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Inaugural lecture
Prof. Elselijn Kingma
September 21, 2012

Health and Health Promotion
Where innovation starts
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Health and Health Promotion

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Why, you may wonder, a lecture on health and health promotion in a science and engineering university? Not just because health is a strategic area of research in this university. Health, health promotion and engineering have a longstanding and important relationship. Indeed, some go as far as to say that technology, not medicine, is responsible for the enormous increase in our health and longevity since the industrial revolution.¹ Examples of such technology are improvements in plumbing, manufacturing and transport. Look at it this way: one way of curing malaria is to look for a medicine. Another way is to eradicate the mosquitoes that transmit this disease by draining the swamp in which they reproduce. It is the latter approach, that of the engineer, not of the doctor, that has freed North-Western Europe from malaria and many other infectious diseases.²

But there is a flipside. No Repetitive Strain Injury without computers, no obesity without transport and food technology, no car accidents without cars, no gun trauma without guns, and no Chernobyl without nuclear energy. Engineering technology not only explains improvements in our health, but it also has an important role in explaining and determining its deterioration. Usually we approach questions about health and disease from the perspective of medicine, the branch of society most directly concerned with health and disease. But the diseases that medicine gets to see are the end result of a whole series of processes. These include the choices made by engineers and policymakers who have designed the environments in which we live and, as a result, have shaped the properties of the populations of which we are part.

**Plan**

In this lecture I will approach questions about health and disease from the perspective of policy and environmental design, rather than from the perspective of medicine. This is a perspective that focuses on health promotion rather than the curing of disease; on populations rather than individuals; and on the policy and design choices that shape our environments and in the end us, rather than the

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¹ Illich (1976), McKeown (1980). For a discussion and other points of view see e.g. Porter (1997), Cooter & Pickstone (2000).
² Dobson (1997), Bruce-Chwatt (1980), McKeown (1980).
individual behavioural and health care choices that do so. I hope you will join me on a tour that first discusses existing ideas of what health and disease are, which are closely tied to the curative, medical perspective. I will then turn my attention to health promotion, and in particular to health promotion by environmental design – that is, health promotion largely done by engineers and at policy level with the aim of changing the characteristics of entire populations rather than those of individuals within that population. I will demonstrate that existing ideas about health, which have been developed in a curative, medical context, are not useful for the health promotion and policy perspective. In their place I will provide the outline of a positive concept of health that is better able to underpin health promotion policy.

On the basis of this concept I will then briefly argue that the way in which health promotion is now often approached – by trying to force, shame or incentivise people into healthier behaviour – is neither particularly productive nor very appropriate. Instead I will outline a different approach to health promotion policy that seeks to alter the behavioural choices that people make without their realising it by changing the environment in which they make those choices. In the development of this type of policy, engineers have a considerable role to play. Although this type of choice structuring seems like a radical intervention for public institutions or individuals to make, I will point out that the mandate and justification for this form of health promotion is considerable.

Philosophy

So, that is the plan. But an inaugural lecture is supposed to say something not only about what one has done and where one is going in one’s research, but also about who one is. I hope you will forgive me for spending some time on this, perhaps, rather existential question.

I am, amongst many things, a philosopher – and as such somewhat of an outsider in this university. Simply put, philosophy, for me, is not about grand ideas. Instead it is about careful thinking: about critical analysis, systematic argumentation, and a meticulous examination of one’s claims and commitments. As such it tends to proceed rather slowly and carefully. In the first part of this lecture I will attempt to demonstrate a little of what this type of thinking looks like, which means that we will proceed slowly and in more depth, as I share with you the results of some of my past research. The second part of the lecture, will speed up as I will try to cover more ground – necessarily in less depth and in a more explorative way – setting out the direction in which I see my research and interests developing as part of this professorship.
What is Health?

The WHO definition
The most often quoted definition of health was devised by the World Health Organisation (WHO) in 1948, and has not been changed since. “Health”, it says, “is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity”\(^3\). The first part of that definition is widely, and I think rightly, criticised.\(^4\) As I have heard some people put it: “a state of complete physical, mental and social wellbeing” sounds more like a definition of an orgasm than of health. I will leave you to make your own judgment on that in particular, but I think we can all agree that the WHO definition, taken literally, leaves “most of us unhealthy most of the time”\(^5\).

One may object that the WHO definition should not be taken literally; it is *idealist*. It attempts to identify the goal that health aims towards – the very top of the mountain, so to speak. But we do not need to realise that goal completely to be healthy, just like we are on the mountain long before we have reached its absolute summit.

I think this is a better way to interpret the WHO definition. But it does not make that definition any less problematic. The reason is that the WHO definition fails to preserve the distinction between health and wellbeing, and this is a problem for at least two reasons.

First, many people who are not, in ordinary language, *healthy* – for example because they have a chronic illness – are able to maintain excellent levels of physical, mental and social wellbeing. These are often similar to and can even

\(^3\) Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.


\(^5\) Smith (2008).
exceed those of ‘healthy’ people. If health and well-being are the same thing, then we lose the ability either to take seriously the reported levels of well-being of these ill people, or to recognise their lack of health that, amongst other things, gives them a legitimate claim to healthcare.

A second reason for preserving the distinction between health and well-being is that there are many things that impact our well-being without impacting our health. If I have a legitimate reason for feeling upset, for example – say, something very bad happened to a very close friend of mine – then this impacts on or reduces my emotional well-being. But I do not think that this makes me emotionally unhealthy. On the contrary: my reaction to my friend’s misfortune is the very measure of social and emotional health.

We can conclude, then, that although health and well-being are related, they are not the same thing. The WHO definition, interpreted either as an account of what health is, or as defining the ideal that health is supposed to approximate, should be rejected.

But maybe that is too quick, for either of these interpretations misrepresent, I think, what the WHO attempts to do. The WHO is not interested in the philosopher’s question of giving a true account of health – that is of telling us what health really is, or what the term ‘health’ means. Instead its definition – arrived at by consensus agreement, not philosophical analysis – has a much more pragmatic goal: that of providing an objective for national and global health policies.

At the risk of over-attacking the WHO definition, I want to say something about that pragmatic aim because it is so closely linked to the policy perspective I will take up in the second half of this lecture.

**The WHO definition and health policy**

Health as a policy goal has a particular role to play: it represents a political aim behind which it is easy for us, as a society, to unite. To be more specific, in a society or body politic that has, to borrow a phrase from liberalist political

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7 See also Eid and Larsen (2007).
philosophy ‘a plurality of conceptions of the good’\textsuperscript{8} – in other words, in a society comprising many different people who value many different ways of life – the idea that health, on the whole, is both good and important, is widely shared. And we do not just tend to agree, whatever our other differences, that health is, on the whole, good and important. Health also has other unifying features: most of us tend to be healthy in very similar ways – that is, your health looks much like mine – and we tend to need similar things to achieve and maintain health: hospitals, clean water, decent food and working conditions, and so forth. In a social and political landscape where agreement can be hard to find, then, health is a useful unifying focus.

If, however, we think that the best pragmatic definition of health is in terms of well-being, then the unifying force of health is lost. For if health is well-being, then the political problem of how to reconcile a very diverse, and often mutually exclusive, set of conceptions of the good again rears its ugly head. And this, of course, seems a particular problem for an organisation like the WHO, which has to contend with far more diversity of values amongst the people it represents than national governments do.

But the problem runs even deeper than that. For even if we were to agree on what well-being is, or simply settle for an “I recognise it when I see it”\textsuperscript{9} approach, my well-being and the conditions required for its realisation may be very, very different from yours. My well-being, for example, requires that the roads in Central London, where I live, are purged from cars and redesigned with cyclists in mind – much like we do in the Netherlands. But many other people claim that for their well-being, Central London needs to be full of cars, or at least accessible to their own car. This difference in how well-being, as opposed to health, is realised in individual people, further undermines the possibility of defining one in terms of the other.

\textsuperscript{8} Political Liberalist Philosophy assumes that there is a plurality of conceptions of the good. Indeed it sees that as a prerequisite for a liberal and just society (Rawls, 1966, 2001). This can be contrasted with approaches in moral philosophy, and perhaps some of our pre-theoretical conceptions, that assume the existence of one true conception of the good. If one accepts the latter view, an account of health could be constructed out of it. (e.g. Megone 1998, 2000, 2007; Foot 2001; Ryff & Singer 1998). But although the latter view may well be true, I will assume the former view of our value system throughout this lecture. This because, whatever its ontological status, we are epistemically confined to it – and that is unlikely to change in the near future.

\textsuperscript{9} Justice Potter Stewart on how to define pornography, concurring opinion in \textit{Jacobellis v. Ohio} 378 U.S. 184 (1964).
So I stick to my conclusion that the WHO definition of health as well-being is unsatisfying. Not just because we have good conceptual reasons for keeping health and well-being distinct, but also from the pragmatic or political perspective.

This conclusion, however, only concerns the first part of the WHO definition. That definition, as you may recall, has a second part, which states that health is “not merely the absence of disease or infirmity”. I will now turn my attention to this second part, by looking at a body of philosophical literature explicitly aimed at uncovering what health is or what the term ‘health’ means.

**Philosophical accounts of health as normal function**

There is a considerable body of philosophical literature on health and disease, and most of it does exactly what the second half of the WHO definition cautions against: it takes health to be the absence of disease, disability or injury – and vice versa.10 To be more specific: much of it defines health as normal biological functioning in a species, and disease as a dysfunction or an adverse departure from that.11 I would like to emphasise here that biological functioning should not be taken to mean physical or bodily functioning; we belong to the living world and so our mental and social functioning are biological just as much as the functions of our body are. At least in principle, then, the idea that health is normal biological functioning can apply to all three – mental, physical and social – realms.

A definition of health as normal biological functioning has considerable strengths, but is accompanied by some problems. A particular strength of this definition is that it seems to map on to our actual use and understanding of the terms ‘health’ and ‘disease’. In other words, ‘normal biological function’ and ‘dysfunction’ track medical and conventional usage of the terms ‘health’ and ‘disease’ much more

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10 Three remarks on this literature. First, most of it does not distinguish between different forms of unhealth, such as diseases, trauma, or disabilities. Instead it groups them all under an umbrella-term: disease (Boorse, 1975; Cooper, 2002), malady (Clouser, Culver & Gert, 1981), disorder (Wakefield, 1992b), or pathological condition (Boorse 1997, 2011). Whitbeck (1978) is an exception. Second, the reason for doing this – which is key to understanding this body of literature – is that the focus in this literature is mostly on defining health and disease for the purpose of solving social problems; identifying those entitled to health care, for example, or justifying the forced treatment of the mentally ill (Cooper & Megone, 2007). Third, much of this literature can be seen as a response to the anti-psychiatry critiques (Szasz, 1960, 1972).

closely and much more specifically than well-being and its absence do. Think about it this way: if someone is functioning biologically normally in the physical, mental and social realms, we have no reason not to attribute a state of health to them. Conversely, to be physically, mentally or socially dysfunctional is, broadly, what it means to have a physical, mental or social disorder.

But the normal biological function approach to health is not without problems. Its main problem is that there is no single way of sorting the biological world into functions and dysfunctions, a consequence of which is that there no single answer to the question of what is health or disease. This problem arises, in part, because there is no unique way of stating what is normal, and I will give you two examples of that.

**Many norms, many functions, many forms of health?**

First, there is a problem of reference populations: whether something is normal or not depends on the population or class that we compare it with. But, biologically speaking, there are many actual and possible – past, present and future – populations that organisms belong to. There is therefore no single correct biological population of reference, and therefore no single correct answer to whether a particular level of function is biologically normal or healthy or not.12

For example, take the blood pressure of a particular 70 year-old male, called Kees. Whether Kees’s blood pressure is healthy or normal depends on the population that we take Kees to be part of. This could be the population of 70 year-old males, the population of all adult males, the population of all 70 year-olds, or the population of North-Western Europe. From the point of view of biology, all of these – and many more – are perfectly reasonable populations by which we can determine, through comparison, the normal function of Kees’s blood pressure. But they will generate different judgments on the health status of Kees. For his blood pressure may well be normal for a 70 year-old male, but not normal for all adult males or for all 70 year-olds.

The problem of reference populations, I would like to stress, is not epistemological. It is not a problem of us having difficulty to know what is normal functioning. Instead it is a metaphysical or ontological problem: a true problem in what there is. Irrespective of how much information we gather, there is no single way of sorting the biological world into populations. And therefore there is no

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12 Kingma (2007).
single answer to whether Kees’s blood pressure is normal, functional or dysfunctional.\textsuperscript{13}

Although irritating, I do think this ontological picture is correct. I see the indeterminacy involved in the normal function approach not as an argument against it, but more as a further problem that accompanies and is revealed by the correct answer that the normal functioning approach provides.

Here is a second example of the same kind of problem, this time involving environments. There is no unique normal way for organisms to be that can be abstracted from the environments that organisms are in. That is to say, there is no biological norm for humans per se, only a normal way for a human to be given that they are in an environment – at low altitude rather than high altitude, for example, or in a cold environment rather than a hot environment. But not all biological norms given exposure to an environment support our thinking about health and disease. Obesity, for example, may just be the biologically normal human response to an environment rich in hamburgers, sugary drinks, and seated work and transport\textsuperscript{14}. Just as a heatstroke is the biologically normal result of exposure to too much sun and too little water, or social withdrawal the normal result of extreme mental trauma. So, again, biologically speaking, there are many different normals out there, at least one for each environment.\textsuperscript{15}

Whilst the idea that health is normal biological functioning is correct, then, it is not the case that nature, or biology, presents us with an unequivocal or unique set of things that are normal, healthy functions. To determine normal functions we need to settle, at least, what the appropriate reference populations are, and what environments we consider to be setting the norm. Because there is no unique way of doing this, we make choices in doing so. And these choices, in all likelihood, involve values.

Does that mean that the same problems I raised for the WHO definition arise for the normal function approach? They could in principle, but in practice they do to a much lesser degree. The WHO definition, which defines health as well-being, requires for its application that we agree explicitly on what constitutes well-being

\textsuperscript{13} Such ontological pluralism should not surprise us. It is a well-respected position in philosophy of biology when it comes to both species (Dupre, 1993, Ereshefsky, 2001, Kitcher, 1984) and functions (e.g. Griffiths, 1993, Godfrey-Smith, 1993, Perlman, 2004).

\textsuperscript{14} James (2008).

\textsuperscript{15} Kingma (2010).
– which is a notoriously difficult thing to do.\textsuperscript{16} Defining health as normal biological functioning, by contrast, only demands that we agree on the reference populations and environments that seem both normal and desirable to us. And that is something that we can agree upon much more readily. So much, in fact, that we can leave most of the sorting work to biomedical science, which tends to proceed without any explicit mention of values at all, or even without ever realising that values are in play.\textsuperscript{17}

\textbf{Interim: Switching Perspective}

This concludes the first part of the lecture, which looked at existing account of health and represents some of my previous research. I have introduced to you two core ideas about health: one, the ambitious WHO definition in terms of well-being, which I reject, and the other, the dominant normal biological function approach in philosophy, which I accept with caution. What both of these approaches share, however, is that they very much focus on health as a property of a particular organism at a particular point in time – which will now become a point of concern.

I now want to make a radical switch of perspective; from individuals to populations, from where I have been to where I see my research going, from a medical, curative perspective to a health promotion perspective, and from individual health care choices to the perspective of policy and design. This is an important shift: when it comes to the context of health promotion as a population policy, I will argue, a very different account of health from the ones I have discussed so far is required. I will take steps to outline such an account of health, and focus in particular on the way in which it is shaped by the environments in which populations live.

\textsuperscript{16} Crisp (2008).

\textsuperscript{17} For a good philosophical account of the pervasive role of values in sciences see Douglas (2009).
Health for Health Promotion

There are two reasons why the health concept I have discussed so far is ill-suited to the health promotion and policy context. First, the policy perspective is characterised by a focus on populations and population effects. In other words, health policy is not primarily concerned with the right health care or behavioural choices for particular individuals, but focused on enacting policies and affecting changes that improve the health of a group or population as a whole. The normal function account of health I outlined earlier cannot support this population perspective. Because the account defines health as normal functioning in an individual in comparison to a reference population, populations are always healthy by definition on this account.

Second, health promotion policy, unlike curative or even preventive medicine, is not primarily concerned with curing the ill or even with preventing the healthy from falling ill. Instead, health promotion aims to promote or improve health in those that are already healthy. But if health is defined as the absence of disease, it is logically impossible to improve or promote health in those that are already healthy.

The health promotion and policy perspective, then, requires an understanding of health that is not mere normal functioning in the here and now: it requires a positive account of health – an understanding of health that is, in the wording of the WHO, more substantive than “merely the absence of disease or infirmity”. Clearly I am not the first to note this and I think many of us intuitively appreciate this idea. But the real challenge is to say what that substantive understanding or extra ‘element’ of health, over and above the absence of disease, is. I am not yet able to offer a complete understanding, but will give an outline of what I see to be at least some important aspects.

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19 See e.g. Ryff & Singer (1998), Huber (2011).
A positive understanding of health

On possible way of understanding positive health is to simply see it as more or above-normal functioning. Marianne Vos, for example, who is recent Olympic Gold-Medalist in cycling, has positive health on this view in virtue of having superior or surplus oxygen uptake and transport function. But I think this is wrong: if you haven’t seen your friend for a while and think ‘gosh, she looks healthy’, then that is not because she is stronger or faster than she is normally, or has better oxygen transport ability.

I suggest that to understand the positive elements of health we need to move away from a focus on what state the organism is in or what an organism does or can do in the here and now. Instead we should, first, conceive of the organism as something that persists over time and, second, look at the ability of the organism to persist over time. Health, in this view, is like a skill: an organism that has more positive health is an organism that has the ability to persist better through a wider range of likely environments and challenges. On this view, if Marianne Vos is healthier than me, then that is not because she can cycle faster or transport more oxygen, but because she is more robust and more resilient: she has more buffer capacity than me and is better able to take on an environmental load and recover. Should we find, however, that Marianne Vos's extensive training actually makes her extremely vulnerable to most environments other than the carefully controlled one created for her as an elite athlete, and that she has worn her body out, then I think we would have a good case for saying that I am in better positive health than she is – despite her undoubtedly superior cycling ability.

Note that positive health does not mean that one has to be immune to environmental onslaught. Someone in good positive health can become ill just like a person in less good positive health. But the person in more positive health is less likely to become ill, less likely to be severely ill, and more likely to recover faster, better or more completely than the person in less positive health. To illustrate this, remember my earlier example of having something very bad happen to a close friend. A person in good positive health will not be immune to being affected by this – indeed she should not be! But a person in good positive emotional, mental and social health will be better able to deal with, recover from, and live through this emotional setback than someone in poorer positive health.

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20 Boorse (1977) discusses positive health along these lines.
21 Venkatapuram (2011) develops such a view in terms of capabilities (Nussbaum, 2000; Sen, 1992).
I suggest that there are two important understandings of health. One is the *normal function* understanding that supports a curative perspective and focuses on the state of the individual organism at a point in time. The other is the *positive ability* perspective that focuses on the organism as extended in time and as living through a range of environments. This latter understanding is useful in the context of health promotion. These two understandings are related but they are not the same. Two people can have similar states of actual functioning but vary enormously in their positive health skills; one can be much more vulnerable than the other. Similarly, two people can have very similar positive health skills, but differ enormously in their actual functioning or acute health/disease status – for example, because one person has the flu and the other one does not.

We can conceive of positive health as a skill consisting of many elements. Narrowly, for example, this skill consists of the quality of one’s immune system, the absence of stress or chronic tiredness, and the availability of physical reserves and fitness. But if we think more broadly it is also constituted by, for example, our behaviour, choices and the quality of our social interaction. It is in positive health, then, that the three elements of health – social, mental and physical – come together and interact. For all three offer resources that improve our ability to live well through a range of environments.

With this rough understanding of positive health in place, I want to look more closely at how it is constituted. And in doing so I want to focus specifically on the role of our environment in constituting our health.

**Positive Health: in the environment or in the organism?**

We might think that we can learn everything there is to know about the positive health of an organism by looking at that organism. But that is not so. There are at least three ways in which we should look towards our environments, too, because they have an important role in determining positive health.

First, and this is rather obvious I think, one’s past environments – that is the food one has eaten, the pollution one has inhaled, the habits one has copied from one’s peers, parents and wider culture, and so on – play an important role in shaping the health skills the organism possesses now.

Second, the health skills that an organism has now are not just located within the organism; they are also located in the present environment. An example I already gave of this are the social resources of the organism. These are located outside
the organism, but improve its ability to persist through a range of likely environments and are thus part of its positive health skills.

Third, an organism’s positive health depends on the future environments it is likely to encounter. To be more specific, the degree to which an organism’s existing skills and resources, whether located within the organism or outside it, are healthy depends not just on those skills themselves, but also on the match between those skills and the organism’s likely future environments. Take, for example, Femke, who has a high-end amount of body fat. If Femke’s future is one of food scarcity, then her extra body fat is good positive health because it will help her persist well through those future challenges and environments. If, however, Femke lives in the here and now – and will always have access to an abundance of high-calorie, easily available food with a lack of cultural constraints on ingesting it – then Femke’s very same high-end amount of body-fat is not very good positive health.

This is a very important point: there is no absolute set of positive health skills. Whether, and the degree to which, one’s existing skills constitute positive health depends on the environments that one will or is likely to encounter. 22

This might sound counterintuitive: how can the future, which has not yet happened, determine my present properties – whether I am or am not healthy now? But this is less counterintuitive than one might think. When I make a choice, a choice between two jobs, for example, I might say “I hope this will prove to have been the right choice”. There, too, the property of the choice being right depends on the future: on what will happen in the life I choose as opposed to what would have happened in the life I do not choose. It is not entirely strange, then, to think that present properties can depend on or be determined by future events.

Interim: switching gears from defining health to promoting health
To summarise, I have argued that normal function accounts of health are not able to support the health promotion and policy perspective for two reasons. First, because they focus on individuals rather than populations. Second, because they define health as the absence of disease. In their place I outlined a positive account of health for health promotion, which can be thought of as the ability of the organism to live through a range of likely future environments. This ability or skill, counter to what we might think, is not just located in the organism itself, but is both caused and constituted in important ways by one’s past, present and future environments.

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22 See also John (2009).
With that understanding of health in mind, I now want to turn my attention to the methods of health promotion and to the justification for those methods. I shall argue that a promising method of health promotion attempts to alter our behaviour and choices by altering our environments. I will offer a justification of this approach that consists of both a progressive and a regressive claim. The progressive claim is that there is a considerable mandate, in fact a positive duty, to interfere in the behaviour of our populations. But the regressive claim is that we should not do so by telling people to change, but only by altering the environments in which they live. And here is where science and technology is very important; the design of the environments we live in is largely in the hands of engineers.

I said at the start of the lecture that I would be detailed and slow in the first half, and move faster in the second half. This is where that gearshift happens. In what follows now I will cover a lot more ground than I have, but spend far less time justifying my every, sometimes rather explorative, claim.
Health Promotion: methods and justification

Positive Health and Choice
Many existing health promotion programs aim to alter our behaviour, and they often do so by giving us information and telling us to consciously make a different, better choice: smoke less, exercise more, eat fewer saturated fats, sugars, salts and processed food, and don’t forget to floss, people! You must floss, it adds six years to your life at least!23

Encouraging behavioural change is absolutely a form of health promotion on the account of health I outlined; we can view our behaviour and our choice making as part of our positive health skills; someone who prefers water to soda is likely to better endure a range of future environments. Still, I think that this method of encouraging behavioural change, the ‘telling you what to do approach’, is neither productive nor appropriate, and let me tell you a story to illustrate this point.

I recently chatted to a member of the catering staff at a British university. The topic came to breastfeeding and she immediately started voicing her guilt that she had not been breastfeeding her infant. “I know I am not giving her the best,” she said, “but I work two jobs, provide all the income in the family, and with all the housework, cooking, and chasing after my three elder stepchildren, I have no time to spend hours sitting on a couch. But I feel so guilty. The maternity nurse said that it was my decision, but in such a way that you just know that you have done the wrong thing.”

I think – and said so during our conversation – that the woman in this story, call her Sue, did choose the most healthy option for her and her family – even if she went against the policy recommendation. For, in a broad view of positive health and taking into account her actual circumstances, the income and other health benefits Sue brings into her family by working, and the opportunity costs of the time and energy she would have spent breastfeeding – which are usually

23 This was meant to be a hyperbole, but Roizen (1999) actually makes this claim. If the association does exist it is probably largely explained by the correlation between flossing and other health-promoting behaviours. (Hujoel et al 2006).
overlooked – far outweigh the health benefits of breastfeeding for her, her family as a whole, and, on balance, probably even her baby.

In Sue, the ‘telling us what to do’ approach was both counterproductive and inappropriate. It was counterproductive because it harmed rather than promoted Sue’s health, first by advising her wrongly and second by causing her stress and guilt when she judiciously went against that advice. It was inappropriate because it failed to take Sue’s circumstances into account, and in advising her nevertheless was casually dismissive of Sue’s ability to make her own choices or judge her own situation.

This is an unavoidable problem for the ‘telling us what to do approach’ of health promotion. Its advice is based on an abstract calculation of what the healthier choice is – on average and all else being equal. But, as Sue illustrates, real life is never average, nor is all else ever equal. A policy expounding one advice for all will therefore always misfire and cause harm in some cases. And – in its complete disregard for the reasons we have for behaving as we do – cause justified irritation in many more.

What is a better way to promote health? I suggest that we can still try to alter people’s behaviour and choices, but should do so by turning our attention to the environment in which those choices are made.

**Using the environment to promote positive health**

I outlined at least three ways in which environments can be thought to cause or constitute health. Past environments play a role in designing the organism and thus the skills it possesses; future environments determine whether and to what degree those skills constitute positive health; and present environments help constitute our skill set because skills and resources available to an organism are not just located within the organism, but also outside it.

These three roles for the environment suggest three ways in which we might use the environment to promote positive health. The first is to improve the environments in which organisms grow up. We might, for example, offer better food options in nurseries. The second way is to change the future environments we encounter. This happens a lot, although it is less likely to be seen as health promotion: by having good plumbing and water treatment plants, by having airbags, car-seats, smoke alarms and safer roads, we alter the range of environments or physical challenges that we are likely to have to endure – and
I hardly need to emphasise that many of these advances are technological advances. The third way to promote health through the environment is to improve the skills of the organism as constituted by the environment. An example would be improving the organism's social network.

Since we can view people's choices and behaviour as part of their health skills, we can in principle apply all three methods to the promotion of them. But for now I want to focus on the third method only: the idea that our behaviour and choices are partially the product of our environment – and that as such we can modify them by altering that environment.

Is it justified to think of our behaviour and choices as partly constituted by our environment? The answer is yes. Normally, when we consider people's choices and seek to explain them, we tend to look at how people choose given a certain environment and given a set of choices. We wonder why an individual has chosen something different to what another person in a similar environment might have chosen. So, for example, if I ask you why you cycle to work, you may answer ‘I like the fresh air’, ‘it is not that far’, ‘it is an efficient way of getting some exercise’ or ‘my partner needs the car’. But it is unlikely that your answer will be ‘because I live in a country with bike-friendly road design, where other road users are attentive to cyclists, and in a culture that teaches children that cycling is a means of transport’.

Those latter reasons are a large part of the explanation for your cycling, however: I can virtually guarantee that many of us who cycle here in the Netherlands would not be cycling were we to live in, say, London. In fact, I would go as far as to say that those latter factors – the environmental and social reasons – have a far greater role in explaining the decision of so many of us to cycle to work than the reasons we will give for that decision when prompted. For if we lived in London, those reasons given – the fresh air, it not being far, or the partner having the car – would simply be irrelevant. They would not sway us, would not even occur to us, or public transport would be the obvious alternative.

Environments in which we live have considerable influence on our choices: they determine the choices available to us and provide us with reasons to choose. But these are the sorts of influences that we only cite to explain differences between populations; cycling behaviour in the Dutch versus the English, for

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24 The third method may not be formally different from the second, but I keep them separate here because it allows for a different emphasis.
example. At the level of explaining individual choice, we tend to be blind to their influence.

The promising way for health promotion, then, is to manipulate environmental influences so as to promote better choices and better health skills. This avoids the problem inherent in the ‘telling you what to do’ approach; health promotion by environmental manipulation does not tell us to act against our reasons and interests, but rather manipulates our situations so that the better health choices are more clearly in our interest. It makes them the easier, more accessible and more reasonable option for a larger part of the population. This is much better aligned with the aim of health policies, which is to enact a population-level change and not necessarily to get every individual person to breastfeed drink less. It is also much more likely to result in changes in those for whom that is indeed good, without irritating or even negatively affecting the health of those for whom it is not.

**Justifying health promotion by environmental design**

Step by step I have arrived at what might amount to quite a radically sounding claim: those in the business of health promotion should not tell us to consciously choose to alter our behaviour. Instead, they should change our environments such that we are nudged, coaxed or guided towards better behaviour, in many cases without our realising it.25

That, potentially, sounds extremely problematic, both morally and politically. If anything is worse than governments telling us what to do, it is governments altering our behaviour without our noticing it. At least when we are told what to do, we are aware of what is happening and can resist!

A full and proper justification of the approach I propose is beyond the scope of this lecture, and indeed is something I hope to research during this professorship. But let me give you four short prima facie reasons why the above response is not, I think, warranted.

First, changes to our environments do not restrict our freedom in the way that a ban does. We can still choose one way or the other, it is just that we have become more likely to, or have more reason, to make certain choices.

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25 Also known as ‘nudging’ (Thaler & Sunstein 2008).
Second, one of the core mandates of the state is to make those decisions and enact those policies that must be adhered to collectively, are best made by the collective, and affect us as groups. Environments are typically outside of our individual control and squarely within the collective realm that the state has been created to govern.

Third, the environments that steer our choices and thereby partially constitute our health skills are already being designed. Infrastructure does not fall out of the air fully formed, but is the product of a long series of individual and collective design choices. There is no environmental default, and we need little justification for choosing the most health-promoting designs where cost-effective.

Fourth and finally, there already are many institutions in the explicit business of shaping our choices, and often in ways that reduce health rather than promote it. Insofar as, for example, advertising works, it does not ‘give us information’ and ‘tell us to consciously choose the right thing’. Instead much of it tries to affect our choices in different ways – by evoking positive associations or feeding into our fast and dirty decision processes. If we are worried about people designing the world in ways that affect our choices without our being aware of this influence, then I suggest that benevolent, democratically justified health promotion should be the least of our worries.

The role of environment in shaping choice also teaches a rather different lesson: if we choose not to promote health but design our world in such a way that it promotes health reducing choices, for example because we earn more money or create more economic growth that way, then we should not complain if we end up having to spend some of that money on healthcare.
Conclusion

I have given you reasons to reject a view that defines health as well-being, and instead outlined a view on health that has two elements. One element is normal biological functioning, which focuses on the properties of an organism in the here and now in comparison to a population in a particular environment. This element is particularly suitable for the curative perspective.

For a health promotion and policy perspective, however, we need to focus on another element of health: a positive account of health. This I have characterised as the ability to persist through a range of environments, which is comprised of many different skills and properties. Not all of these properties are located in the organism, and I have highlighted three important roles for the environments in determining them: past developmental environments play a role in explaining the skills the organism has now, present environments have a role in constituting the skills of the organism, and future and environments determine how healthy those skills are.

The roles of the environments in causing and constituting positive health reveal at least three different ways in which we might modify the environment to promote, or reduce, health – and all three ways are open to and used by engineers. I highlighted one particular way of using the environment in order to promote health, which was the manipulation of environmental influences on our health choices. This method, I argued, is both a more promising and a more justifiable avenue for health promotion than the ‘giving us information and telling us what to do approach’. Engineers can put this method to extremely creative use, and I hope that they will continue to do so.
This brings me to the end of this lecture, and to the opportunity to express my gratitude to the people who have helped me get here. It is a privilege to have that opportunity, although I still lack the space to include everyone I want to or should.

*Humanistische Stichting Socrates* and Eindhoven University of Technology, thank you for the opportunity you have given me. I very much plan to make the most of it.

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*Ik heb gezegd.*
References


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