons.'[358] Tazelaar examined 36 families to substantiate his conclusions. However, instead of solely looking for tuberculous patients and map the causes of death in their ancestry—as Doyer had done—Tazelaar picked his families based on availability. He did not reason backwards and examined families of non-tuberculous patients as well. Furthermore, Tazelaar based his data on his personal observations so that he could take his own diagnoses into account; not solely causes of death. This allowed him to include information on individuals that had recovered from tuberculosis, and specify whether their tuberculosis was 'open' or 'closed'. In that respect, Tazelaar investigated whether or not there had been a source of infection (*infectiebron*) in a family with significantly more cases.

The inclusion of open tuberculosis as a source of infection is Tazelaar's most important basis for diminishing the hereditary disposition for tuberculosis. His data showed that of the 215 cases of tuberculosis, 174 patients had ancestors with the same disease. For Doyer, this was enough to claim the existence of hereditary disposition of tuberculosis. Tazelaar, on the other hand, explained the percentage of 80% differently: 'one may be tempted to interpret this big percentage as proof for the existence of a hereditary disposition. But in 82% of the cases of tuberculosis, I could identify contact with a case of open, contagious tuberculosis. Therefore, the frequent occurrence of tuberculosis in multiple generations can also be explained by exposure to a source of infection.'[359] In other words, tuberculosis is caused by exposure to contagion. How, then, are individual differences explained? To answer that question, Tazelaar mapped the environmental conditions in which the families lived. On the one hand, he classified whether a household in which tuberculosis had been found lived in good, insufficient, or bad house conditions (*woningstoestanden*); on the other hand, Tazelaar classified whether families

[355] J. Tazelaar, *Over Exposite en Hereditaire Dispositie Bij Tuberculose* (1926), 93.
[356] Ibidem, 80.
[357] Ibidem, 5.
[358] Ibidem, 80.
[359] Ibidem, 89.

had good, sufficient, or low wealth.[360] A clear correlation between the number of cases in a family and the environment in which it lived, was enough for Doyer to conclude that difference in environment explained differences in developmental health.[361]

Tazelaar wrote his dissertation with passion; exclamation marks were no exception to his writing. We should interpret this spirit in terms of Tazelaar's aim to revise Doyer's conceptualisation of heredity and contagion. At stake was not only a properly scientific understanding of the disease but the plausibility of tuberculosis reformer's optimism in promoting environmental reform. Tazelaar indeed made no secret of his ambitions: 'if we stop perceiving tuberculosis from the viewpoint of hereditary disposition,' the physician from Sint-Martensdijk preached, 'and instead focus on the significance of exposition, the disease offers a more hopeful perspective for both patient and physician. A powerful eradication through improving wealth and housing to prevent infection leads to good results immediately.'[362] However, Tazelaar's conclusion was not solely shaped by his practical orientation; he claimed that also his investigations themselves made him change his mind. 'Before I started my investigations, even when I was ready to draw my genealogical stats, I supported the theory of disposition (*dispositieleer*). But while reordering and comparing my data, I changed my viewpoints. I now count myself on the side of the contagionists *(besmettingsleer*).'[363] To me, Tazelaar's study is an excellent example of how conceptual struggle reflects social struggle. In this case, it reflects a different way of conceptualising tuberculosis as a collective problem. Instead of discussing inherited disposition to conceptualise disease transmission, Tazelaar centres the debate around individual development. The 'side' of the disposition theory emphasised hereditary transmission as the crucial cause of tuberculosis. Contagionists, on the other hand, explained the constitution of tuberculosis in terms of exposure to contagious agents during development. Of course, the latter explanation made it more plausible to interfere in the environment to improve personal hygiene.

The reception of Tazelaar's investigations

The interaction between the conceptualisation of heredity with respect to tuberculosis and the question of how the problem of tuberculosis should practically be solved is also visible in the ways Tazelaar's book was received. I have tracked down two reviews. The first one, published in *Tegen Tuberculose* in 1926, is written by the editors. Given Tazelaar's conclusions, it is not really surprising that they were very enthusiastic: 'We want to start with expressing our great admiration for the man who—just as Doyer—found the courage to examine such a difficult subject. Everyone who reads it will be highly impressed with the conscientiousness and high amount of honesty of the author.'[364] Although the reviewer did not find *Tegen Tuberculose* the place for an in-depth discussion of the statistics and Tazelaar's methodology, he was convinced by the 'overwhelming significance of exposition in the constitution of tuberculosis.' In that regard, the reviewer was happy to announce that Tazelaar had to let go the disposition doctrine (*dispositieleer*): 'his investigations have made him a follower (*aanhanger*) of the doctrine of

[360] J. Tazelaar, *Over Exposite en Hereditaire Dispositie Bij Tuberculose* (1926), 71–78.
[361] Ibidem, 85.
[362] Ibidem, 92.
[363] Doyer, *Tuberculose en erfelijkheid*, 92.
[364] 'Over expositie en hereditaire dispositie bij tuberculose', *Tegen Tuberculose* (1926), 103.

contagion *(besmettingsleer*).'[365] The reviewer's use of the words 'follower' and 'doctrine' reveals an almost religious character of the discussion.

Nevertheless, the critic believed that Tazelaar's impact on the heredity-contagion dispute was comparable to Doyer's study: 'Those who don't value contagion may change their understanding slightly, but it won't fundamentally change their viewpoints; comparable to how Doyer's research did not really impact the followers of the doctrine of contagion.'[366] Moreover, the dispute between Doyer and Tazelaar primarily was an exponent of less-specialised debates between those believing in the possibilities of environmental reform, and those who didn't. This is also apparent in a 1926 review published in the Dutch Medical Journal by R.N.M. Eijkel, who had been head inspector of public health since 1924. 'Just as I advised together with Heynius van den Berg [director of the Amsterdam department of the NCV] at the social-hygienic congress in Utrecht last year: Tazelaar's study shows that the household forms the main source of infection.'[367] And although Eijkel doubts whether 'Tazelaar actually showed that hereditary disposition doesn't at all play a role in the transmission of tuberculosis', he is nevertheless happy that 'Tazelaar showed how environmental conditions play a decisive role in constituting tuberculosis during development, and that the disease is primarily contagious. His study is thus another piece of evidence that everything should be done to improve the environment to prevent further transmission.'[368]

It is important to emphasise how the debate between Tazelaar and Doyer, as well as its reception, took place at the same time that the NCV explicitly downplayed a hereditary conceptualisation of tuberculosis to establish an identity as optimistic reformers. One the one hand, the Doyer-Tazelaar debate is different in that it shows that in the specialised arena, 'disposition' was a highly contested notion and that its relation to heredity was far from a done debate. There was consensus that the Tubercle Bacillus was a *conditio sine qua non* and that different individual responses to infection could very well be explained in terms of disposition. As the reviews of Tazelaar's study by prominent members of the anti-tuberculosis movement foreshadow: it was indeed possible that heredity played a role in the formation of individual disposition, albeit a minor one. On the other hand, the Doyer-Tazelaar dispute is highly comparable to how heredity and contagion were conceptualised in *Tegen Tuberculose*. Doyer's attention for hereditary transmission has to be understood in relation to his scepticism towards environmental reform; Tazelaar's emphasis on exposition during development rather than inherited disposition transmitted through reproduction related explicitly to his optimism regarding the results environmental improvements would have. The debate on disposition and exposition shows how the relationship between tuberculosis and heredity changed from being discussed in the context of conceptualising transmission to explaining development.

Crystallising the coexistence of exposition and disposition

The shifting focus from transmission to development did not solely take place at the margins of medical discourse in the dissertations of Doyer and Tazelaar. The third edition of the

[365] 'Over expositie en hereditaire dispositie bij tuberculose', *Tegen Tuberculose* (1926), 105.
[366] Ibidem.
[367] R. N. M. Eijkel, 'Recensie van Tazelaar's "Over Expositie en Hereditaire Dispositie bij Tuberculose"', *Nederlands Tijdschrift voor de Geneeskunde* (1926), 1545.
[368] Eijkel, 'Recensie van "Over Expositie en Hereditaire Dispositie", 1547.

textbook of the *Leerboek der tuberculosebestrijding,* published in 1926 reveals a process of conceptual crystallisation, especially in comparison to the second edition. In a chapter on 'Disposition, Immunity, and Heredity', Heynius van den Berg admitted that 'some children are born with a weakly predisposed body,' and that 'this innate degenerate constitution implies insufficient immunity (*verweerkracht*) against harmful external influences.'[369] Moreover, this 'weak disposition occurs with different family members,' and 'can be transmitted to offspring in the same way this is known in case of other degenerate characteristics.'[370] Quite explicitly van den Berg confessed that 'against the inherited characteristics influencing the natural defence against tuberculosis, we stand completely powerless.'[371] Thus, van den Berg now agreed with Doyer that individuals inherited the extent to which they are vulnerable to tuberculosis.

Yet, disposition, a notion synonymously used with immunity, is not solely made up by an inherited blueprint, according to Heynius van den Berg. 'Also external, environmental influences are of significant influence on individual susceptibility,'[372] Heynius van den Berg emphasised. 'Nutrition, proper housing, and sufficient wealth make the individual strengthen its immunity; this played a more decisive role in individual disposition than its inherited potential. Moreover, Van den Berg stated in line with Tazelaar that exposition to a source of infection explains why the transmission of tuberculosis occurred more often in certain families. 'In constituting tuberculosis,' van den Berg stated, 'exposure plays a bigger role than hereditary disposition.'[373] Although van den Berg embraced the role heredity played in constituting tuberculosis, he downplayed its significance by conceptualising disposition in terms of development instead of a transmission. As environmental conditions were more significant than inherited disposition, heredity—and environmental pessimism—could still be problematised.

Hence, Heynius van den Berg emphasised that hereditary 'disposition' did not mean 'predisposition' (*voorbeschikt*): environmental improvements in which infection was prevented and individual immunity was strengthened overruled the significance of an individual's inherited susceptibility. 'This is very important for the eradication of the disease. If the contrary was the case and the individual's inherited disposition played a decisive role, any attempt of the tuberculosis movement of direct and indirect prevention would be doomed to failure from the outset.'[374] In other words, the hereditary disposition transmitted through reproduction on which reformers claimed to have no influence, became a contributing factor among many other environmental developmental conditions which sanitary reformers could influence. At the end of the 1920s, to put it briefly, the conceptual consensus among anti-tuberculosis reformers on the aetiology can thus be characterised by its reformative optimism and an increasing emphasis on individual development rather than transmission. Tuberculosis was not caused by the hereditary make-up of someone's ancestry but conceptualised through the relative weight of innate and external conditions during development.

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[369] Rodolphe de Josselin de Jong, *Leerboek der tuberculosebestrijding* (3th edition) ('s-Gravenhage: Nederlandsche centrale vereeniging tot bestrijding der tuberculose, 1926), 81–82.
[370] Josselin de Jong, *Leerboek der tuberculosebestrijding*, 82.
[371] Ibidem, 82.
[372] Ibidem, 83.
[373] Ibidem, 92.
[374] Ibidem, 93.

Until this point, I have shown that after the First World War, the 'contagion-heredity dispute' primarily dealt with the proximate cause for transmission. The perspective that tuberculosis was caused by transmitting a contagious agent as opposed to the viewpoint that the disease was hereditary and therefore transmitted through reproduction. As became apparent in the debate between Doyer and Tazelaar, both extremes came to be regarded as over-simplistic. Although reformers reached a consensus that tuberculosis was not caused without exposure to tubercle bacilli, it was less clear how different individual responses could be explained. As a result, the contagion-heredity opposition entered a new phase. It centred around the question of whether individual disposition was transmitted biologically through reproduction or that contagious agent were transmitted through the environment. At the end of the 1920s, however, even that opposition became resolved. As the third edition of the NCV's textbook showed, those investigating tuberculosis came to agree that *both* hereditary and environmental circumstances played a role in the constitution of tuberculosis as causative factors. Point of debate, however, remained which factors were more important during development: nurture or nature?

Around 1930, as we will see, the individual constitution of tuberculosis during development became the topic of debate. In this 'epidemiological' interpretation of tuberculosis, the concept of heredity remained important but changed from being perceived as a cause into a causative factor. The importance of the concept of heredity was not the only continuity that persisted. As had been the case in the 1920s, disagreement over the proper understanding of tuberculosis in which the concept of heredity played a paramount role, interacted with competing viewpoints over the ultimate results of environmental reform.

Fase III – From Cause to Determinant: tuberculosis as developmental condition

The first Dutch explicit epidemiological interpretation of tuberculosis as being caused by the interaction between various causative factors can be found in the Bernhard Vos's textbook on respiratory tuberculosis—published in 1925. 'We cannot deny an inherited, innate susceptibility for tuberculosis,' Vos stated. 'However, the significance of this disposition does not only depend on its quantity, and the extent to which it expresses itself, it also depends on the ratio to other factors that influence the constitution of tuberculosis.' Here we see how Vos makes the difference between internal and external factors. 'The more unfavourable the circumstances in individual lives are, the less its resistance will be, and the more the protective powers that help the individual ward off harmful environmental influences decrease.' Individual disposition for tuberculosis consists, therefore, by inherited 'endogenous' or 'innate' factors on the one hand, and environmental, 'exogenous' elements, on the other side. Examples included 'bad nutrition, unfavourable housing, damaging professions, alcohol, and psychological influences.' [375] According to Vos, only the latter factors was malleable and formed the locus of intervention.

Vos's epidemiological interpretation of tuberculosis set the tone for the rest of the Dutch interwar period, as becomes apparent in the third and last Dutch study in the tradition of Doyer and Tazelaar: Louis Cornelis Alons's dissertation on *The Hereditary Factor in the Aetiology of Tuberculosis*, published in 1928. Again, this general practitioner investigated the relationship

[375] Vos en Leusden, *Leerboek der longtuberculose*, 137.

between tuberculosis and heredity by means genealogical investigations in the municipality he practised—in this case in the little town of Oud-Schoonebeek. According to Alons, this place is ideal for genealogical studies. 'With their protestant background, marriage takes almost exclusively place within the same families,' Alons stated, 'the villagers can be characterized as one big family, in which every individual is exposed in the same way to infection, and lives in the same environment (housing, nutrition, wealth, profession). Thus, the only difference between these individuals is their hereditary constitution.'[376] In his introduction, he explicitly admitted that 'much research pointed out clearly how tuberculosis does not constitute without infection with a contagious agent. Moreover, the occurrence of the disease also depends on a big part in bad housing and insufficient nutrition.' Cor Alons questioned, though, 'whether these two influences are the only causal factors in generating tuberculosis.'[377] The answer was no: 'In the aetiology of tuberculosis, the hereditary factor plays a significant role,' Alons stated in his dissertation conclusion. More specific, however, was his second statement: 'The constitution of human tuberculosis required infection with the Tubercle Bacillus. But in some cases inherited susceptibility plays a significant role alongside other environmental conditions influencing development.'[378]

These conclusions are, just as Doyer's, based on a comparison between pedigrees (*kwartierstaten*) in which the constitution of tuberculosis in three generations is mapped, and family trees in which besides the diagnosed cases of tuberculosis, for every individual is indicated whether they had parents or grandparents with the disease. This design reveals the theoretical difference between phenotype and genotype. According to Alons, this is inspired by geneticists who conduct research in the tradition of 'Mendel's monohybrid cross-breeding experiments', based on the assumption that an individual's inherited potential (genotype) consist for half of the parents' genotype and a quarter of the grandparent's genotype.[379] In this way, Alons found himself able to estimate the genotypic constitution of every pair of parents. He considered hereditary disposition to tuberculosis as a single genetic factor, and identified which parents were homozygotes. Alons argued that the factor of susceptibility for tuberculosis followed the Mendelian 'law of division' (*splitsingswet*).[380] After all, a quarter of the grand-children (F2) of a monohybrid pair of grand-parents (P1) developed symptoms for tuberculosis. Therefore 'in the aetiology of tuberculosis in our population (*bevolking*), heredity plays a role as a recessive genotypic hereditary factor (*erffactor*).'[381]

It is quite remarkable that in their genealogical investigations, neither Doyer nor Tazelaar mentioned Mendel's name, nor did they see themselves as investigating a question of 'genetics'.[382] This was not the case for Alons: he explicitly mentioned prominent Dutch

[376] Cornelius Louis Alons, *De erfelijke factor in de aetiologie van de tuberculose* (Groningen:Wolters, 1928), 10–12.
[377] Alons, *De Erfelijke factor in de Aetiologie van Tuberculose*, 8–9.
[378] Ibidem, 1.
[379] Ibidem, 18.
[380] Ibidem, 27.
[381] Ibidem, 27.
[382] The initial Dutch preference for 'scientific genology' without Mendelism is 'remarkable' from a history of biology viewpoint and may be beyond the scope of this chapter. The way in which Dutch general practitioners initially investigated the eatiology of tuberculosis seems to be isolated from debates on variability in evolutionary biology. In that sense, they investigated disposition without referring to the 'biometrician-mendelism' dispute of the early 20th century. Doyer's and Tazelaar's attention for heredity apart from Mendelism is not interesting

eugenicists such as Marianne van Herwerden and Tine Tammes as sources for literature and inspiration.[383] That did not mean that Cor Alons saw his research as an argument for reproductive measures—he didn't even mention that possibility—nor necessarily as a criticism of environmental reform. His most important conclusion, he repeatedly emphasized, was that the aetiology of tuberculosis consisted of '(1) infection, and (2) predisposition, which in its turn entailed (a) inherited high susceptibility, and (b) environmental factors such as insufficient nutrition, housing, and other diseases.'[384] At first sight, it seems that he resisted the temptation of discussing his research in light of tuberculosis reform. However, his third thesis-statements reveal the contrary: 'All measures taken to eradicate and prevent tuberculosis, keep their utmost value for those believing the hereditary factor in the aetiology of this disease.'[385] An epidemiological view of tuberculosis, in which hereditary disposition was only one contributing factor next to others, no longer implied that environmental reform was senseless.

Nevertheless, some tuberculosis-reformers did not welcome Alon's study. Heynius van den Berg wrote a rather critical review for the Dutch Medical Journal (*NTvG*) in 1929. He praised Alon's attempt to investigate the influence of heredity on the susceptibility of tuberculosis. Don admitted—with hesitation—that Alon's percentages 'indeed fit very well the conclusion that tuberculosis constituted through a recessive hereditary factor as might expected from Mendel's laws.' Heynius van den Berg, however, approached Alons's results with suspicion: 'Alons doesn't sufficiently take into account the extent to which all patients were exposed to a source of infection, as Tazelaar had done before him.' Therefore, 'we are still waiting for an answer to the question of the respective role hereditary factors play in constituting tuberculosis.'

Nevertheless, Heynius van den Berg was much milder in a chapter he wrote in the fourth edition of the official textbook of the tuberculosis eradication movement in 1931. In contrast to the third edition in 1926, van den Berg now admitted the existence of a certain innate, inherited, and natural susceptibility—its weakness or strength depended in that regard on the hereditary material transmitted through generational reproduction.[386] He emphasized that 'we are defenceless against these factors,' but reminded his readers that 'controllable environmental factors' were much more important in weakening the resilience against tuberculosis. Tuberculosis reformers, van den Berg stated, had to pay way more attention to these environmental influences.[387] The development of Heynius van den Berg's writing in the textbook of the NVC on the concept of heredity shows a crystallization of the epidemiological

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because all pre-war research on the topic should be Mendelist; it is remarkable because it does not refer to a biometrical mode of investigating. See: Lyndsay A. Farrall, 'Controversy and conflict in science: A case study—The English biometric school and Mendel's laws', *Social Studies of Science* 5:3 (1975): 269–301; Daniel J. Kevles, 'Genetics in the United States and Great Britain, 1890-1930: a review with speculations', *Isis* 71:3 (1980): 441–455; Alan R. Rushton, 'Nettleship, Pearson, and Bateson: The biometric-Mendelian debate in a medical context', *Journal of the history of medicine and allied sciences* 55:2 (2000): 134–157; Based on Müller-Wille and Rheinberger's work, we can conclude that the Dutch approach to heredity--in general--seems rather conservative. See: Müller-Wille en Rheinberger, *A Cultural History of Heredity*, 114–26.

[383] Ibidem, 0.

[384] Ibidem, 27–28.

[385] Ibidem, 1.

[386] R. De Jossilin de Jong, *Leerboek der Tuberculosebestrijding*, 4e dr. ('s-Gravenhage: Nederlandsche Centrale Vereeniging tot Bestrijding der Tuberculose, 1931), 102–3.

[387] De Jossilin de Jong, *Leerboek der Tuberculosebestrijding*, 106–8.

interpretation of tuberculosis in which the role heredity played was not downplayed anymore and could co-exist with optimism regarding environmental reform.

The Dutch genealogical investigations of Doyer, Tazelaar, and Alons on the relationship between the concept of heredity and tuberculosis were not continued in the 1930s for two reasons. On the one hand, Dutch genealogical investigations became regarded as old-fashioned in light of research from abroad. Results from experimental biology, especially twin research conducted by primarily German researchers such as Bruno Lange (1903-1969), Karl Diehl (1897-1969), and Otmar von Verscheur (1896-1969), convinced both tuberculosis reformers and eugenicists that individual differences in the intensity and occurrence of tuberculosis had to be explained in terms of hereditary disposition.[388] However, another reason for the positive reception of these German investigations was the consensus tuberculosis reformers reached around 1930: namely that the heredity did play a role in constituting tuberculosis, albeit a minor one compared to environmental influences.

This consensus is explicitly visible in the fifth edition of the NCV's textbook on the eradication of tuberculosis published in 1937—and especially Heynius van Den Berg's chapter on disposition. 'Tuberculosis itself is not transmitted through reproduction. Yet, the attention for the hereditary factor in tuberculosis does make sense in terms of natural resistivity as an innate bodily characteristic (*eigenschap van het lichaam als zoodanig*) and is, as well as other physical and mental characteristics, under the influence of heredity.'[389] And while referring to the recent German twin studies, Heynius van den Berg stated that 'it has been established that identical twins show a clearer similarity in the course of the disease as compared to fraternal twins.' However, Heynius van den Berg stressed that this hereditary influence wasn't a decisive factor: 'the results of twin experiments plea for the significance of hereditary influence, but despite the influence of a hereditary susceptibility for tuberculosis, it plays only a minor role.'[390] In weighing the significance of environmental and inherited factors, the former was more significant: nurture prevailed over nature during development, so to say.[391]

The co-existence of the hereditary factor and social reform led to the epidemiological interpretation of tuberculosis at the end of the Dutch interwar period. The last important voice on the relationship between heredity and tuberculosis came from the Leiden physician and sanitary reformer Johannes Muller. Based on extensive literature research, he proposed to interpret tuberculosis as a 'unit of epidemiology' in 1939. Muller conceptualised the disease as the interaction between social, environmental factors acting on the level of population, and individual differences in terms of inherited susceptibility. In the words of Muller himself: 'The eradication of tuberculosis has to be grounded in the acknowledgement that both quantitative

[388] Johannes Muller, 'De beteekenis van het schoolgeneeskundig onderzoek voor de epidemiologie der tuberculose' (1939), 42; Waardenburg, *Geneeskunde en erfelijkheidsleer*, 10; Wibaut, *De beteekenis der erfelijkheid voor de geneeskunde*, 145; Frets, *Erfelijkheid*, 138.
[389] Rodolphe de Josselin de Jong, R. N. M. Eijkel, en P. J. Fortanier, *Leerboek der tuberculosebestrijding*, (5th edition) ('s-Gravenhage: Nederlandse centrale vereeniging tot bestrijding der tuberculose, 1937), 137.
[390] Josselin de Jong, Eijkel, en Fortanier, *Leerboek der Tuberculosebestrijding*, 137.
[391] I am quite hesitant to use these words, as they have a historical connotation with Galton's eugenics. But I do use it here in an analytic sense.

factors (the degree of contact with contagious bacilli) and individual factors (heredity, weakening of the physical condition) are of significance in constituting tuberculosis.'[392]

Such a multicausal or determinant-based conceptualisation made the influence of environmental and social reform more precise. More important, it conceptually harmonized direct, prophylactic, and indirect environmental prevention. 'The improvement of housing, wealth, nutrition, and hygiene' led, one the one hand to 'a decrease of the quantitative factor leading to tuberculosis': better sanitation would lessen the quantity of germs the individual would come in touch with.[393] On the other hand, Muller argued that better developmental conditions would strengthen the individual's resistivity, as 'environmental influences determine the extent to which inherited potential is employed.'[394] In that regard, Muller argued that his epidemiological interpretation implied that 'attempts to eradicate the Tubercle Bacillus was an unachievable goal.' Mullers statement was in no way meant pessimistic. The best answer to tuberculosis is the improvement of individual resistivity (*aanvalskracht*), improved by 'sufficient nutrition and proper hygiene'. Moreover, 'wealth—which controls the level of morality, nutrition, housing, and civilization—is in my consideration the stronghold against tuberculosis.'[395] At the end of the Dutch interwar period, as Muller's conclusion shows, the hostile attitude towards the concept of heredity had disappeared among tuberculosis reformers. Heredity became conceptualized as a contributing factor (*factor*)—not as a cause. In the sanitary reformers attempts to legitimise environmental reform, heredity was employed comparable to as alcohol reformers and eugenicists: as the starting point of development.

In this section, I analysed the professionalised discourse—or phrased less esoteric: explicit debate—on the concept of heredity and its relationship with tuberculosis. As illustrated in section II of this chapter, the Dutch sanitary reformers presented themselves as reform-spirited optimists to convince a non-expert public that direct and indirect prevention was the most promising solution to the social problem of tuberculosis. The plausibility of this practical orientation was based, as I pointed out in section III, on the promise that tuberculosis could be eradicated—it was a victory within reach. In order to legitimize this attitude towards tuberculosis, the reformers explicitly employed concepts and explained them in ways that suit their practical solution of environmental reform, while remaining in dialogue with recent scientific research. In this fourth section, I analysed how the meaning of the concept of heredity reflected the struggle for recognition for direct and indirect prevention during the Dutch interwar period.

In the first two decades of the twentieth century, reformers conceptualised heredity primarily in relation to disease transmission. As reformers equated the hereditary conceptualisation of transmitting tuberculosis with conservatism and pessimism, a contagious conceptualisation of transmission stood for optimism. It implied that environmental improvement could stop the contagious cause for transmission. In the 1920s, while consensus was reached about the contagious agent as a *conditio sine qua non*, the relation between tuberculosis and heredity was discussed in terms of development. Whereas some believed that

[392] Muller, 'De beteekenis van het schoolgeneeskundig onderzoek voor de epidemiologie der tuberculose', 15.
[393] Ibidem, 48–49.
[394] Ibidem, 47.
[395] Ibidem, 65.

individual disposition was primarily inherited, sanitary reformers preferred to stress how individual disposition depended on the degree of exposition to the contagious agent. This emphasis on exposition rather than disposition in constituting tuberculosis during development was crucial in legitimising environmental improvement. In the 1930s, this conceptual tension resolved by explaining the inherited susceptibility to infection as one of the many determinants constituting tuberculosis during development. In this multicausal, epidemiological model, how individual's developmental health strengthened or weakened susceptibility to disease was understood as a determinant as well as the quantity of exposition to a source of infection. As heredity became conceptualised to partly explain the constitution of tuberculosis during development instead of the cause for transmission, it formed the starting point for *both* direct and indirect prevention—instead of its enemy. That had been a long way.

	Heredity primarily discussed to explain…	*Tuberculosis caused by…*	*Legitimising environmental reform to improve individual health*
1920s	Transmission	… infection rather than ancestry genetic make-up	Improving hygiene and better housing to prevent transmission
1930s	Development	… relative weight of inherited predisposition, the quantity of exposition, quality of developmental conditions	Improving developmental conditions to better developmental conditions and prevent infection

Figure 3.5 – schematic overview of the changing conceptual developments in relation to propagating environmental reform.

v. Environmental reform

In this last section, I will show how the tuberculosis reformer's specific conceptualisation of heredity as a legitimisation of environmental reform substantiated the general argument of my thesis: Dutch public health discourse was oriented towards the individual. Dutch sanitary reformers understood tuberculosis as a collective problem. Still, its solution depended on the improvement of developmental health by reassuring that every individual could grow up in a healthy environment to strengthen its response to infection. In this section, I first want to show how Dutch tuberculosis reformer's changing conceptualisation of heredity accompanied a different interpretation of what 'environmental reform' specifically meant. Whereas in the 1910s and 1920s, environmental reform regarded a combination of prophylactic measures and rising living standards, in the 1930s, environmental reform mainly implied socioeconomic reform. What remained similar throughout the interwar period, however, is that Dutch tuberculosis saw the eradication of tuberculosis as being achieved through improving individual, developmental health. This focus on the individual sets the stage for the second part

of this section, in which I will elaborate on how tuberculosis reformers conceptualized public health as the improvement of the health of the *sum* of individuals. I will explain this interpretation of the collective against the background of the local health infrastructure in the Dutch interwar period. Moreover, I want to emphasize that Dutch tuberculosis reformers did not even mention eugenics or reproductive measures as a potential solution. They dismissed—only on rare occasions—Darwinian, laissez-faire population thinking in which the individual could be sacrificed in favour of the population.

Heredity and individual health

A preference for direct eradication in the 1920s

I stressed earlier how Dutch sanitary reformers celebrated Robert Koch as their ultimate hero. They translated his discovery of the contagious agent into a message of hope: tuberculosis was not a disease to which society stood helpless, it was preventable and controllable. I showed that in the Netherlands, some physicians doubted Koch's findings and stuck to the 19th-century idea that innate, inherited capacities caused tuberculosis. The Dutch tuberculosis reformers, however, stressed that since tuberculosis was a contagious disease, the danger came from the environment. They employed the dichotomy between heredity and contagion to define their 'progressive' attitude in contrast to a 'pessimist' and 'conservative' attitude that doubted the efficacy of environmental reform. But there still was some disagreement within the Dutch reform movement: should tuberculosis be eradicated by protecting the individual from infection (prophylaxis), or strengthen the individual's resistance trough indirect prevention employing socioeconomic reform?

These opposing views were explicitly visible in *Tegen Tuberculosis*. One of the most outspoken proponents of the indirect approach was 'A physician's wife from the south' (*Een Doktersvrouw uit het Zuiden)*. She wrote contributions on regular occasion on the significance of strengthening the individual to improve its response to infection. 'The fight against tuberculosis is nowadays not directly focused on the Tubercle Bacillus,' she stated, 'but against the pre-existing weakness of the body that doesn't only advance the constitution of tuberculosis, but are a necessary precondition.'[396] Her voice still represented a minority of reformers; others fiercely disagreed with such an understanding of the constitution of tuberculosis. Paediatrician Reinier Pieter van de Kasteele (1886-1948), for example, argued almost the opposite: 'Without infection with tubercle bacilli, there is no tuberculosis,' he emphasized in a lengthy article on the relationship between child and tuberculosis in 1922. 'Way too often, I hear laymen say that the disease exists because of weakness insufficient nutrition, catching a cold, or other influences. But the disease can not constitute solely by these random influences.' Even the healthiest individuals could be hit by tuberculosis, 'if only the opportunity for infection exists.'[397]

The state report on the eradication of tuberculosis of 1922 tried to set the matter by outlining that tuberculosis was in principle a contagious disease: 'the disease is transmitted

[396] Een doktersvrouw uit het Zuiden, 'Waar het om gaat', *Tegen Tuberculose* (1922), 72.
[397] R.P. Van de Kasteele, 'De bescherming van het kind tegen de tuberculose (1)', *Tegen Tuberculose* (1922), 24.

through infection,' the investigative committee wrote. However, the committee admitted individual differences in response to infection: 'the individual resistance that the body develops determines the consequences of infection, and can be lessened by external circumstances.' These conditions included 'all kinds of diseases', 'insufficient nutrition', 'impoverishment', 'alcoholism', and 'psychological suffering'.[398] I already highlighted that both politicians and reformers received the report with disappointed for its lack of a clear preference for direct or indirect reform. However, the report did combine a contagious explanation with a social explanation of tuberculosis by focussing on individual health, which could be secured by the healthy environment in which both infectious germs and harmful influences that decreased individual resistances were absent.[399] The eradication of tuberculosis started with environmental reform that secured proper individual developmental health.

As I showed in the fourth section of this chapter, the anti-tuberculosis reformers remained to downplay any relation between tuberculosis and heredity. It is, therefore, no surprise that the state committee stated in capital letters that 'STILL MANY THINK THAT NOTHING CAN BE DONE ABOUT TUBERCULOSIS SINCE IT IS A HEREDITARY DISEASE.'[400] Tuberculosis was caused by exposition to harmful environmental influences damaging individual health. No wonder, then, that the investigative committee did not even mention inherited disposition as they described the adverse factors decreasing resistance. Heredity primarily served as a concept in contrast to which environmental reform could be legitimised.

However, as I showed in my discussion of the conceptualisation of heredity in relation to tuberculosis in more specialist arena's, there indeed became to be some attention for the role heredity played in explaining different individual responses to infection in the middle of the 1920s. Reformers reluctantly began to admit that this 'individual disposition' to tuberculosis was only partly inherited. In line with their inclination towards environmental reform, they remained, on the one hand, emphasising that exposition was more important than hereditary disposition. And on the other hand, that external conditions played a more important role in individual disposition than the innate, inherited share. Schuurmans Steckhoven best summarises this eclectic combination of infection, exposition, disposition, social conditions, and heredity in a propagandistic pamphlet, reprinted in *Tegen Tuberculose* in 1925: 'Instead of heredity, infection in relation to environmental conditions makes the difference.'[401]

A preference for indirect eradication in the 1930s

The minor role heredity played in the makeup of individual disposition to tuberculosis foreshadowed the conceptualisation of heredity as a necessary factor rather than a proximate cause in the 1930s. And yet—although the meaning of the concept changed, the orientation on environmental improvement at the level of the individual was not affected at all. In the epidemiological view on tuberculosis of the 1930s, reformers explained tuberculosis in terms of the interaction between several factors. Besides the quantity of exposure to infectious agents, also the quality of the individual's resistance to infection was explained as the interplay between

[398] J.A. Putto, 'Het Rapport der Staatscommissie inzake Tuberculosebestrijding', *Tegen Tuberculose* (1922), 96.
[399] Putto 'Het Rapport der Staatscommissie inzake Tuberculosebestrijding,' 12.
[400] Ibidem, 12.
[401] Schuurmans Stekhoven, *De tuberculose*, 53.

internal, natural, biological, and inherited characteristics on the one hand, and the external factors that increased or decreased the individual's resistivity on the other side.[402] In this new explanation, the Dutch anti-tuberculosis reformers regarded innate, inherited characteristics as a given and something that could not be controlled, but emphasized the minor role these characteristics, in the end, played.[403]

The incorporation of heredity in explaining tuberculosis paved the way for effectively combining indirect and direct eradication conceptually at the level of the individual. They thereby explicitly focussed on the health of the child. *Tegen Tuberculosis* chief editor J.A. Putto, for example, stated in a 1927 article in which he connected the new understanding of tuberculosis with an evaluation of the efficacy of the Dutch sanitary movement that 'a goal-oriented tuberculosis eradication movement focusses itself on the developing child. This orientation means that we try to decrease the quantity of infection through prophylactic sanitary measures while admitting that infection is not always avoidable.' As a result, Putto argued, 'the individual's resistance should be improved in the early stages of development.'[404] The hereditary innate characteristics, in that respect, formed an unequal starting point that was unchangeable; the external, environmental factors that influence the individual during its lifetime were far more decisive in constituting tuberculosis. In their acceptance of the role heredity played in tuberculosis, nurture prevailed over nature.

Johan Muller provided the first explicit conceptualisation of tuberculosis as an 'epidemiological unit' in his dissertation on tuberculosis and paediatrics in 1939.[405] He made the distinction between individual susceptibility for infection—constituted by determinants such as heredity, nutrition, physical strength, and other diseases—and the quantitative exposition to infectious agents. Muller believed the latter played a less important role than the former.[406] Therefore, in line with Putto's focus on strengthening the individual body in *Tegen Tuberculose*, also Muller argued that increasing resistance would be more effective than preventing infection. 'Direct, prophylactic measures are out of place. I acknowledge sufficient nutrition, physical self-care as the best resources in withstanding the attack (*aanvalsdruk*) of the Tubercle Bacillus.' Muller here shared a more comprehensive explanation of environmental reform in terms of socioeconomic improvement rather than prophylactic measures: 'Wealth, being the basis (*het peul*) of decency, nutrition, housing, and civilization, has to be recognized as the best bastion against tuberculosis.'[407]

Taken altogether, the concept of heredity continued to play a crucial role in articulating the Dutch reformer's response to tuberculosis. The meaning of the concept, however, changed over the interwar period. As well did the preference for indirect socioeconomic over direct prophylactic environmental reform. But besides the changing conceptualisation, it may be far more interesting to see what remains similar during the interwar years. On the one hand, tuberculosis reformers continued to regard the environment as the locus of intervention. Instead of curative care, or reproductive measures, the sum of all external circumstances influencing

[402] Muller, 'De beteekenis van het schoolgeneeskundig onderzoek voor de epidemiologie der tuberculose', 63.
[403] Gerke Brouwer, *Besmetting met tuberculose in gezin en school* (Leiden, Leische Uitgeversmaatschappij, 1934), 131.
[404] Putto, 'Tuberculose en de Tuberculosebestrijding', 3.
[405] Muller, 'De beteekenis van het schoolgeneeskundig onderzoek voor de epidemiologie der tuberculose', 39.
[406] Ibidem, 63.
[407] Muller, 'De beteekenis van het schoolgeneeskundig onderzoek voor de epidemiologie der tuberculose' 63.

the individual formed the core of the Dutch response to tuberculosis. On the other hand, Dutch tuberculosis reformers wanted to better the environment to improve individual, developmental health. A healthy environment would not only decrease the chance of contact with a contagious agent, but it would also strengthen the individual's resistance if an infection would happen. Still, reformers conceptualised tuberculosis as a social disease. If heredity did play such a minor role in explaining tuberculosis, how then, would improving and protecting individual health lead to improving public health?

'Individu, Huisgezin, Samenleving'

The answer lies in how Dutch tuberculosis reformers understood the 'public' in public health. Notions such as 'population' (*populatie*), 'race' (*ras*), or 'society' (*samenleving*) were used interchangeably in explaining the collective as the multiplicity of individuals.[408] The collective was not an abstract typological and statistical phenomenon, controllable and improvable at the cost of individual health. The individual citizen, so to say, was not the expression of the population, but the collective was the expression of the totality of individuals. The more individuals were nurtured in a healthy environment; the more populational health would be improved. The focus on developmental health trough environmental reform to achieve the eradication of the social disease of tuberculosis makes perfect sense against the backdrop of how tuberculosis reformers conceptualised the collective. I will illustrate the Dutch understanding of the collective by, first, demonstrating how sanitary reformers refrained from population health perspectives, and, second, show how they atomistically envisioned that improving individual health leads to collective health.

Eugenic and reproductive measures to alter the hereditary health of the population and its individuals did not seem to be a topic of debate among sanitary reformers. As I showed in chapter II, eugenicists explained the health of the population in terms of an essential hereditary mass, biologically transmitted through reproduction. They believed that it could be useful if not all individuals reproduced themselves to improve to prevent degeneration on a collective level. For the interwar period, Dutch tuberculosis reformers never thought of tuberculosis as a sign of individual degeneration. That reproduction of these individuals should be prevented to secure the health of a social body—individual suffering due to tuberculosis never was a necessary evil. Even when the relationship between heredity and the disease was debated, as I showed in section III, hereditary factors were seen as determinants beyond control. Dutch tuberculosis reformers did not even discuss sterilisation as a possible solution in the fight against tuberculosis. Moreover, segregation of individuals was regarded to be 'in contrast to the Dutch public character (*volkskarakter*).'[409]

Additionally, against the backdrop of the reformer's individual-oriented public health approach, it is not a big surprise that a laissez-faire approach to public health received no support among sanitary reformers. Schuurmans-Steckhoven, for example, opposed in his

[408] This discursive observation is made explicit in Johannes van Loghem's text book on hygiene in chapter ix, in which he clarifies the relationship between heredity and sanitary reform in terms of a focus on either the population or the individual. I have discussed this chapter more extensively in chapter 1, section iii on how Dutch health reformers opposed 'race delusion'. See: van Loghem, *Algemene gezondheidsleer,* esp. 318.
[409] Putto, 'Het Rapport der Staatscommissie inzake Tuberculosebestrijding', 89.

popular brochure on tuberculosis in 1925 'the widespread opinion of those who fear that children of tuberculous parents are necessarily inferior and predestined to become a victim of tuberculosis themselves.' He furthermore criticized 'the paralyzing statements of those who believe that all environmental measures that serve the eradication of tuberculosis keep degenerate individuals superficially alive thereby leading to weakening of the human population (*geslacht*) as a whole.'[410] Another example included the famous Amsterdam physician, publicist, and outspoken tuberculosis reformer Louis Heijermans (1873-1938), who discussed laissez-faire public health in his discussion of the local organisation of the Dutch tuberculosis reform movement in 1929. 'In some circles, public health reform is characterised as keeping the weak alive superficially, and that it would be more convenient from a biological and social viewpoint to let these individuals die. As a result, the physically strong will survive, and the losers (*sukkels*) and idiots (*stumperds*) will no longer be a burden to society.' In line with the consensus among sanitary reformers, Hijermans disagreed by pointing at the extent to which environmental and social conditions overruled hereditary factors in causing various diseases.[411] Now that it is clear how tuberculosis reformers left aside a population-oriented public health approach, how then did they explain how enhancing developmental health using environmental reform led the improvement of public health and the eradication of tuberculosis?

In arguing for the connection between developmental health and collective health, the household (*huisgezin*) played a crucial role. An individual sufferer from tuberculosis, the reasoning went, could not only *infect* its household, but it also influenced the *developmental conditions* of the rest of the family. In case the mother was hit by tuberculous, she could not take care of her children. The father, on the other hand, could not provide his family with enough income that was required for proper nutrition. If children suffered from tuberculosis, the mother had to spend all her time taking care of her infected child, and could not spend enough time on cleaning the house and securing proper hygiene, the Dutch tuberculosis reformers feared. Individual tuberculosis thus led from bad to worse at the level of the family. The way of reasoning is nicely illustrated by the 1926 edition of Josselin De Jong's *Leerboek der Tuberculose*:

> Tuberculosis in the family gives much reason to carefulness. Many individuals cannot withstand the mental pressure of infection and seek comfort in alcoholism so that both the individual *and* his family go down on the social ladder. The social wellbeing decreases more and more so that both the families' physical strength gets worse, and the change for infection increases. The individual tuberculosis sufferer forms a big thread for society (*samenleving*).[412]

The continuous relationship between the individual, household, and society as a whole enabled Dutch reformers to define tuberculosis as a problem of public health: disease on the individual level could lead to the condition on the collective level. To that extent, the process could not be controlled on the social scale; it had to be interrupted or prevented through environmental reform on the individual level. That attitude is nicely illustrated by a then 13-year-old Mien

[410] Schuurmans Stekhoven, *De tuberculose*, 53.
[411] Louis Heijermans, *Gemeentelijke gezondheidszorg in Nederland* (Amsterdam: N. v. 'Ontwikkeling', 1929).
[412] Josselin de Jong, *Leerboek der tuberculosebestrijding*, 10.

Lens, who made a school report of a visit to the 'Tuberculosis exhibition' and was, as a prize, published in *Tegen Tuberculose* in 1927. She described how reformers portrayed a dramatic picture of a father suffering from a bad socio-economic environment.

> Imagine a father that became an alcoholic due to physical and psychological stress. As a result, also his family *(huisgezin)* fell into poverty so that the household had to move to a shabby house in which light and clean air were absent. Due to these unhealthy living conditions, the mother weakened and got tuberculosis. Luckily the local association for the eradication of tuberculosis came to the rescue. The house was cleaned, the family was well-fed, proper ventilation was implemented, and clean bed-sheets were donated.[413]

The narrative Mien Lens sketched is exemplary for how tuberculosis reformers reasoned that intervention should happen to prevent that individual infection compromised the health of the family, and thereby the society as a whole. The environment, in this regard, was not only a causal factor in constituting the disease, but it also had a progressive and deteriorating effect as well. A process that could only be stopped by locally improving the environment. In his famous pamphlet on tuberculosis, the physician W.J. van Gorkom even stated that the question on the consequences of tuberculosis for 'individual, household and society' as *the* central problem of tuberculosis reform in the 1930s. Environmental reform formed the core of the Dutch tuberculosis movement: 'it focusses on improving the developmental health of the young child by nurture in a healthy family *(huisgezin*). And as these strengthened individuals form the parents of the future,' van Gorkom argued, 'environmental reform will enhance the health of society itself (*de groote maatschappij op zich zelve*).'[414]

Of course, we have to understand the Dutch tuberculosis reformer's focus on developmental health and environmental reform as a solution for a public health problem as being in interaction with the Dutch interwar political context. As I showed in the first section of this chapter, the organisation of Dutch public health was, besides its preference for preventive approaches over treatment, characterised by privately funded and locally organised institutions. Public health was not only conceptualised but also organised bottom-up. In the context of the Dutch interwar political culture in which health care was seen as a private matter, it is not surprising that Dutch health reformers did not propagate aggressive, top-down, population-oriented public health policies such as sterilisation and segregation. As we already saw with Dutch eugenics and alcohol reform, how Dutch tuberculosis reformers conceptualised tuberculosis as an issue of collective health, adds to the picture that egalitarian sentiments dominated the Dutch interwar discourse on public health. Equal developmental conditions secured by a healthy environment were considered the best response to collective diseases.

vi. Conclusion

This chapter showed how the Dutch tuberculosis eradication movement in the interwar period employed the concept of heredity to promote environmental reform by downplaying its

[413] Mien Lens, 'Een bezoek aan het tuberculosemuseum', *Tegen Tuberculose* (1927), 132.
[414] Van Gorkom, 'Helpt ons de Tuberculose bestrijden!', 37.

significance. Additionally, this conceptual history reveals an individual-oriented public health approach on a conceptual level. I first sketched the political and institutional context that shaped the Dutch public health response to tuberculosis, and stressed how, in the context of a liberal-confessional political climate, health care was perceived as a private matter and organised locally. Dutch public health policy was, therefore, characterised by a close collaboration between a funding state, and so-called 'private initiatives' that organised tuberculosis reform locally. The other important contextual factor in understanding the Dutch interwar response to tuberculosis is the general preference for preventing transmission over surgical or pharmacotherapeutic treatment, in which the 'consultation offices' played a similar central role as it did in Dutch anti-alcohol reform. The combination of decentralised Dutch public health and a focus on preventive approaches explained why the Dutch sanitary reformers preferred environmental improvement as the best solution to the tuberculosis problem—both directly through prophylaxis and indirectly through rising living standards.

This context sets the stage for my investigation of how Dutch sanitary reformers employed the concept of heredity to establish their professional identity as progressive optimists, who succeeded in reconceptualising tuberculosis as a malleable problem, by downplaying the hereditary factor. In doing so, they set the stage for proactive, sanitary and environmental improvements. I highlighted the central, but ironic role heredity played in propagating that the victory in the fight of tuberculosis was within reach. Although tuberculosis reformers emphasized that tuberculosis was a contagious disease and therefore preventable, they regarded it equally important to stress that it was not a hereditary disease. In the interwar period, as I showed, sanitary reformers rhetorically equated a hereditary conceptualisation of tuberculosis with conservatism and pessimism and a contagious understanding with optimism. As a result, protecting tuberculosis against hereditary conceptualisations reflected a struggle for professional authority and problem-ownership against fatalist physicians and an 'ignorant public' in the eradication of tuberculosis.

The central role that the concept of heredity played in the rhetoric of the sanitary movement provided a good reason to further analyse the more explicit, scientific debate on the concept of heredity and its relationship with tuberculosis. In order to legitimise the envisioned solution of environmental improvements, the Dutch sanitary reformers explicitly employed concepts to explain them in ways that suited their practical solution of environmental reform, while remaining in dialogue with recent scientific research. As a result, heredity remained important to legitimise environmental reform, despite its changing meaning. Whereas heredity initially was conceptualised as a potential proximal cause for the *transmission* of tuberculosis, it began to be explained as playing a (minor) role in the constitution of individual disposition during *development* in the 1920s. In the 1930s, however, reformers increasingly conceptualised heredity as a 'unit of epidemiology'—as a determinant in constituting tuberculosis. Whereas the reformers kept using the concept of heredity without losing sight of environmental reform, the conceptual relation between heredity and tuberculosis was explained in different ways. Initially to explicitly deny its causal role, then to contrast it with the decisive role exposition to infection played, and lastly to show how the hereditary factor in constituting tuberculosis could be overcome by improving living conditions.

In the last section of this chapter, I argued that this changing conceptualisation reflects a shifting balance in what 'environmental reform' precisely entailed. The attention for exposition signifies a preference for prophylactic, direct prevention of infection in the 1920s. On the other hand, the emphasis on the decisive role other environmental determinants played over both hereditary disposition, and the quantity of exposition reflects the more outspoken call for socioeconomic improvements in the 1930s. But despite these differences, I highlighted a critical continuity: during the Dutch interwar period, environmental reform was intended to improve individual developmental health. And more important, that tuberculosis reformers generally reasoned that improving individual health would lead to collective health. As a result, my conceptual analysis of heredity again shows the individual-oriented approach that characterised Dutch public health.

Dutch sanitary reformers did not understand an individual as the expression of populational health through their share of an abstract, and statistically existing intergenerational hereditary mass. In their dismissal of laissez-faire public health policy, eugenic sterilization, forced segregation, Dutch health reformers were never willing to sacrifice individual health for the cause of improving population health. They believed that inherited differences were compensated by living in a healthy environment. In their focus on improving developmental, rather than hereditary health, the Dutch tuberculosis reformers thought that collective health was reached through improving the developmental health of the individual. This individually-oriented public health discourse cannot be understood in isolation from a context without aggressive top-down public health policy by the Dutch state. Decentralised privately organised local initiatives had to lead to the nation-wide eradication of the social scourge of tuberculosis. In the Dutch interwar period, health was understood as primarily a private and local matter; such an attitude undoubtedly was an exponent of a confessional and liberal political culture, but it became explicit in the conceptual struggle over the meaning of scientific concepts.

Interwar conceptualisation of heredity	**Individual oriented public health approach**	**Sanitary Reform 1920s**	**Sanitary Reform 1930s**	**Population oriented public health approach**
Which traits are transmittable?	Acquired characteristics	Not important, only horizontal transmission	Disposition as epidemiological factor	Hereditary blueprint
How is the development of the phenotype explained?	Nurture	Nurture prevails; exposition to contagious agent caused tuberculosis	Nurture prevails; resistivity and quantity of exposition decisive factors	Nature
How is collective survival achieved?	Enhancing Individual health	Preventing infection of individuals	Preventing infection and strengthening developmental health of individuals	Survival of the fittest
What is the direction of intervention?	Bottom-up	Bottom-up (Household as locus of intervention)	Bottom-up (Household as locus of intervention)	Top-Down

Fig. 3.6 – A schematic visualisation of how Dutch sanitary reformers related to ideal typic conceptualisations of public health oriented towards the individual or the population.

Conclusion

Individualised public health

Dutch interwar public health was oriented towards the individual insofar that health reformers envisioned individualised solutions to issues of collective health. In this thesis, I examined how three groups of reformers responded to three public health issues. Next to my illustration of how Dutch eugenicists targeted and explained degeneration, I investigated anti-alcohol reformers focussed on alcoholism, and how sanitary reformers proposed to eradicate tuberculosis. Although these three groups had different priorities, my thesis reveals that they had the same practical orientation. Dutch eugenicists, anti-alcohol reformers, and sanitary reformers envisioned the improvement of developmental conditions for every individual as the ultimate means to enhance and maintain collective health. In each of these cases, they conceptualised the collective as the multiplicity or series of individuals. Dutch health reformers emphasised that collective health started by improving individual health—an abstract population was never employed as the 'ultimate objective' that legitimised compromising individual autonomy.[415]

I approached Dutch public health discourse through the analytic scope of conceptual history. Debates about degeneration, tuberculosis and alcoholism were structured around concepts which meanings depend on both local and historical context. The different, often contradictory meanings of these explanatory notions make conceptual debates both confusing and promising. In need of an analytic anchor and inspired by Reinhart Koselleck, I decided to turn this ambiguity into methodology and followed Dutch interwar discourse on public health problems through conceptualisations of one stable linguistic element. In my thesis, this has been the 'heredity'. I specifically chose this concept because it played a central—yet different—role in how eugenicists, anti-alcohol reformers, and sanitary reformers medicalised individual deviations and defined them as problems of collective health. Both my analysis of the conceptual changes, as well as comparing the different role heredity played for these different groups, enabled me to draw general conclusions about Dutch interwar public health discourse.

I furthermore agree with Koselleck that concepts are exciting because an investigation of how and why historical actors conceptualised notions differently reveals social and political tension. Taking this one step further: conceptual struggle about the meaning of heredity in degeneration, alcoholism, and tuberculosis among Dutch public health reformers reflected and interacted with the Dutch political culture. As a result, my research builds on the pioneering writings of Erwin Ackerknecht, who famously argued that preference for particular aetiologies

[415] I have included this reference to remind my reader of how I specified the difference between individual-oriented and population-oriented levels of phenomena in my introduction on p. 11 and 12 with reference to Foucault's lectures on the principle of population at the College de France in 1977-1978. See, again: Foucault, *Security, territory, population*, 42.

of diseases reflects ideological orientation.[416] With these theoretical considerations in mind, let me outline my conclusion that how Dutch eugenicists, anti-alcohol reformers, and sanitary reformers employed the concept of 'heredity' to make sense of social diseases in the interwar years, reflects a political culture of decentralisation and egalitarianism. First, I elaborate on my conclusions on the conceptual history of heredity in Dutch interwar public health. After that, I will connect these conclusions with the Dutch political context. In the remainder of this conclusion, I reflect on my findings on individualised Dutch public health discourse against the backdrop of international historiography and present the inevitable research questions following from my thesis.

i. Biologised public health: the contested meaning of heredity

For the three groups serving as protagonists in my story, the concept of heredity played various roles in establishing professional authority over the solution to exterminate the causes for and consequences of social diseases. Dutch eugenicists depicted themselves as the scientific experts on the application of academic heredity theory—later called 'genetics'—to solve social problems. Above all, they explicitly presented themselves as researchers making the distribution of heritable traits within a population intelligible through experimental, genealogical and statistical investigations. To demarcate and protect the phenomena to which the eugenicists' know-how applied, they explicitly distinguished their expertise from public beliefs through the conceptual dichotomy of 'actual' and 'apparent' heredity. Their knowledge served as the essential argument for a division of labour within public health, in which eugenicists focussed on the health of the future population. Similarly, anti-alcohol reformers employed heredity as the academic concept legitimising their envisioned solution of individual restraint. In the interwar years, by using seemingly apolitical explanatory notions such as heredity, anti-alcohol reformers appealed to the 'authority of science' to establish their social position as the designated group to eradicate alcoholism.

Sanitary reformers employed heredity in almost the opposite manner. In order to make their optimism on the prospective success of environmental reform in the eradication of tuberculosis plausible, they explicitly downplayed hereditary explanations of the aetiology of tuberculosis to highlight the external and malleable causes of the disease. On the whole, the concept of heredity played a crucial role in articulating problem-ownership over social disease among Dutch public health reformers during the interwar years. This central place of heredity is not surprising against the backdrop of the increasingly 'biologised' discourse of Dutch intellectual debates, as has earlier been pointed at by historians such as Stephen Snelders, Toine Pieters, Frans Meijman, Pim Huijnen and Frank van Vree.[417]

[416] Ackerknecht, 'Anticontagionism between 1821 and 1867', 19.

[417] Martijn Eickhoff, Barbara Henkes, en Frank van Vree, *Volkseigen: ras, cultuur en wetenschap in Nederland, 1900-1950*, Jaarboek van het Nederlands Instituut voor Oorlogsdocumentatie ; 11 (Zutphen: Walburg Pers, 2000); Snelders, Meijman, en Pieters, 'Alcoholism and Hereditary Health in Dutch Medical Discourse, 1900–45'; Huijnen e.a., 'A Digital Humanities Approach to the History of Science'.

Apart from drawing professional boundaries in the context of a biologised discourse, also theoretical considerations explain the central place that heredity held in interwar public health discourse. From the beginning of the 19th century, the concept of 'heredity' was increasingly used to articulate the biological relationship between individuals and the (intergenerational) group to which they claimed to belong.[418] In the interwar years—before the 'modern synthesis' on a biomolecular level in the 1940s and 1950s—the notion was employed to explain three interconnected biological processes. First, it referred to debates over which features are transmitted to the next generations through reproduction. Either those characteristics acquired during an individual's life that altered the hereditary make-up, or solely the 'germ-line' regardless of its acquired characteristics. Second, heredity played a role in discussions on how traits are developed. Either by environmental influences or following an inherited blueprint. And thirdly, heredity was used to explain the origin of variability within a population, the extent to which individuals could influence this variability, and whether or not specific degenerate individuals need to be sacrificed for the population's evolution. Various combinations of conceptualisations on these issues existed during the interwar years.

Heredity thus played a central role in both establishing professional authority and facilitating debate on the relationship between the individual and the group. Therefore, I decided to analyse how Dutch public health reformers employed heredity to articulate their public health approach as being oriented towards the individual or the population on the ideal-typic scale I presented in my introduction. On the one extreme, in a population-oriented public health approach with its focus on top-down intervention, acquired characteristics are conceptualised not to be hereditary, nature prevails over nurture in development, and collective survival is achieved by withholding individuals from reproducing. On the other extreme, in the individual-oriented public health approach with its focus on bottom-up intervention, acquired characteristics are perceived transmittable across generations. Moreover, nurture prevails over nature in explaining physical development so that every individual is essential in reaching collective health. In an individual-oriented public health approach, environmental improvement serves as the starting point.

To effectively situate Dutch public health on the scale of individual or population oriented discourse, I want to draw four general conclusions about the changing meaning of heredity in relation to social diseases during the Dutch interwar years. (1) Firstly, *throughout the interwar period, public health reformers came to agree that acquired characteristics were not inheritable and that environmental influences acting on the developing body cannot alter the genetic blueprint.* Historians of biomedicine such as Ernst Mayr and Carlos Lopéz Beltran traditionally call this shift from a 'Lamarckian' to a 'Weismannian' understanding of heredity the 'hardening of hereditarianism'.[419] My thesis discloses the messiness of this process. Looking backwards, the three groups of public health reformers in my thesis indeed reached internal consensus on the 'Weismannian' conceptualisation of reproductive transmission, but

[418] Carlos López-Beltrán, 'Forging heredity: from metaphor to cause, a reification story', *Studies in History and Philosophy of Science part A* 25:2 (1994): 211–235.

[419] Mayr is famous for coining the difference between 'hard' and 'soft' hereditarianism, respectively referring to a 'Weismannian' or 'Lamarckian' understanding of heredit. See: Ernest Mayr en Provine, *The evolutionary synthesis*. But it is also used as a historiographical counter-position by: López-Beltrán, 'Forging heredity'; and also: Snelders, Meijman, en Pieters, 'Alcoholism and Hereditary Health in Dutch Medical Discourse, 1900–45'.

at a different pace. Whereas Dutch eugenicists agreed in the mid-1920s that development had to be regarded separately from (reproductive) transmission, Dutch anti-alcohol reformers initially remained faithful that external influences acting on the developing body—such as alcohol—could alter the hereditary material. Only towards the end of the 1930s, they began gradually to admit the impossibility of this 'Lamarckian' or 'soft' understanding of heredity.

Secondly, in defining degeneration, alcoholism and tuberculosis as collective problems, (2) *Dutch public health reformers increasingly employed heredity to discuss social diseases in relation to development instead of reproductive transmission*. Dutch alcohol reformers initially used heredity to explain how individual alcohol consumption affected future collective health through germ-damages, which were passed on to next generations. In the late 1930s, following 'Weismannian' view of hereditary transmission, anti-alcohol reformers argued instead that alcohol was a toxic external factor during development. They now conceptualised individual alcohol consumption as a threat to collective health because it kept alcohol in the environment, thereby compromising the developing conditions of other individuals. A similar trend is visible in how Dutch sanitary reformers discussed the relationship between heredity and tuberculosis. In the 1910s and 1920s, heredity was debated as the wrong proximal cause for disease transmission. Not the patient's ancestors had transmitted tuberculosis through recombination of the hereditary material, but instead, the external contagious agents were believed transmittable and conceptualised as the cause for tuberculosis. However, with an epidemiological understanding of tuberculosis in the late 1930s, sanitary reformers began to approach the disease from a multi-causal point of view. They now admitted that disposition to tuberculosis was inherited, but that it played only a minor role next to the many external influences acting on individual development, such as the quantity of contact with contagious agents as well as nutrition and quality of housing. Towards the end of the interwar period, tuberculosis was not only an infectious disease; Dutch sanitary reformers conceptualised it as a developmental disease as well.

The conceptual transition from transmission to development leads me to my third conclusion. (3) *The strongly biologised Dutch interwar public health discourse went along with a big emphasis on environmental—and hence malleable—influences in the constitution of social diseases.* Anti-alcohol reformers holding a Lamarckian understanding of heredity in the 1910s and 1920s believed that environmental factors were important because they could damage the hereditary material. Later, when they embraced a Weismannian conceptualisation of heredity, Dutch anti-alcohol reformers stressed how external factors were more important than innate disposition in developing alcoholism. Dutch sanitary reformers, while admitting the existence of inherited disposition, similarly emphasised the dominance of environmental (and malleable!) conditions in developing tuberculosis. More surprising might be the prominent attention for environmental influence within the conceptualisation of social diseases among Dutch eugenicists. They argued that external forces could (almost) not alter the hereditary material, but that an individual was not entirely predetermined by its inherited blueprint for development. To identify actual hereditary degeneration, first, the environment needed to be improved to guarantee optimal and equal conditions for individual development. On the whole, Dutch public health reformers were no genetic determinists: in development, nurture prevailed over nature.

Dutch interwar public health discourse followed international trends in its increasing attention for biological conceptualisations of social diseases as well as the consensus about the impossibility of transmitting non-hereditary characteristics through reproduction towards the end of the interwar years.[420] It is, however, rather exceptional that these conceptual shifts were accompanied by attention for environmental influences on development. How can we explain this seemingly paradoxical position? The answer leads us to my fourth conclusion. (4) *Dutch public health reformers conceptualised the collective as a series of equal individuals.* Because inherited differences disappeared against the decisive influence of the environment, every individual counted in the ambition to improve and maintain public health. As long as equal environmental conditions were guaranteed collectively, every individual would be able to develop its inherited potential fully—thereby overcoming inherited differences. In other words: if every individual became healthier, social diseases would be eradicated, and collective health would improve. This egalitarian position took different shapes in the case of the three groups under my consideration. Eugenicists believed that degenerate individuals would develop a sense of social responsibility once the environment was improved, anti-alcohol reformers reasoned that individual restraint would prevent the spread of alcoholism through society. Sanitary reformers believed that a clean and healthy environment would prevent both infection and improve resistance once infection with the Tubercle Bacillus had taken place.

This fourth conclusion that Dutch public health reformers conceptualised the collective as the sum of individuals is further substantiated with their explicit opposition towards laissez-faire public health approaches. Neither anti-alcohol reformers, sanitary reformers nor even Dutch eugenicists contended that some individuals needed to be sacrificed by letting nature run its course to maintain the quality of the population. Their opposition was primarily grounded in ethical considerations, but it was conceptually substantiated as well. Dutch eugenicists, for instance, believed that sociomedical improvements kept weak individuals alive. Their reproduction would lead to a process of 'counter-selection' and cause degeneration. However, Dutch eugenicists believed, counter-selection was a fundamental characteristic of civilised societies. Eugenic measures, in that regard, would be the 'humanitarian' solution to the threat of degeneration. In a similar vein, anti-alcohol reformers opposed the laissez-faire perspective that alcohol was a 'selective substance' killing undesired individuals, and that it should be welcomed in societies for that reason. Initially, they believed they opposed such beliefs because alcohol consumption led to germ damages. In the 1930s, however, they conceptualised environmental improvement as compensating the degenerate constitution of weak individuals. Thus, Dutch public health reformers considered doing nothing, letting go, and trust nature that social diseases would lead to their own solution as an impossible option.

In sum, I conclude that Dutch public health discourse was conceptually oriented towards the individual instead of an abstract social body or population. Dutch eugenicists, anti-alcohol reformers, and sanitary reformers shared the belief that collective health was achieved by enhancing individual health through environmental improvements. After all, despite that Dutch Public health reformers agreed that acquired characteristics were not heritable, they emphasised how environmental influences were equal to, or sometimes even more important than an individual's inherited blueprint in individual development. Therefore, Dutch public health

[420] Müller-Wille en Rheinberger, *A Cultural History of Heredity*, 88.

reformers preferred the environment as the locus of intervention to improve the conditions for development so that *every* individual could fully grow its inherited potential. This egalitarian stance on individual potential was furthermore substantiated by conceptualising the collective as a series of equally essential individuals. Public health was thus reached by increasing the sum of individual health.

So far, I primarily showed how Dutch public health reformers shaped and employed the concept of heredity to legitimise the practical solution of the social problems they targeted. It makes sense to explain the conceptual changes I discovered in terms of the interaction and information exchange between Dutch public health reformers and specialist researchers. To maintain their authority, they had to incorporate conceptual and experimental developments in professional science—albeit with strong reluctancy and delay. Despite the conceptual changes, the practical solutions eugenicists, anti-alcohol reformers and sanitary reformers envisioned, remained similar throughout the interwar period. All three groups employed the concept of heredity to legitimise a specific form of environmental reform: in combination with reproductive measures, to guarantee individual restraint from alcoholism, and to improve hygiene, housing and nutrition. In other words: my analysis of heredity in interwar public health discourse shows that public health reformers made the concept fitting for the solution they already had in mind.

This historical process of conceptual engineering is fascinating for historians of biology, interested in the changing meaning of heredity in interaction with practical problems and solutions. Nevertheless, although I showed that Dutch individual-oriented public health fitted with the environmental interference public health reformers envisioned, I have yet left unanswered *why*, then, they preferred reform starting at the individual level. To answer this question and further disclose the co-construction of concepts and practice, I need to put the conceptual trends I discovered in their context. It will become clear that Dutch individualised public health was a response to the existing health infrastructure in the Netherlands, and therefore an exponent of the Dutch interwar political culture.

ii. Dutch political culture

With their emphasis on environmental reform starting at the individual and local level, Dutch public Dutch health reformers responded to the pre-existing health infrastructure of the interwar years. As a result, their conceptualisation of public health reflects the political consensus that health was a private matter, from which the national government should refrain itself. During the interwar period, the Netherlands knew no sterilisation laws, federal prohibition, segregation laws for tuberculous patients as top-down responses to social diseases. The confessional and liberal cabinets governing the Netherlands in the interwar period dismissed such proposals as unjustified state-interference with private life. Especially eugenic proposals were met with great hostility because ‘the individual does not serve the state; the state serves the individual,’ as

catholic minister of justice Joop van Schaik nicely captured the Dutch interwar political climate in 1933.[421]

This dramatic rhetoric does not mean that national laws on social diseases did not exist at all. Even though alcohol was not prohibited, the Netherlands knew a system of permits for selling alcohol, with a maximum number per municipality, and issued by the local council. The legal basis for this system dated back to the end of the 19th century and the only additions made during the interwar period was the judicial inclusion of soft alcoholic drinks. Tuberculosis had more priority for the interwar Dutch governments. That does not necessarily become apparent through legislation but by governmental expenditures. After all, the state itself did not organise collective action towards tuberculosis; this they left to the private initiatives, whose importance and authority was explicitly acknowledged. However, throughout the interwar period, the Dutch government subsidised the organisation of especially sanitary reform increasingly. Despite that inspection and allocation of this money was organised centrally, the action on tuberculosis materialised through private initiatives. Altogether, the picture emerging from the political and legal context of Dutch public health reveals a robust public-private collaboration between a facilitating and funding national government on the one hand and flourishing civil society on the other side.

Additionally, I claim that interwar Dutch public health was an exponent of the long-term Dutch decentralised political culture, as materialised in the 1848 Dutch constitution written by Johan Rudolph Thorbecke as well as his provincial and municipal laws of 1850 and 1851. In this liberal legislation, Thorbecke had constructed a state-structure around an ingenious system of checks and balances between national, regional, and local government. The municipality—as close to the individual citizen—had political primacy. No wonder that alcohol laws, to give an example, were implemented and designed nationally, but that its practical implementation depended on the decisions of the municipal council. In sum, top-down public health measures were incompatible with the Dutch political culture of local government.

The absence of centralised national public health policies certainly was a crucial factor in enabling private initiatives to flourish in the first half of the twentieth century. Dutch society is known to be 'pillarised' during a big part of the 20th century, meaning that civic life took place in relative isolation from other sociocultural groups. Catholics, protestants, socialists, and—as a result—liberals did not only have their own media and sports clubs; these socio-cultural groups also had their own associations dealing with social diseases. Regardless of their ideological and philosophical differences, these pillarised private initiatives were comparable in two ways. Firstly, almost all agreed that the collective response towards public diseases had to start at the local level and opposed state interference. Apart from the socialists—being a minority until the Second World War—liberals stressed individual autonomy, comparable to how the confessional pillars stressed the central role local religious communities played in solving social disease through either the 'subsidiarity principle' (Catholics) and 'sovereignty in one's own circle' (Protestants).

Secondly, the pillarised private initiatives did not differ in the activities and practical actions they initiated. One the one hand, private enterprises produced and circulated propaganda

[421] Handelingen Tweede Kamer der Staten Generaal (1934-1935:II), 748. See also: Chapter I, section i 'academic activism' in this thesis for a more detailed discussion of van Schaik's position.

for their sociocultural community to convince and inform them to enforce social responsibility and change individual behaviour. On the other hand, private efforts were responsible for the initiation and construction of 'consultation offices', in which citizens were informed on harnessing themselves to social diseases and prevent further transmission—through individual restraint, proper hygiene, clean houses, and healthy food. As the decentralised Dutch political culture enabled civic public health association to blossom during the interwar years through public-private collaboration, these initiatives localised the collective response to social diseases even further. They made it a matter of individual responsibility.

The political and institutional context of Dutch public health discourse thus provides a straightforward answer as to why Dutch eugenicists, anti-alcohol reformers and sanitary reformers preferred the collective response to social disease to start at the individual level—bottom-up rather than top-down. That is, this practical orientation aligned the Dutch interwar political culture of decentralisation and individual citizenship, and the resulting institutionalisation of public health through a public-private collaboration between local civic initiatives and a funding state. Phrased in the analytic terminology of conceptual history: Dutch public health reformers articulated the Dutch political culture of decentralisation and egalitarianism through an individual-oriented conceptualisation of public health, as has become clear through my analysis of the conceptual history of heredity—with its significant role for malleable environmental factors in individual development—in Dutch debates on degeneration, alcoholism and tuberculosis. On a conceptual level, I claim that Dutch public health was individualised during the interwar years.

iii. A Dutch Sonderweg?

Why is this interesting? What is at stake historiographically? At first sight, my thesis is an example of the interaction between science and society, and how the historical meanings of concepts—also scientific ones—is the result of the negotiation between theoretical considerations and sociopolitical motives, situated in a cultural context. Theoretically speaking, I showed the merits of applying conceptual history to history of science and medicine, as well as to political history. Furthermore, my story problematises linear histories of science because it instead illustrates the messy process of how knowledge is constructed in interaction with a sociopolitical context. However, this thesis does not only show that 'things are more complex' by emphasising context. Above all else, I tried to offer a constructive narrative that contributes to answering the question of how the Netherlands responded to threads of social decay in the interwar period.

That is why I approached the conceptual history of heredity from the perspective of public health history, and relate my analysis of Dutch public health to the international story that Johannes Kananen, Sophie Bergenheim, and Merle Wessel present in *Conceptualising Health* (2018). They argue that in the 19th century, with the dominance of sanitary reformers and their environmental reform, public health was individual-oriented and approached bottom-up—as reformers conceptualised health as a universal right for every individual. This orientation shifted towards the statistical population—or abstract social body—in the first half

of the twentieth century when former imperialist states embraced centralised political systems such as fascism, communism, and democracy. Many European countries tended to approach public health top-down. Additionally, health became regarded in a 'mercantilist manner' in the early 20th century, the Finnish historians argue. This population-oriented public health approach legitimised the sacrifice of individual autonomy to achieve collective health. This historical characterisation of early-20th-century public health enables the contributors to Kananen's 2018 edited volume to effectively localise eugenics and other top-down public health approaches. However, the pendulum swung back to an individual-oriented public health conceptualisation after the Second World War. The traumas of the holocaust, the universal declaration of human rights and a focus on chronic diseases all culminated in post-war 'New Public Health' (NPH) movement, the authors of *Conceptualising Public Health* argue. With its emphasis on life-style improvement and environmental reform, individual-oriented public health still dominates present-day epidemiology. How does the Netherlands fit this archetypical and long-term history of modern European public health?

It does, and it doesn't. The analytic scale of individual and population oriented public health helped me quite a lot to effectively examine Dutch interwar public health discourse. My thesis differs from the *Conceptualising Public Health* approach in that I investigated the concept of heredity instead of primarily political concepts. Still, my conclusion that Dutch interwar public health discourse was individualised is an explicit reference to the historical pendulum analytically applied in the Scandinavian historiography of public health. Nonetheless—and here it gets exciting—my thesis problematises the sketched international trend that public health became oriented towards the population in the first half of the twentieth century. During the interwar years, Dutch politicians and public health reformers explicitly opposed foreign sterilisation policies and other examples of racial madness as loudly as they disliked laissez-faire public health conceptualisations. Instead, they emphasised individual agency in achieving public health. In other words, this thesis suggests continuity rather than discontinuity in public health discourse. Does this mean that the Netherlands walked a different path during the interwar years? Do I reveal a Dutch *Sonderweg* in public health history?

Again—I do, and I don't. My story detaches public health history from the nation-state. After all, I approached public health history by looking at how 'collective action' is conceptualised by public health reformers that were not acting on behalf of the nation-state. National policies, as a result, play only a contextual role in my history of public health. In that sense, one may say that it is not surprising that I reconstructed public health discourse which is not oriented towards the population but instead focussed on individual development. I, however, would oppose such criticisms because my thesis offers a new explanation of the interwar absence of top-down public health policies such as eugenics, prohibition and segregation in terms of the interaction between conceptual struggle and the interwar Dutch political culture.

In respect of eugenics, being the utmost example of top-down public health, Jan Noordman revealed already in 1995 that the Galtonian movement was 'only a marginal cultural phenomenon' because the Dutch 'pillarised society offered no room for grand overarching ideas such as eugenics'.[422] Toine Pieters, Stephen, Snelders, and Pim Huijnen suggested that

[422] Noordman, *Om de kwaliteit van het nageslacht*, 261–66.

Noordman looked at the wrong place: they investigated debates on heredity and biology in 19th and early-20th century medical discourse.[423] I provided a complementary explanation of the absence of rigorous top-down eugenic policies and other state-led health measures compromising individual autonomy: the interwar political culture of egalitarianism and decentralisation, which materialised in a local public health infrastructure focussed on environmental reform, made explicit support for top-down interference impossible. I would even argue that Dutch hereditarianism conceptually substantiated decentralised solutions to issues of collective health. Overall, with its lack of top-down health policies and individualised public health discourse—especially from an international perspective—the Netherlands certainly holds a remarkable place in public health history during the interwar years. As a result, my thesis invites more comparative research on how health reformers conceptualised public health in different international contexts during the first half of the twentieth century—and to include the Netherlands in such comparisons.

iv. What's next?

Timeframe

Besides my plea for comparative investigations, there are two other imaginable directions for further research. The first path considers the expansion of the timeframe being used for this thesis. I was able to reconstruct conceptual transitions against the background of a relatively stable political culture. It would be fascinating to see whether shifts in the political culture become apparent in how heredity and other key concepts were employed to articulate public health. Eddy Houwaart beautifully reconstructs the liberal motives of Dutch sanitary reformers and their particular relations with Dutch politics in his renowned book on *De Hygiënisten* (1995).[424] Unfortunately, his analysis is limited to the 1890s, with the introduction of the germ theory of disease, bacteriological science, and the birth of medical parasitology. As a result, how new conceptualisations of illness interacted with the Dutch political culture in between these scientific developments and the First World War—the starting point of my thesis—remains yet to be investigated. Such investigations would further substantiate the continuity between the Dutch political culture as articulated by Thorbecke's 1848 constitution, the interwar period.

My research could equally be expanded to the period immediately after the Second World War. It has been a conscious decision to end my story with the start of the Second World

[423] Huijnen, Laan, De Rijke, Pieters, 'A Digital Humanities Approach to the History of Science'; Snelders, Meijman, en Pieters, 'Heredity and Alcoholism in the Medical Sphere: The Netherlands, 1850–1900', *Medical History* 51:2 (april 2007): 219–36; Snelders, Meijman, en Pieters, 'Alcoholism and Hereditary Health in Dutch Medical Discourse, 1900–45'; Stephen Snelders en Toine Peters, 'Van degeneratie tot individuele gezondheidsopties. Het maatschappelijk gebruik van erfelijkheidsconcepten in de twintigste eeuw', Article, GEWINA / TGGNWT; Stephen Snelders, 'The Plot against Cancer: Heredity and Cancer in German and Dutch Medicine, 1933-1945', *Gesnerus* 65:1 (2008): 42; Toine Pieters, 'Aldred Scott Warthin's Family "G": The American Plot Against Cancer and Heredity (1895–1940)', in *History of Human Genetics* (Springer, 2017), 91–103.

[424] Eddy Houwaart, *De hygiënisten: Artsen, staat en volksgezondheid in Nederland, 1840-1890* (Maastricht University , 1991).

War. Following a 'prospective' take on history, I emphasised the possibilities of analysing eugenics and other top-down public health measures distinct from the horrific Nazi-practices during the Second World War. This enabled me to highlight the explicit and widespread criticism of German 'racial madness' (*rassenwaan*) in the 1920s and 1930s among Dutch public health reformers. But whereas I explained this opposition in terms of the Dutch political culture, it remains yet to be answered how Dutch individualised public health holds during the German occupation. Stephen Snelders, in his 2007 article on Dutch eugenics during the Second World War, indeed wonders whether 'National Socialist beliefs were truly different from other eugenicists or that they drew different socio-political conclusions from related biomedical ideas, and that the boundaries blurred in context of changing political circumstances.'[425] Snelders suggests that Nazi-eugenics and moderate eugenics was not that different—both were not necessarily genetic determinists—and that the isolation of Dutch wartime eugenics has to be explained in terms of the political dynamic of the Second World War.[426] We are still waiting for Snelders' 'future publication which further examines the translation of heredity theory to national-socialism.' However, I think that it would be fascinating to include an examination of the continuities between pre-war and war-time conceptualisations of public health in the Netherlands.

A third way of expanding my timeframe would be to examine post-war conceptualisations of public health in the Netherlands. How did the groups and figures in my story relate to the 'New Public Health' in which epidemiology and biomedicine increasingly focussed on chronic disease caused by risk-factors? Was this 'second epidemiological transition' indeed caused by increasing attention on individual autonomy and bodily integrity due to the trauma's of the holocaust and the resulting universal declaration of human rights, as the authors of *Conceptualising Public Health* suggests. Or is this 'new focus on the individual' no more than a continuity of individualised public health as it already existed in the Dutch interwar period? Furthermore, how does this hypothetical individual-oriented public health approach relate to the changing social-democrat political climate and the rise of the Dutch health care state, as well as to its neo-liberal critiques at the end of the twentieth century?

'Practice'

The most challenging question following from my research, however, considers the relationship between the conceptual developments I revealed, and historical reality. In other words: how does the Dutch discourse on public health materialise into concrete action? Does my story about individualised public health imply that individuals who were considered a threat to collective health were trusted as responsible citizens? Was their autonomy indeed as respected as Dutch public health reformers conceptually claimed? One the one hand, I might have to admit that these questions point at the limitation of my conceptual history. The nature of my sources—textbooks, dissertations, academic journals, popular science publications, and propaganda—does not enable me to be entirely sure what Dutch public health reformers *actually* did, neither do I know what these historical figures *actually* thought—apart from their writings. Along

[425] Stephen Snelders, 'Op weg naar een 'Germaansche' volksgezondheid. Nationaal-socialisme, erfelijkheidsleer en eugenetica in Nederland 1940-1945', *GEWINA/TGGNWT* 30:2 (2012): 63.
[426] Snelders, 'Op weg naar een 'Germaanse' Volksgezondheid, 73.

similar lines, my research also doesn't show how tuberculous patients, degenerate individuals, and alcoholics themselves experienced Dutch public health.

In the case of the Netherlands, very little research has been conducted in this direction. And yet, the few examples investigating the relationship between conceptual debates on collective health and the practical realities for individual 'patients' are very exciting. Theo van der Meer, for example, showed how the explicit distinction between unacceptable eugenic sterilisation on the one hand, and accepted 'voluntary' castration of sex offenders for therapeutic reasons, on the other hand, was meaningless in practical settings of asylums.[427] Based on a systematic review of patient files, van der Meer argues how 'sex offenders' were medicalised as homosexuals during hospitalisation through eugenic categories, and were forced to undergo 'voluntary sterilisation' by their doctors to prevent future social harm.[428] These practices are still in line with individualised public health in the Dutch interwar period; it, however, shows that the explicit self-image among health reformers and politicians of reaching collective health by improving possibilities for individual development implied that, in practice, individual autonomy could still be compromised.

Moreover, I do consider this thesis to be insightful in the possibilities of health discourse and explicating the parameters of debating public health in the Dutch interwar period. After all, my thesis does show how Dutch health reformers employed heredity to construct an egalitarian, individual-oriented self-image in adherence to the interwar political culture. Moreover, my analysis of the conceptual language used to structure and order discussions on social diseases in the interwar period *at least* reflects how real experiences, problems, fears, and actions were articulated, categorised, and legitimised trough language during the interwar years. I therefore think of my thesis as a starting point for future research on public health in practice. Having examined public health on a conceptual level, so where should we look to investigate the procedures, therapies, and diagnoses making 'collective action' towards social diseases a historical reality?

The answer lies at the 'consultation office'. My thesis exposes that collective action to maintain public health was decentralised, local, and conceptually oriented at the individual. As a result, the Dutch response to social diseases took concrete shape at consultation offices initiated by private initiatives. We have seen how these offices held a central place in action towards tuberculosis and alcoholism. Yet, consultation offices for venereal disease and even premarital examination also existed in the first half of the twentieth century. Although public health reformers founded most of the consultation offices already at the beginning of the 20th century, they still play an essential (albeit different) role in 21st-century Dutch health care. They have been examined sideways in projects on the history of neo-Malthusianism, tuberculosis, venereal disease, alcoholism, outpatient care, and social work.[429] Unfortunately, consultation offices

[427] Theo Van der Meer, 'Eugenic and sexual folklores and the castration of sex offenders in the Netherlands (1938–1968)', *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 39:2 (2008): 200–201.

[428] Van der Meer, 'Eugenic and sexual folklores and the castration of sex offenders', 201–2.

[429] Most of these investigations are dissertations written under the supervision of Dutch historian Piet de Rooij, see, for example: Annet Mooij, *Geslachtsziekten en besmettingsangst: een historisch-sociologische studie; 1850-1990* (Boom Koninklijke Uitgevers, 1993); Liesbeth Bervoets, 'Opvoeden tot sociale verantwoordelijkheid: de verzoening van

have never been investigated to provide an integrated account of 20th-century public health in the Netherlands that explains the historical development from early 20th century private initiatives to present-day consultation offices tracking developmental health.

Furthermore, also in these existing histories, it remains a mystery what happened at consultation offices. How were potential patients identified and attracted to the consultation office? How where they treated? Which people offered treatment, and why did they participate in the activities at the consultation office? How where these offices funded, and how were they organised? Was the relationship between the state and private initiatives negotiated within the organisation of consultation offices? And how was and is the network of consultation offices sustained? It would be fascinating to locate continuities and discontinuities over the long 20th century guided by these concrete questions. Moreover, long-term history of the Dutch consultation office enables to fully understand the extent to which concepts constitute practice, and more important: what individual-oriented public health implied for those who were targeted as a threat to collective health. ■

wetenschap, ethiek en sekse in het sociaal werk in Nederland rond de eeuwwisseling' (1993); Hugo Quintus Röling, *'De tragedie van het geslachtsleven': Dr. J. Rutgers (1850-1924) en de Nieuw-Malthusiaansche Bond* (Van Gennep, 1987); Leonie De Goei, *De psychohygiënisten: psychiatrie, cultuurkritiek en de beweging voor geestelijke volksgezondheid in Nederland, 1924-1970* (Sun, 2001).

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